INSTRUCTIONAL TECHNOLOGY AWARENESS AND INSERVICE TRAINING NEEDS OF PRIMARY SCHOOL TEACHERS OF KERALA

K. S. KRISHNA KUMAR

Thesis submitted for the Degree of

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Dedicated to

my mother and motherland

DECLARATION

I, K S KRISHNA KUMAR, do hereby declare that this thesis entitled **'INSTRUCTIONAL TECHNOLOGY AWARENESS AND INSERVICE TRAINING NEEDS OF PRIMARY SCHOOL TEACHERS OF KERALA'** submitted to the University of Calicut for the award of the Degree of Doctor of Philosophy in Education has not been previously formed the basis of the award of a Degree, Diploma, Title or Recognition.

Calicut University Campus
26-10-2007

K.S. KRISHNA KUMAR

Dr. V SUMANGALA
Professor & Former Head of the Department
Department of Education
University of Calicut.

CERTIFICATE

I, **Dr. V. SUMANGALA,** do hereby certify that this thesis entitled **'INSTRUCTIONAL TECHNOLOGY AWARENESS AND INSERVICE TRAINING NEEDS OF PRIMARY SCHOOL TEACHERS OF KERALA'** is a record of bonafide study and research carried out by **Sri. K. S. Krishna Kumar**, under my supervision and guidance and that it has not been previously formed the basis for the award of a Degree, Diploma, Title or Recognition.

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Dr. V. SUMANGALA

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Calicut University Campus *K S KRISHNA KUMAR*

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C. kmaq-lnI kµÀ`-§Ä D. ¢mkvapdn kwhm-Z-§Ä

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A. aqey-\nÀ®bw B. {KlWw

C. DZv{K-Y\w D. A]-{K-Y\w

29. ‘DÄIm-gvNm-]-T\’¯n\v A´-co-£-§Ã Hcp-Ip-t¼mÄ]mTy-hn-j-bs¯ Ah-X-cn-¸n-tI--Xv F§-s\-bmWv?

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C. hnhn[`mjm-hy-h-lmccq]-§ÄIpÅ {]m[m\yw

D. A£-c-am-e, hymI-cWw F¶n-h-IÄIpÅ {]m[m\yw

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B. ìnÌp-tÌ-{ian-Ìr-Xhpw {]hÀ¯-\m-[n-jvTn-Xhpw
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C.]T-\-{]-hÀ¯-\-§-fpsS sshbn[yw

D.]Tn-Xm-hnsâ _p-hn-[t-jn-Ì-fpsS hnÌ-k\w

41. Is--¯Â]T-\w, {]_-Ô-c-N-\, s]mXp-hmb Ah-X-c-Ww, kwÌ-b-\n-hm-c-Ww, NÀ¨ F¶o {]hÀ¯-\-ß-sFÃmw DÄs¸-Sp-¶Xv GXn-emWv?

A.]m\Â NÀ¨-ÌÄ
B. kwhm-Z-ßÄ
C. {]ivt\m-¯cn
D skcn-\m-dp-ÌÄ

42. Xmsg]d-bp-¶-h-bnÂ Search Engine AÃm-¯Xv GXmWv?

A. Google
B. Yahoo
C. PageMaker
D. Excite

43. ‘kÀÆ-` mjm hgmÌ-cWw’ (Universal Grammar) ASn-Øm-\-cm-Ip-¶Xv F´mWv?

A. hgmÌ-c-W-]-T\w
B C¥ojv ` mjm-]-T\w
C. c\p-jg-c-kvXn-jvÌ-¯nse ssPhnÌ` mjm-L-SÌw
D. A£-c-cmem]T-\-¯nsâ {]kcn

44. ‘Language Laboratory’ bpsS cpdg Dt±-Ig-sc-´mWv?

A. hgmÌ-c-W-t_m-[\w
B. ` mjm-t-jn-Ì-fpsS]cn-io-e\w
C. ` mjm-hn-hÀ¯\w
C. Ch-sbm-¶p-cÃ

45. t_m[-\-¯n-\p-tijw {]Xn-^-e-\m-Ø-Ì-cmb A]-{K-Y-\-¯n\pw hne-bn-cp-¯-en\pw hnj-b-cm-t-Xv GXmWv?

A. \ÂÍnb]T-\m-´-co-£-ß-epsS/]T-\-{]-hÀ¯-\-ß-fpsS
A\p-tbm-PgXbpw, ^e-{]m]vXnbpw
B.]mTg-]-²Xn/t_m[\ Dt±-Ig-ßÄ,]mT-hkvXp F¶n-h-bpsS
A\p-tbm-Pg-Xbpw, ^e-{]m]vXnbpw
C. A[gm-]n-Ì-bp-sSbpw]Tn-Xm-Ì-fp-sSbpw {]Ì-S-\-ß-fpsS A\p-tbm-PgXbpw, ^e-{]m]vXnbpw
D. Ch-ÌÄ FÃmw

46. ‘Portable Document File’ (.pdf) Ìfp-cmbn _Ô-s¸« tkm^vävshbÀ GXmWv?

A. Corel Draw
B. Acrobat Reader
C. AVG
D. PageMaker

47. ‘t{]mPIvSv coXn’ ASn-Øm-\-cm-Ip¶ XXz-im-kv{X-tc-XmWv?

A. cm\-hn-Ì-Xm-hmZw Humanism
B. BZÀi-hmZw Idealism
C. {]Ir-Xn-hmZw Naturalism
D. {]mtbm-Kn-Ì-hmZw Pragmatism

48. ‘\nbp-cm-` ym-k-ßÄ (Assignments) \ÂIpÌ hgn e£y-cm-Ip-¶Xv F´mWv?

A. Is--¯-ep-Ìfpw hgcn-K-X-]-T-\hpw
B. {KÙ-im-e-Ì-fpsS D]-tbmKw
C. ¢mkvcp-dn-t_m-[-\-¯nsâ XpSÀ¨
D. Ch-ÌÄ FÃmw

49. ‘hne-bn-cp-¯Â’-p F¶-XnÂ DÄs¸-Sp-¶-tX-XmWv?

A. A²m-]-Ì³ kzbw hne-bn-cp-¯p-¶Xpw]Tn-Xm-Ìsf hne-bn-cp-¯p-¶Xpw

B.]Tn-Xm-ÌÄ]c-kv]cw hne-bn-cp-¯-\p-¶Xpw A²ym-]-Ìs\ hne-bn-cp-¯p-¶Xpw

C. Ch-ÌÄ FÃmw D. Ch-sbm-¶p-cÃ

50]cn-k-c-hp-am-bpÃ CS-s]-S-ep-Ì-fn-eqsS hkvXp-Ìsf \nco-£n-Ìp-Ì, Af-Ìp-Ì, hÀ¤o-Ì-cn-Ìp-Ì,]co-£Ww sN¿p-Ì, \nK-c-\-¨-fnÂ F¯n-t¨-cpÎ XpS-¨nb {]hÀ¯-\-¨Ä GXv hn`m-K-¯nÂ DÄs¸-Sp¶p?

A. `mjm-tÌ-jn-ÌÄ B. {]{Ìn-bm-tÌ-jn-ÌÄ

C. [mc-W-ÌÄ D. A²ym-]-\-tÌ-jn-ÌÄ

51. ‘ssh‖m-cn-Ì-am\’ (Emotional Quotient) ¯nsâ kqN-Ì-¨-fnÂ DÄs¸-Sm-¯Xv GXmWv?

A. kl-Ì-c-Wm-ß-IX B. kwLÀj-`-cn-X-amb Nn´

C. aäp-Ã-h-tcm-SpÃ _lp-am\w D. Bß-\n-b-{´Ww

52. ‘_lp-P-\-am-[yaw” (Mass Media) F´p-sÌm-v Dt±-in-Ì-¶Xv F´mWv?

A. tdÙn-tbm,]{Xw, sSen-hn-j³

B. amkn-Ì-ÌÄ, hmcn-Ì-ÌÄ, CXc B\pÌmen-Ì-¨Ä

C. Ne-Nn-{X-¨Ä D. Ch-ÌÄ FÃmw

53.]mTy-h-kvXp-hnsâ D]-L-S-Ì-¨sf Ah-bpsS {Ìaw,]cn-Wm-aw, _Ôw XpS-¨n-b-h-bpsS ASn-Øm-\-¯nÂ tcJ-s¸-Sp-¯p¶ k¼¼-Zm-b-ta-XmWv?

A. Forward Branching B. Backward Branching

C. Flow Charting D. Chaining

54. {]Xn-`-Ìfmb]Tn-Xm-Ì-fpsS (Gifted Pupils) e£-W-¨-fnÂ DÄs¸-Sp-¶-tX-XmWv?

A. D¯-c-¨-fnse Akm-[m-c-WX B. {]iv\-]-cn-l-c-W-¨-fn-epÃ thKX

C. DbÀ¶ \ne-hm-c-apÃ Bi-b-{K-l-W-tijn

D. Ch-ÌÄ FÃmw

55. ‘A[ym-]-\-am-Xr-Ì-ÌÄ’ (Models of Teaching) hni-Z-am-Ìp-¶-sX-´mWv?

A. A[ym-]-\-¯nsâ L«-¨Ä/{Ìa-¨Ä,]T-\-¯nsâ {]Xy£/]tcm-£-^-e-¨Ä

B. A[ym-]-Ìsâ {]Xn-Ì-c-W-co-Xn-ÌÄ,]T-\m-´-co-£-¯sâ kmaq-lnÌLS-\, klm-b-Ì-a-{¼¼-Zm-b-¨Ä

C. Ch-ÌÄ FÃmw D. Ch-sbm-¶p-cÃ

56. ‘Keller Plan’ F¶Xv Hcp

A. hyàay-[n-jvTnX t_m[-\-co-Xn-bm-Wv.

B. A[ym-]Ì]cn-io-e\ coXn

C. kmaq-lm-[n-jvTnX t_m[-\-co-Xn-bm-Wv.

D. Hcp t_m[-\-co-Xnth AÃ

57. hnh-c-kw-kvÌ-cW (Information Processing) hn`m-K-¯nÂ DÄs¸-Sp¶ A[ym-]-\-amXrÌth-XmWv?

A. Synectics
B. Concept Attainment
C. Role play
D. Jurisprudential Inquiry

58. FÜv-KmÀ tÜÂ \nÀt±-în¨ ‘ A\p-` -h-kvXq-]nÎ’ (Edger Dale’s Cone of Experience)-bnÂ Ìmcy-£-αX Gähpw Ìpdª C\-tα-XmWv?
A. \mS-Ìo-Ì-cWw
B. ` mjm-]-c-_nw-_-§Ä
C. \nÝeÑn{X-§Ä
D. cq]-αm-Xr-Ì-ÌÄ

59 ‘Micro Teaching’F¶Xv F ´ mWv?
A. Poh-ìm-kv{X-t_m-[-\-co-Xn-bmWv
B. KWn-X-ìm-kv{X-t_m-[-\-co-Xn-bmWv
C. t_m[-\-tÌ-jn-Ì-fpsS]cn-ìo-e-\-αmWv
D. Ì¼yq-«À]cn-ìo-e-\-co-Xn-bm-Wv.

60 t_m[-\m-kq-{X-W-¯n\v ASn-Øm-\-L-S-Ì-αmbn]cn-K-Wn-tÌ--Xv F ´ mWv?
A.]mTy-hkvXp/]mT-§Ä
B.]T-\-km-k-{Kn-ÌÄ
C.]T-\-{]-hÀ¯-\-§Ä
D. t_m[\/]mTy-]-²Xn D±-îy-§Ä

61. t_m[-\m-kq-{X-W-th-f-Ì-fnÂ kα-{K-αmb A]-{K-Y-\-¯n\v]cn-K-Wn-tÌ--Xv F ´ mWv?
A.]T-\-km-α-{Kn-ÌÄ,]T-\-{]-hÀ¯-\-§Ä, XpSÀ{]-hÀ¯-\-§Ä
B.]mTy-]-²Xn D±-îy-§Ä, DXv]-¶-§Ä, tÌjn-ÌÄ
C. Ch-ÌÄ FÃmw
D. Ch-sbm-¶p-αÃ

62. αqey-\nÀW-b-¯n\v ASn-Øm-\-L-S-Ì-αmbn]cn-K-Wn-tÌ--Xv F ´ mWv?
A.]mTy-hkvXp/]mT-§Ä
B.]T-\-km-α-{Kn-ÌÄ
C.]T-\-{]-hÀ¯-\-§Ä
D. t_m[\/]mTy-]-²Xn D±-îy-§Ä

63. Ûm\-\nÀ½n-Xn-hmZX{ ´ -§-fnÂ DÄs ¸ -Sm-¯Xv GXmWv?
A. kwhm-Zm-ßÍ]T\w
B. Ìs--¯Â]T\w
C. {Ìαo-ÎrX]T\w
D. hmXnÂ ¸ pd]T\w

64. ‘kαo-]-Ø-hn-Ì-k-\-α-WvÛew’ (Zone of Proximal Development-ZPD) ‘ssÌXm§v’ (Scaffolding) F¶o Bî-b-§Ä \nÀt±-în-Ìp-¶-sX- ´ mWv?
A.]T-\-¯nÂ A[ym-]n-Ì-bpsS klmbw
B.]T-\-¯nÂ kl-]m-Tn-Ì-fpsS klmbw
C.]T-\-¯nÂ kαq-l-¯nsâ klmbw
D. Ch-ÌÄ FÃmw

65. t_m[-\-th-f-Ì-fnÂ A[ym-]n-Ì-bpsS tNmZy-§Ä ^e-{]-Z-αm-Ìp-¶-Xn\v D]-bp-ù-αmb X{ ´ -tα-XmWv?

A. tNmZy-§-fpsS BhÀ¯-\hpw]p\xhnX-c-Whpw

B. Iq{Sp-XÂ hyàX e` y-am-Ip¶ hmi-Zo-I-c-W-§Ä

C. Icn-bp-¯-c-¯nsâ kq{N-\-IÄ \ÂIÂ

D. ChI-Ä FÃmw

66. I¼yq-«À D]-tbm-K-s¸-Sp¯n s]mXp-th-Zn-I-fnÂ/¢mkv apdn-I-fnÂ hmj-bm-h-X-c-W-¯n\v D]-I-cn-Ip¶ Software GXmWv?

A. M S Word B. M S Excel

C. M S Access D. M S Power Point

67. EDUSAT sâ tkh-\-§-fnÂ DÄs¸-Sp-¶Xv GXmWv?

A. CâÀs\äv kaI-cy-§Ä B. aÄ«o-ao-Onb]mT-§Ä

C. VICTERS D. Ch-IÄ FÃmw

68. ‘html’, ‘http’, ‘www’ F¶nh t\cn«v _Ô-s¸-Sp¶ taLe GXmWv?

A. sSen-hn-j³ B. Zn\-¸-{X-§Ä

C. tdUntbm D. sh_vssk-äp-IÄ

69. ‘t_m[-\-am-[yaw’ F¶ \ne-bnÂ I¼yq-«-dnsâ Gähpw {it²-b-amb Kph-sa-´mWv?

A. t_m[-\-km-a-{Kn-I-fpsS kw`-c-W-tijn

B. IfÀ{]nâ-dp-I-fpsS e`yX C. UnPn-äÂ kmt¦-Xn-IX

D. hyàn-K-X-t_m-[-\-¯n-\pÅ £aX

70. Xmsg]d-bp¶ sSen-hn-j³ Nm\-ep-I-fnÂ hyXy-kvX-am-bXv GXmWv?

A. Animal Planet B. National Geographic Channel

C. Discovery Channel D. Star World

71. t_m[-\-am-[y-a-§Ä/D]-I-c-W-§Ä Xnc-sª-Sp-Ip-¶-Xn-\pÅ am\-Z-WvU-§Ä GXmWv?

A.]Tn-Xm-I-fpsS F*w,]T-\-hn-j-bw, e`y-amb ka-bw, km¼-¯n-I-tijn

B. D]-I-c-W-§-fpsS t_m[-\-£-a-X, {]hÀ¯\ ]cn-Nbw

C. t_m[\]mTy-]-²Xn Dt±-iy§Ä D. Ch-IÄ FÃmw

72. ‘Action Research’ sâ apÀy-amb D-t±-iy-sa-´mWv?

A. imkv{X-K-th-j-Ww B. Ncn-{X-K-th-jWw

C. {]iv\-]-cn-lmcw D. imkv{X-]-co-£Ww

73. t_m[-\-{]-{Io-b-bnÂ]Tn-Xm-hn\v \Ât- kzmX-´y-¯n\v Gsd {]m[m\yw Iev]n¨ hn`m-K-ta-XmWv?

A. hymh-lm-c-hmZw (Behaviorism) B. am\-hn-I-Xm-hmZw (Humanism)

C. LS-\m-hmZw (Structuralism) D. BZÀi-hmZw (Idealism)

74. Xmsg]d-bp-¶-h-bnÂ ‘Operating System’ AÃm-¯Xv GXv?

A. Windows B. Unix

C. Nero D. Linux

75. ‘¢mÊvapdn Bï-b-hn-\n-ab’ (Classroom Communication) ¯nÂ {]m[m\yw \Âtï--Xv GXn-\mWv?

A. {]Xn-]pjvSn ’ (Feedback) B. {]tNm-Z\w ’ (Motivation)

C. Zzn]m-Zp-B-ï-b-hn-\n-abw ’ (Two-way Communication)

D. Ch-ÏÄ FÃmw

1 t_m[\-þ]-T-\-{]-hÀ¯-\-§ÄÏmbn Zn\-]-{X-§Ä D]-tbm-K-s¸-Sp-¯p-t¼mÄ t_m[\ km[y-X-ÏÄ DÃh GXmWv?

A. apƒ-{]-kw-Kw, tem-\-§Ä B. hmÀ¯-ÏÄ,]c-ky-§Ä, dnt¸mÀ«p-ÏÄ

C. Ch-ÏÄ FÃmw D. Ch-sbm¶pw D]-bp-à-aÃ

2 ‘ImÀ«q-Wp-ÏÄ’ Hcp

A. cmjv{Sob B‰£-]-lm-ky-Nn-{Xo-Ï-cWw amÞ{X-am-Wv.

B. hn‰\m-‰Zm-]m[n amÞ{X-amWv C. t_mZ-t\m-]m-[n‰b AÃ

D. t_m[-t\m-]m-[n- Ïq-Sn-bmWv

3 {]m‰Zin Ncn-{X-c-N-\bvIv X¿m-sd-Sp-Ip¶ Ip«n-ÏÄIv hnh-c-tï-ƒ-c-W-¯n\v apƒy-ambn \nÀt±-in-Ïm-hp¶ D]m-[n-‰b-XmWv?

A. PnÃm¯q]Sw B. Ncn-{X-hn-Óm-\-‰Ïm-ï-§Ä

C.]mT-]p-kvX-Ï-§Ä D. A¯n-ap-ƒ-§Ä

4 t_m[-\-¯nÂ ‘‰kmÞÏ-«nIv coXn’(Socratic Method) sb¶v
Adn-b-s¸-Sp-¶-‰X-XmWv?

A. kl-Ï-c-Wm-ßÍ]T\w B. kwhm-Zm-ß-Ï-]-T\w

C. kl-hÀ¯n-X-]-T\w D. kzbw \nb-{´nX]T\w

5. Ip«n-Ï-fnse kÀ¤m-ß-ÏX (Creativity) bpsS t]mj-W-¯n\v D]-bp-à-amb
]T-\-{]-hÀ¯-\-§Ä GXmWv?

A. kmln-Xy-c-N-\m-{]-hÀ¯-\-§Ä B. \nÀ½m-W-{]-hÀ¯-\-§Ä

C. {]iv\-]-cn-l-cWw D. Ch-sbÃmw

6. ‘¯n¶-X-e-t_m-[\w’(Multi Level Instruction) ASn-Ømƒ-\-am-Ip-¶Xv F´mWv?

A.]mTy-]-²-Xn-bnse hnj-b-§-fpsS sshbn[yw

B. A[ym-]-Ï-cpsS t_m[-\-tï-jn-Ï-fpsS sshbn[yw

C. Ip«n-Ï-fpsS]T-\-th-K-X-Ï-fp-sSbpw]T-\-co-Xn-Ï-fp-sSbpw sshbn[yw

D. ChsbmÃp-aÃ

7. t_m[-\-{]-{In-b-bnÂ Hƒc]mTy-hkvXp Xs¶ hyXykvX kµÀ¯-§-fnÂ, hnhn[Xe-§-fnÂ,]e ho£-W-§-fn-ep-amƒbn BhÀ¯n-¨v,]Tn-Xm-Ïsf
ÏqSp-XÂ DbÀ¶ tïjn-Ï-fn-teIv F¯n-Ip¶ kao-]-\-ta-XmWv?

A. DZv-{K-Yn-X-k-ao-]\w B. Nm{In-Ïkao]\w

C. ¯n¶-X-e-k-ao-]\w D. Xoam-ünIv kao-]\w

8. ‘{]iv\-]-cn-l-cW (Problem Solving) kao-]\’¯nÂ {]Ya L«-amƒbn kzoÏ-cn-tï--Xv GXmWv?

A. kwL-§-fmbn Xncn°v ÏÀ¯-hy-§sf] ¦ p-h-bvÍÂ

B. {]{In-bm-tï-jn-Ï-fpsS {]tbmKw C. {]iv\s¯ thÀXn-cn-¨-dn-bÂ

D. {]iv\-]-cn-lm-c-amÀ¤-§sf Ïs--¯Â

9. Xmsg]d-bp-¶-h-bnÂ hgXy-kvX-amWn \nevIp-¶Xv GXmWv?

   A. sImfm-jp-IÄ B. NmÀ«p-IÄ

   C. ^nenw D. t]mÌ-dp-IÄ

10 A[ym-]-Isâ \nb-{´-W-8ÄIp-]-cn-bmbn {]tXyI]ncn-io-e\w e`n-¨-bcpw DbÀ¶ \ne-hm-c-apÅ Ip«n/Ip«n-IÄ Xmgv¶ \ne-hm-c-Imsc]Tn-¸n-Ip¶ coXn-tb-XmWv?

   A. kwL-t_m-[\w (Team Teaching)

   B.]cn-lm-c-t_m-[\w (Remedial Instruction)

   C. ÓmXr-\nÀt±-in-X-t_m-[\w (Cognitive Guided Instruction)

   D. ka-k-aq-l-t_m-[\w (Peer Tutoring)

11. 'Heuristics' {]mtbm-Kn-I-am-Ip-hm³ D]-I-cn-Im-hp¶ coXn-tb-XmWv?

   A. BhÀ¯\w B. t{]mP-IvSp-IÄ

   C.]cn-lm-c-t_m-[\w D. So¨nMv sqjo-\p-IÄ

12. s]mXp-hmb]T-\-e-£y-8Ä,]c-kv]-cm-{i-b-Xzw,]mTy-h-kvXp-hns\ hnhn-[-`m-K-8-fm-IÂ, kzbw]T-\-¯n\pw kwL]T-\-¯n\pw Hcp-t]mse Ah-kcw \ÂIÂ, Is--¯nb Bi-b-8sf]¦p-sh-IÂ, sa¨-s¸-Sp-¯Â
Fÿ¶n-h-sbÃmw DÄs¸-Sp¶ t_m[-\-coXn GXmWv?

   A. kwL-]-T\w B. kl-I-c-Wm-ß-I-]-T\w

   C. {Iao-Ir-X-]-T\w D. kzbw\nb-´n-X-]-T\w

13. 'kzmwio-I-cWw (Assimilation) 'kwØm-]\w' (Accomodation) ' kw´p-eo-I-cWw' (Equilibration) Fÿ¶o kwÓ-Isf]nbmsj hni-Zo-I-cn-Ip-t¼mÄ, t_m[-\-{]-{In-b-bnÂ {]m[m\yw \ÂIp-¶Xv F´n-\mWv?

   A.]T-\-ssh-I-ey-8Ä Is--¯p-¶-Xn\v

   B.]pXnb A\p-`-h-8-fn-eqsS \ne-hn-epÅ [mc-W-Isf sa¨-s¸-Sp-¯p-¶-Xn\v

   C.]cn-lm-c-t_m-[\w \S-¯p-¶-Xn\v

   D. kwL-t_m-[-\-¯n\v

14. '\nc-´-chpw ka-{K-hp-amb aqey-\nÀWb'coXn-bpsS apÀy-amb e£yw F´mWv?

   A.]mTy-]-²-Xn-bnse _lp-hn-[-hn-j-b-8-fpsS Ah-X-cWw

   B. hgXy-kvX-t_m-[-\-co-Xn-I-fpsS {]tbmKw

   C. hnhn[ ]T-t\m-]-I-c-W-8-fpsS D]-tbmKw

   D.]Tn-Xm-hnsâ _lp-hn-[ti-jn-I-fpsS hnI-k\w

15. Is--¯Â]T-\w, {]_-Ô-c-N-\, s]mXp-hmb Ah-X-c-Ww, kwi-b-\n-hm-c-Ww, NÀ¨ Fÿ¶o {]hÀ¯-\-8-sfÃmw DÄ¸-Sp-¶Xv GXn-emWv?

   A.]m\Â NÀ¨-IÄ B. kwhm-Z-8Ä

   C. {]ivt\m-¯cn D. skan-\m-dp-IÄ

16. ‘kÀÆ-` mjmhymÎ-cWw’ (Universal Grammar)ASn-Ømn-\-amn-Ip-¶Xv F´mWv?

A. hymÎ-c-W-]-T\w
B. Cw¥ojv ` mjm-]-T\w
C. a\p-jy-a-kvXn-jvÎ-¯nse ssPhnÎ ` mjm-L-Sfw
D. A£-c-amem]T-\-¯nsâ {]kàn

17. t_m[-\-¯n-\p-tijw {]Xn-^-e-\m-ß-Î-amb A]-{K-Y-\-¯n\pw hne-bn-cp-¯-en\pw hnj-b-amn-tÎ--Xv GXmWv?

A. \ÂInb]T-\m-´-co-£-§-fpsS/]T-\-{]-hÀ¯-\-§-fpsS A\p-tbm-Py-Xbpw, ^e-{]m]vXnbpw
B.]mTy-]-²Xn/ t_m[\ Dt±-iy-§Ä,]mT-hkvXp F¶n-h-bpsS A\p-tbm-Py-Xbpw, ^e-{]m]vXnbpw
C. A[ym-]n-Î-bp-sSbpw]Tn-Xm-Î-fp-sSbpw {]Ir-S-\-§-fpsS A\p-tbm-Py-Xbpw, ^e-{]m]vXnbpw
D. Ch-IÄ FÃmw

18. ‘t{]mPIvSv coXn’ ASn-Ømn-\-amn-Ip¶ XXz-im-kv{X-ta-XmWv?

A. amn\-hn-Î-Xm-hmZw (Humanism)
B. BZÀi-hmZw (Idealism)
C. {]Ir-Xn-hmZw (Naturalism)
D. {]mtbm-Kn-Î-hmZw (Pragmatism)

19. ‘\nbp-àm-` ym-k-§Ä’ (Assignments) \ÂIpÎ hgn e£y-amn-Ip-¶Xv F´mWv?

A. Is--¯-ep-Ifpw hyàm-K-X-]-T-\hpw
B. {KÙ-im-e-Î-fpsS D]-tbmKw
C. ¢mkvap-dn-t_m-[-\-¯nsâ XpSÀ¨
D. Ch-IÄ FÃmw

20. ‘hne-bn-cp-¯Â’ F¶-XnÂ DÄs¸-Sp-¶-tX-XmWv?

A. A²ym-]-Ì³ kzbw hne-bn-cp-¯p-¶Xpw]Tn-Xm-Isf hne-bn-cp-¯p-¶Xpw
B.]Tn-Xm-IÄ]c-kv]cw hne-bn-cp-¯p-¶Xpw A²ym-]-Is\ hne-bn-cp-¯p-¶Xpw
C. Ch-IÄ FÃmw
D. Ch-sbm-¶p-aÃ

21. ‘sshÎm-cn-Î-am\’ (Emotional Quotient) ¯nsâ kqN-Î-§-fnÂ DÄs¸-Sm-¯Xv GXmWv?

A. kl-Î-c-Wm-ß-Ix
B. kwLÀj-` -cn-X-amb Nn´
C. aäp-Ã-h-tcm-SpÅ _p-am\w
D. Bß-\n-b-{´Ww

22. ‘_p-P-\-am-[yaw’(Mass Media) F´p-sIm-v Dt±-in-Ip-¶Xv F´mWv?

A. tdÙn-tbm,]{Xw, sSen-hn-j³
B. amkn-Î-IÄ, hmcn-Î-IÄ, CXc B\p-Im-en-Î-§Ä
C. Ne-¨n-{X-§Ä
D. Ch-IÄ FÃmw

23.]mTy-h-kvXp-hnsâ D]-L-S-Ī-§sf Ah-bpsS {ïaw,]cn-Wm-aw, _Ôw XpS-§n-b-h-bpsS ASn-Øm-\-¯nÂ tcJ-s¸-Sp-¯p¶ k{¼-Zm-b-ta-XmWv?

A. Forward Branching
B. Backward Branching
C. Flow Charting
D. Chaining

24. {]Xn-`-Ī-fmb]Tn-Xm-Ī-fpsS (Gifted Pupils) e£-W-§-fnÂ DÄs¸-Sp-¶-tX-XmWv?

A. D¯-c-§-fnse Akm-[m-c-WX
B. {]iv\-]-cn-l-c-W-§-fn-epÅ tbKX
C. DbÀ¶ \ne-hm-c-apÅ Bï-b-{K-l-W-tijn
D. Ch-ÏÄ FÃmw

25. 'A²ym-]-\-am-Xr-Ī-ÏÄ' (Models of Teaching) hnï-Z-am-Ìp-¶-sX-´mWv?

A. A[ym-]-\-¯nsâ L«-§Ä/{ïa-§Ä,]T-\-¯nsâ {]Xy£/]tcm-£-^-e-§Ä
B. A[ym-]-Ìsâ {]Xn-Ī-c-W-co-Xn-ÏÄ,]T-\m-´-co-£-¯nsâ kmaq-lnÎLS-\, klm-b-Ī-k-{¼-Zm-b-§Ä
C. Ch-ÏÄ FÃmw
D. Ch-sbm-¶p-a-Ã.

26. 'Keller Plan' F¶Xv Hcp

A. hyàym-[n-jvTnXt_m[-\-co-Xn-bmWv
B. A[ym-]Ì]cn-ïo-e\ coXn
C. kmaq-lm-[n-jvTnX t_m[-\-co-Xn-bmWv
D. Hcp t_m[-\-co-Xntb AÃ

27. Micro Teaching F¶Xv F´mWv?

A. Poh-ïm-kv{X-t_m-[-\-co-Xn-bmWv
B. KWn-X-ïm-kv{X-t_m-[-\-co-Xn-bmWv
C. t_m[-\-tï-jn-Ī-fpsS]cn-ïo-e-\-amWv
D. Ï¼yq-«À]cn-ïo-e\coXn-bmWv

28. t_m[-\m-kq-{X-W-¯n\v ASn-Øm-\-L-S-Ī-ambn]cn-K-Wn-tï--Xv F´mWv?

A.]mTy-hkvXp/]mT-§Ä
B.]T-\-km-a-{Kn-ÏÄ
C.]T-\-{]-hÀ¯-\-§Ä
D. t_m[\/]mTy-]-²Xn Dt±-ïy-§Ä

29. t_m[-\m-kq-{X-W-th-f-Ī-fnÂ ka-{K-amb A]-{K-Y-\-¯n\v]cn-K-Wn-tï--Xv F´mWv?

A.]T-\-km-a-{Kn-ÏÄ,]T-\-{]-hÀ¯-\-§Ä, XpSÀ{]-hÀ¯-\-§Ä
B.]mTy-]-²Xn Dt±-ïy-§Ä, DXv]-¶-§Ä, tijn-ÏÄ
C. Ch-ÏÄ FÃmw
D. Ch-sbm-¶p-aÃ

30. ɑqeɣ-\nÀW-b-¯n\v ASn-Ø̈m-\-L-S-Ī-ɑmbn]cn-K-Wn-ŧĪ--Xv F´mWv?

A.]mTy-hkvXp/]mT-ßǞ B.]T-\-km-ɑ-{Kn-ĪǞ

C.]T-\-{]-hÀ¯-\-ßǞ D. ŧ_m[\/]mTy-]-²Xn Dŧ±-īy-ßǞ

31. ‘kɑo-]-Ø̈-hn-Ī-k-\-ɑ-WvUew’ (Zone of Proximal Development-ZPD) ‘ssĪXmßv’ (Scaffolding) F¶o Bī-b-ßǞ \nÀŧ±-īn-Īp-¶-sX-´mWv?

A.]T-\-¯nÂ A[ym-]n-Ī-bpsS klmbw

B.]T-\-¯nÂ kl-]m-Tn-Ī-fpsS klmbw

C.]T-\-¯nÂ kɑq-l-¯nsâ klmbw

D. Ch-ĪǞ FÃmw

32. ŧ_m[-\-ŧh-f-Ī-fnÂ A[ym-]n-Ī-bpsS ŧNmZy-ßǞ ^e-{]-Z-ɑm-Īp-¶-Xn\v D]-bp-ɑ-ɑmb X{´-ŧɑ-XmWv?

A. ŧNmZy-ß-fpsS BhÀ¯-\hpw]p\xhnX-c-Whpw

B. ĪqSp-XÂ hyàX e`m-b-ɑm-Īp¶ hnī-Zo-Ī-c-W-ßǞ

C. īcn-bp-¯-c-¯nsâ kqN-\-ĪǞ \ÂĪÂ

D. Ch-ĪǞ FÃmw

33. Ī¼yq-«À D]-ŧbm-K-s¸-Sp¯n s]mXp-ŧh-Zn-Ī-fnÂ/¢mkv ɑpdn-Ī-fnÂ hnj-bm-h-X-c-W-¯n\v D]-Ī-cn-Īp¶ Presentation Software GXmWv?

A. M S Word B. M S Excel

C. M S Access D. M S Power Point

34. EDUSAT sâ ŧkh-\-ß-fnÂ DǞs¸-Sp-¶Xv GXmWv?

A. CâÀs\äv kaĪ-cy-ßǞ B. ɑǞ«o-ɑo-Ūnb]mT-ßǞ

C. VICTERS D. Ch-ĪǞ FÃmw

35. ‘html’, ‘http’, ‘www’ XpS-ßnb {]ŧbm-K-ßǞ ŧ\cn«v _Ô-s¸-Sp¶ ŧɑɔe GXmWv?

A. sSen-hn-j³ B. Zn\-¸-{X-ßǞ

C. ŧdŪnŧbm D. sh_yssk-äp-ĪǞ

36. ‘ŧ_m[-\-ɑm-[yɑw’ F¶ \ne-bnÂ Ī¼yq-«-dnsâ Gähpw {īŧ²-b-ɑmb KpW-sɑ-´mWv?

A. ŧ_m[-\-km-ɑ-{Kn-Ī-fpsS kw`-c-W-ŧījn

B. ĪfÀ{]nâ-dp-Ī-fpsS e`yX C. ŪnPn-äÂ kmŧ¦-Xn-ĪX

D. hyàm-K-X-ŧ_m-[-\-£ɑX

37. Xmsg]d-bp¶ sSen-hn-j³ Nm\-ep-Ī-fnÂ hyXy-kvX-ɑm-bXv GXmWv?

A. Animal Planet B. National Geographic Channel

C. Discovery Channel D. Star World

38. t_m[-\-am-[y-a-8Ä/D]-i-c-W-8Ä Xnc-sª-Sp-ip-¶-Xn-\pÂ am\-Z-Wv0-8Ä GXmWv?

A.]Tn-Xm-i-fpsS F*w,]T-\-hn-j-bw, e` y-amb ka-bw, km¼-¯n-i-tijn

B. D]-i-c-W-8-fpsS t_m[-\-£-a-X, {]hÀ¯\]cn-Nbw

C. t_m[\/]mTy-]-²Xn Dt±-i-8Ä

D. Ch-IÄ FÃmw

39. 'Action Research' sâ apÀy-amb D-t±-iy-sa-´mWv?

A. imkv{XK-th-j-W]cn-io-e\w B. Ncn-{X-K-th-jW]cn-io-e\w

C. {]iv\-]-cn-lmcw D. imkv{X-]-co-£Ww

40. '¢mÊvapdnBi-b-hn-\n-ab'(Classroom Communication) ¯nÂ {]m[m\yw \Ât[-Xv GXn-\mWv?

A. {]Xn-]pjvSn (Feedback) B. {]tNm-Z\w (Motivation)

C. Zzn]m-Z-p-B-i-b-hn-\n-abw (Two-way Communication)

D. Ch-IÄ FÃmw

Χηαπτερ Ονε

INTRODUCTION

- Need and Significance of the Study
- Statement of the Problem
- Definition of Key Terms
- Variables
- Major Hypotheses and Objectives
- Methodology
- Scope of the Study

Who dares to teach
must never cease to learn

-John Cotton Dana

With the advent of the 'knowledge' era, Teacher Education needs to prepare teachers to face the changing technological contexts and to model pedagogies and tools for better forms of student learning. High initiative teachers are often posed with questions like, "How significant is content or subject knowledge for creative and effective learning? What links can be made between a teacher's knowledge and the associated pedagogic strategies and practices to ensure successful learning? How important is the updating of teacher's knowledge base? What form should this take?". These questions illustrate a theme in Teacher Education that is increasingly catching the attention of educational policy makers also in this hour of e-learning and of virtual classrooms.

If 'quality education' and 'excellence in achievement' are the watchwords of the new generation learners, then teachers of the present are to be moulded, trained and professionally developed. Teachers are to carry out their roles effectively like stimulate learning, enhance thinking, develop student personality, facilitate self-actualisation and liberate the potentialities of the young. To achieve these, teachers should be competent content wise, pedagogy wise, management wise, evaluation wise and be committed to the learner, to the society, to the basic human values, and to one's own life long learning to attain professional excellence. The fast developments in the field of Information and Communication Technology also is now at our spell from the simple slideshow to www for the attaining of all these excellently.

Importance of Primary Education

Living is in a sense, learning each moment. Education is primarily concerned with learning; in a macro sense, learning the art of living. In other words, education is the training for successful living with social utility. Primary education is the foundation

of the entire superstructure of both life and education. The importance of primary education is dominated by the criterion of giving effective experiences for fruitful life. In addition to social life vision, primary education is concerned with basic knowledge, skills and attitudes incorporating the three R's- reading, writing and arithmetic (Dearden, 1968). Primary education is a totality of training for individual living and group living. Primary education has been made compulsory in almost all countries. Primary education is not complete in it and is preparatory, since it prepares the pupil to go on to something else and put his foot on the first step of the ladder of knowledge to take off the life-journey (Mohanty, 2002). Primary schooling is the base for building up children's moral, spiritual, intellectual and physical development. Primary schooling is heavily related to developmental tasks of a child, which itself form ways and fuels for achievement of further developmental tasks. Primary schools are intended to promote the wholesome, all-round growth and development in children in the desirable direction in both individual and social life. The foundation of any educational system lies in schools, especially in primary sector.

Primary education is really multi-dimensional and broad-based. All aspects of human personality are dealt here. All major educational policies and commissions in all countries stressed the importance of primary education with special note marks for development of self-realisation, human relationship and civic responsibility in children, the future generation of the state. The Kothari Commission has envisaged "what is expected is that primary education should convey the foundation for a child to grow into a responsible and useful citizen of country". The first lessons of balanced and harmonious development of all faculties in a child; acquiring capacity for self reliance in aspects of cleanliness, health and culture; understanding social, cultural and moral implications of life and growing up as citizens of a new social order based on cooperative work with an understanding of their rights, responsibilities and obligation in a society, etc., are widened angle of importance primary schooling. The National Policy on Education, as revised in 1992, had emphasized the need for a substantial improvement in quality of education to achieve essential levels of learning through primary schooling. The Programme of

Action, 1992, stressed the need to lay down Minimum Levels of Learning at Primary and Upper Primary stage. This need emerged from the basic concern that irrespective of caste, creed, location or sex, all children must be given access to education of comparable standards. Men, media, machines and methods related and involved in primary sector are to be dealt with very consciously and evaluated frequently.

Analysing the challenges of primary education, Logan & Sachs (1997), cited four reasons for the importance of primary education – it is the longest stage of compulsory education, child grows from early childhood and through to early adolescence and so more developmental stages are crossing, throughout these years teachers figure large in children's lives and family involvement tends to be higher in primary than in secondary years. Significance of primary school teachers is also implied in the above as, the minds and hands of primary teachers are tools for shaping the lives of young children. Thus, for the creation of a healthy future generation, prime target of any educational policy must be continuous enrichment facilities for primary school teachers. In any society, children are specially cared, so also primary teachers are to be specially cared for their professional development.

Multi-faceted roles of today's teacher

Rich quantities of innovations are being practiced in the current scenario of education. While discussing on the role of today's teacher, Trilling and Hood (1999) compared the characteristics of learning of the knowledge based society and industrial society. In Industrial age, teacher was a director, and knowledge source while, in Knowledge age teacher is a facilitator, guide, co-learner and consultant. In Industrial age the process of learning was curriculum-directed, time-slotted, rigidly scheduled and fact-based. In Knowledge age, learning changed to a mode of open, flexible, on-demand, student directed, real-world and concrete. Action & reflection, discovery & invention, collaborative, community–focused, open-ended, creative diversity, computer mediated, dynamic multimedia interaction, worldwide unbounded communication, multi-dimensional performance assessment by experts,

mentors, peers and self became the main traits of today's learning and instructional environments.

Role of teachers change over time in response to new patterns of educational governance and managements, new kinds of students, new theories of teaching and learning, and the arising new technologies (Chapman & Adams, 2004). Educationists are claiming that, we are on the way with 'child centered education', 'learner-oriented instruction', 'participatory–approach', 'competency-based instruction', 'brain compatible learning' etc. Still teacher is the prime medium of classroom activities. As innovations and reforms in education occur, the meaning of teacher effectiveness also changes. But, certain basic ingredients of effective teaching still tend to persist, which includes knowledge of substantive curriculum area, pedagogic skills, familiarity with multiple instructional strategies, ability to be reflective, self-critical and motivate students to learn (Chapman and Adams, 2004).

While the term 'learner-centered' is invoked in many curriculum documents, there is little agreement on its meaning. Learner-centeredness is a concept that cannot be captured in finite, static, and unquestioned definitions (Paris & Combs, 2006). In midst of learner-centered reforms, teacher is still a high-status participant in the classroom interaction process. When the process of instruction get more transformed to learner-centered, teachers are currently faced with a variety of challenges like class size, diversity in student populations, variety of instructional strategies, classroom management problems, social accountability pressures, curriculum changes, and new technologies and the like.

The process of instruction is complex and this takes place in two contexts–curricular context and programmatic context-and to be perceived in terms of three phases – pre-engagement phase, engagement phase and post-engagement phase (Martinez-Pons, 2001). The contexts are so important since they determine the ways in which instruction is planned and carried out. The curricular context of instruction involves the regular school or educational settings and their instructional efforts are part of an on-going curriculum whose activities are repeated cyclically. The programmatic context of instruction involves teaching –learning activities designed

to meet some specific organizational goal such as bringing teachers up to date on aspects of their work or to meet some social needs. Whether the context is curricular or programmatic, the instructional endeavor is to be discussed as a three-phase process. Efforts like learner needs assessment, diagnosis, fixing instructional objectives, task analysis, test development, pre-testing, grouping, instructional module development and it's debugging are included in the pre-engagement phase of instruction. The engagement phase of instruction covers instructional implementation, module implementation, situational assessment, final adjustments, formative evaluation and corrective activities. Summative evaluation and remediation are the major actions in the post-engagement phase of instruction (Martinez-Pons, 2001).

Teachers are expected to answer themselves an expanded set of key questions throughout the three 'pre-pro-post' sessions of instruction. Proper planning of instruction, contextualisation, natural presentation of the subject matter, rationale for the selected instructional-learning strategies, persistence of motivation among students, group size formation, group dynamics and behavior, assurance of individual performance during group works, appropriate teacher behavior, fulfillment of curricular objectives, proper integration of contents, timing and pacing of instruction-learning, continuous evaluation, comprehensive evaluation, varieties of assessment, classroom management, classroom ecology, instructional flow, etc are major the demands that are being raised before a teacher. That is, the role of a teacher varies among that of a designer, director, event-manager, facilitator, student, researcher, psychologist, philosopher, sociologist, creative artist, etc. Coping with and conveying the technological developments, creating knowledge explosions are other challenges for role diversity of classroom teacher. For implementing ideas like 'transformative learning experiences' grounded in socio-cultural changes resulting from fusion of digital technologies such as internet, wireless connectivity, digital imaging and virtual classrooms raises need for assimilation of role-diversity on the part of teachers (Pearson and Somekh, 2006).

Teachers of the twenty-first century are further expected to take on expanded roles and responsibilities such as curriculum developers, action researchers, team leaders and staff development facilitators. This multiplicity of roles suggests that the traditional conception of teacher effectiveness has been rendered anachronistic. Recognising this widened range of professional responsibilities and needs, teachers are to give divergent opportunities for enhancing their individual knowledge and competencies, and should give best support for better conditioning of texture of classroom life. As stated by Dave, *Teachers can act as trail-blazers in the lives of learners and in the process of education for development. If teachers acquire professional competencies and commitment, and if they are enabled and empowered to perform their multiple tasks in the classroom, school and community in a genuinely professional manner then a chain reaction can begin starting with a sound teacher performance and culminating into high quality learning among increasingly more students in cognitive, affective and psychomotor areas of human development.*

Need for continuous professional development among teachers

Teaching is a rich blend of art and science. Teaching is a creative act that creates learning in a spontaneous manner by combining individual pieces of education and experiences into a new whole that is specially made for the circumstances they see in their situation. Teaching is scientific in nature since good teaching is the result of intensive knowledge of the subject matter and a deep understanding of teaching and learning (Moore, 2005). The quality of education depends on the content of systems, school programs, support services and infrastructure provided to enhance effective teaching and learning. The task for ensuring quality teaching roots from pre-service teacher education and branches through induction and inservice continuing professional development. Inservice teacher education programmes aim at upgrading professional competencies of teachers and acquainting them with new knowledge and skills that could facilitate the acquisition and use of new knowledge. Whenever curriculum changes occur, it is imperative that a comprehensive plan of inservice education is to be developed and implemented. This would enable the teachers to understand the curriculum changes both in letter and spirit.

Continuous learning is needed for those who are involved in change. In teaching profession induction, renewal and redirection activities are to be provided for teachers as substantive resources for continuing development and career-long teacher education (Burke, 1987). It is globally acknowledged that, to become a better teacher one must become a vicarious learner. Nor does learning stop when and expert stage is reached. They can master any kind of teaching strategy or implement almost any kind of sensible curriculum (Joyce & Weil, 2005).

Teaching Competencies for Effective Instruction

The National Council of Teacher Education (1998) has identified ten competencies for making the teachers professionally competent. Those are Contextual competencies, Conceptual competencies, Content competencies, Transactional competencies, Educational Activities competencies, Teaching-Learning Material Development competencies, Evaluation competencies, Management competencies, Competencies related to working with parents, and Competencies related to working with Community and other agencies.

Effective teachers are expected to have good command of their subject matter and a solid core of teaching skills. The efficiency of Instruction is to be supported by proper goal setting, instructional planning and classroom management. Effective Instruction is result of rich blend of teachers' subject matter competence, awareness about instructional strategies, goal-setting skills, instructional planning skills, classroom management skills, motivational skills, communication skills, skills for handling culturally diversified pupils, and technological skills (Santrock, 2006).

Pedagogical Content Knowledge and Instruction

Teachers' learning perspectives are broadly related to their subject matter and instructional skills. Areas of teacher-knowledge are to be critically anlaysed for a new conceptualisation. Lee Shulman suggested an inspiring concept namely, Pedagogical Content Knowledge for practicing teacher community. For becoming a reflective educator and to build a culture of inquiry in our schools (Reagan, Case & Brubacher, 2000) suggested Lee Shulman's concept of Pedagogical Content

Knowledge as cognitive element of reflective practices in classrooms. Content knowledge, general pedagogical knowledge, curriculum knowledge, pedagogical content knowledge, knowledge of learners and their characteristics, knowledge of educational contexts, and knowledge of educational ends, purposes, and values and their philosophical and historical grounds are the seven broad categories of knowledge base for a classroom teacher. Pedagogical Content Knowledge can be interpreted as a collection of Teacher Pedagogical Constructions, which is expected to be acquired by a teacher as a form of knowledge that generates productive instructional planning and effective wisdom of practice (Hashweh, 2005). Pedagogical Content Knowledge can be perceived also as a collection of teacher professional constructions, as a form of knowledge that preserves the planning and practice that the teacher acquires when repeatedly teaching a certain topic.

Instructional Technology for Effective Instruction

Instructional Technology is not merely a knowledge area that deals only with audiovisual instructional materials. It is a way to think about problems of teaching and learning to find workable solutions (Wittich & Schuller, 1973). Classical definition of 'Instructional Technology' refers to *a systematic way of designing, carrying out and evaluating the total process of learning and teaching in terms of specific objectives based on research on human learning and communication and using a combination of human and non-human resources to bring about more effective instruction. In this broad sense, the concepts of Instructional Technology become central to the whole educational process.*

The definition of Instructional Technology prepared by the Association for Educational Communications and Technology (2000) is as follows, *Instructional Technology is the Theory and Practice of Design, Development, Utilization, Management, and Evaluation of processes and resources for learning*.

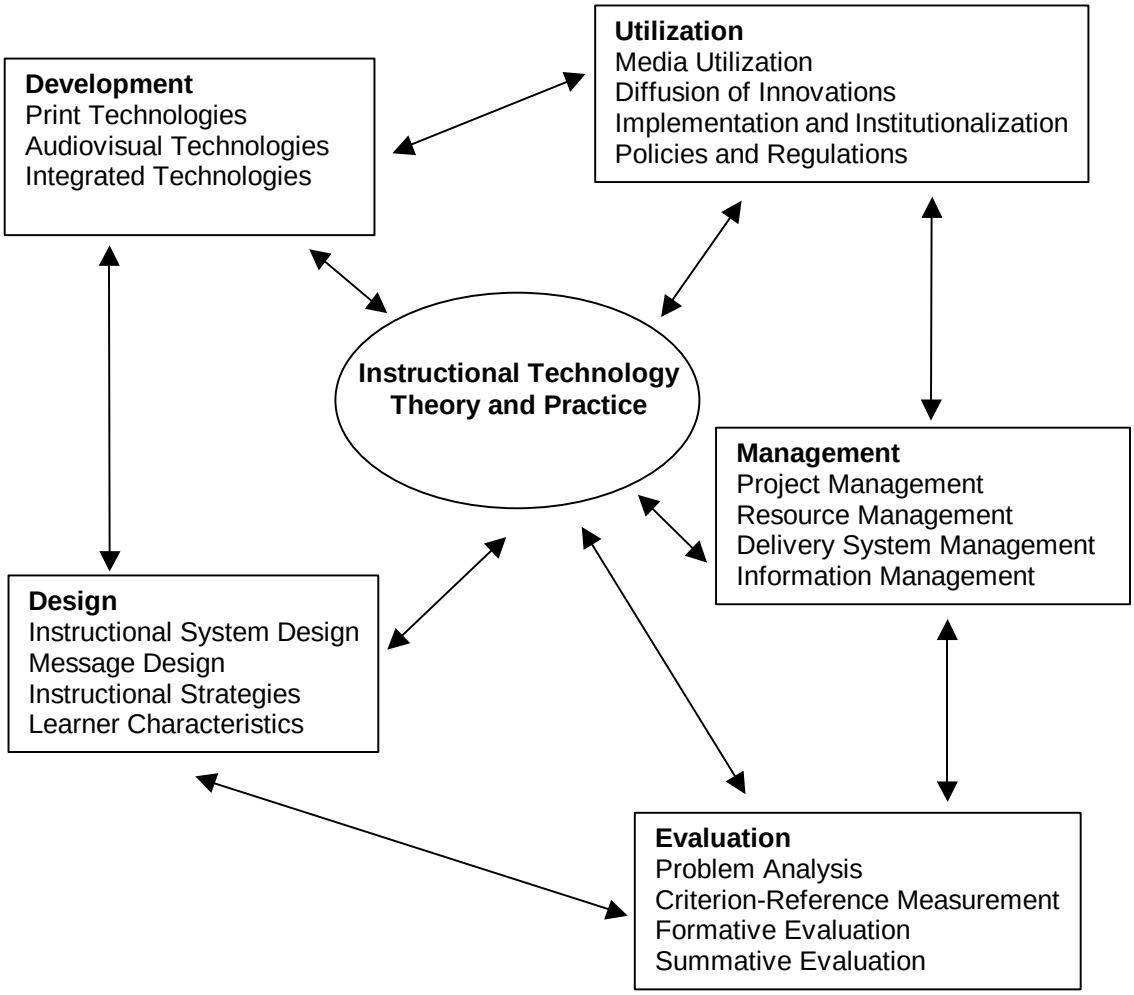

FIGURE 1.1. Instructional Technology: Its domains and sub domains.

(Adapted from, 'NCATE Program Standards. Initial and Advanced Programs for Educational Communications and Technology'. Prepared by Association for Educational Communication and Technology Bloomington, IN, 2000, p.12.)

In the above definition of Instructional Technology, Theory consists of concepts, constructs, principles, and propositions that serve as the body of knowledge; Practice is the application of that knowledge to solve problems; Design refers to the process of specifying conditions for learning; Development refers to the process of translating the design specifications into physical form; Utilization refers to the use of processes and resources for learning; Management refers to processes for

controlling Instructional Technology, and Evaluation is the process for determining the adequacy of instruction. (Seels & Richey, 1994).

History of Instructional Technology

Development of this world relied on knowledge acquired through mankind education and its fruitful applications. Observing the process of education, communication will be identified as the vital fueling element. Zooming to any effective education system or educator, the effective instructional ways with identity and potentials in which the contents were delivered will be forming the main pixels of picture. Behind every excelling education system, there will be effective communication and instructional systems proposing meaningful learning.

Instructional Technology is perhaps as old as the human race. The history of Instructional Technology begins from the first communicable action, i.e., 'communication' itself. Great teachers had spent their more time in search of more fruitful ways of communication for more effective learning; it may be in the form of a story, theory, reflection, analogy, picture, materials or first hand experiences for their disciples. Their instructional ways decorated a range from the spoken word to the viewing of the real world. They were planning better instructional activities; they were really great Instructional Technologists too.

The heritage of Instructional Technology can be traced to the time when tribal priests systematized bodies of knowledge and early cultures invented pictographs or sign writing to record, preserve, transmit and reproduce information. A million years ago itself the first makers and users of instructional tools systematically taught their children many kinds of skills, attitudes, and concepts thought too complicated for mastery. In each era of mankind developments and cultures, new instructional methods were devised for including learning theories derived from their previous instructional experiences resulting in new ways of thinking, acting, speaking, and feeling. Our early educators were aware of the problems associated with perception, motivation, individual differences, and evaluation. They identified different instructional strategies required for different learning outcomes related to different

contextual requirements. Themes and variations in the history of literatures are solid evidences for conceptualizing this. The aim of each age or society was to identify skills and subject matter, which promised transfer to learner behavior (Saettler, 1968). In total, each significant shift in cultural values or perceptions over the centuries has led to new theories of knowledge and learning and so to evolutions of Instructional Technology.

No profession can advance faster without absorbing fluently the knowledge base upon which it is built up. No teacher is regarded as professionally competent unless there is intimate familiarity of knowledge bases of instructional process (Stones & Anderson, 1972) The scopes of the psychological theories, extensive developments in educational research, thinking in educational philosophies, sociological aspects of education, etc also have thrown considerable light on and led to significant changes in the practice of teaching and preparation of teachers as competent persons. Becoming a competent teacher requires omni-type, holistic, all-round, multifaceted awareness and skills related to instruction. Attention to teacher and teaching is demanded in peak for school improvement, especially for the primary stage. The primary school improvement rests upon the quality of teaching by concentrating more upon the pedagogy (Southworth, 1996).

Scope of Instructional Technology

Instructional Technology is the means and ways for effective communication in the context of human learning. Instructional Technology is the pursuit of knowing how people learn and discovering the best method to teach the learner. It is the art and science of teaching with physical devices of technical performance including tools, machines, instruments, weapons, and appliances involved in the process of teaching and learning. Instructional Technology incorporates knowledge behind technological innovations. Instructional Technology includes all the skills, methods, procedures and routines ends or aims effective learning. Instructional Technology is a socio-technical system, the manufacture and use of objects involving people and other objects in combination. Instructional Technology is a process that begins with a need and ends with a solution (Christopher, 2000). Instructional Technology involves in

both instruments or devices and also curriculum initiatives to teach, enable, shape or manage pupils (Beundia, 2002)

Educational Technology and Instructional Technology.

The two concepts Educational Technology and Instructional Technology are used interchangeably. Instructional Technology is a subset of educational technology, based on the concept that instruction is a subset of education. Comparisons of the terms education, instruction, teaching and learning have made better contrast between Educational Technology and Instructional Technology. Educational Technology is wider concept than Instructional Technology as education is wider than instruction. Instructional Technology is the theory and application of proper tools and techniques in instructional settings, while educational technology is concerned with whole education process and contexts. All parameters of instructional technology are suited within that of educational technology, while all of educational technology does not suit within the parameters of instructional technology.

Inservice Training for the Empowerment of Teachers.

In one sense, investment in education means, investing in the continuous competency development of teachers. If teaching is about to make differences in the lives of students, then opportunities for continuous professional learning and development must be available and fully resourced. It is an attraction that, for the effective implementation of learner/child-centered education, highly industrialised societies are really engaged in reforms designed to extend the period of professional education for teachers (Entwistle, 1970). Strategies to improve teaching and learning are likely to include upgrading skills of teachers through inservice training programmes.

NCERT (2004) identified the major objectives of inservice teacher education while framing a Curriculum Framework for Teacher Education for implementing teacher development programmes more pragmatically. The objectives of inservice education are to enable the teachers to understand the assumptions underlying

existing educational policy, curricula and syllabi, to help the teachers to develop necessary skills for effective transaction of curriculum, to sensitise the teachers about their role and function particularly in the context of new educational developments, to familarise teachers with the latest developments in educational technology and techniques of pupil evaluation, sharing experiences and ideas with teachers in order to obtain necessary feedback for further improvement in the educational system, to familarise the teachers comprehensively with planning and administration related aspects of school/educational set up, to enable teachers to integrate values in all subjects and activities, enable teachers to understand the nature and extent of learners with special educational needs and to enable teachers to be sensitive to gender and environment-related issues. In short, inservice teacher education programmes aim at upgrading professional competencies of teachers and acquainting them with new knowledge and skills that would facilitate the acquisition and use of new knowledge.

Curriculum is described in terms of teacher-pupil interactions and the teacher is the key to any curriculum implementation. Curriculum change is most effectively implemented when the supportive personnel assist teachers. Aspects of in-service teacher preparation demand the prime consideration in any discussions of implementation of new curriculum designs (Michaelis, Grossman & Scott, 1975). As part of professional development inservice training programmes plays crucial role. The inservice training programmes are to be engaged in authentic learning activities and experience for fine reflections in their future instructional performances. Inservice training is to be used as a key in turning teachers into effective change agents. (Charalambous & Karagiorgi, 2002). It is the responsibility of the decision-making centers to make sure that sufficient inservice training is provided on a systematic basis to meet teachers' needs and expectations, which demands a need for inclusion of special pedagogical/instructional aspects in teachers training. The teachers are to be engaged in actions or processes, which are then transformed into conceptual objectives, can influence their perception of learning. Through collective reflection of their active participation they objectified connections between learning processes and learning outcomes. The explicit

reflections of the modeled experiences in inservice training programmes provide them opportunity for the teachers to empathize, as learners, with their pupils' learning situations.

Inservice Teacher Education- The Indian Scenario

In India, the National Council of Educational Research and Training (NCERT), the State Councils of Educational Research and Training (SCERTs), Regional Institutes of Education (RIEs), Institutes of Advanced Studies in Education (IASE) are organizing massive inservice education programmes for primary teachers. Tracing the evolutions of inservice teacher education in India formal educational policy resolution in 1904, Hartog Committee in 1929, and Seargent Plan in 1944 are some milestones during the British Period. The University Education commission in 1949 identified the importance of inservice and lifelong education of teachers. The Secondary Education commission (1952-53) recommended extension services for inservice teachers. The extension service departments started during 1955-58 in about one hundred training colleges was the first attempt to create a network for inservice teacher education in India. Those extension service centers were first supervised by the All India Council of Secondary Education and subsequently by NCERT and later handed over to the State Governments in 1969. In 1964 State Institutes of Education (SIEs) were established to provide in-service training to primary teachers, primary teacher educators, and primary education supervisors. The recommendations of National Policy on Education 1986 and its revision in 1992 insisted strengthening inservice training programmes in local contexts. In the light of those recommendations District Institutes of Education and Training (DIETs) were established at district level for preservice and inservice teacher education for primary teachers.

Under supervision of National council of Educational Research and Training (NCERT) planned and designed massive crash programmes like the Programme of Mass Orientation of School Teachers (PMOST) during the 7^{th} five year plan (1986-1990) and Special Orientation of Primary Teachers (SOPT) during 8^{th} and 9^{th} five year plans and the programmes were implemented by different states under guidance

of NCERT. The DIETs are now implementing and monitoring the inservice education activities for teachers through Block Resource Centers (BRC) and Cluster Resource Centers (CRC). Another significant step in this regard was the formation of National Council for Teacher Education (NCTE) as a statutory organisation to accredit institutions of teacher education and to provide guidance and frameworks for teacher education curricula and methods. Local agencies like Zila Panchayat, Block Panchayat, Grama Panchayat, etc are also intensively involved in quality improvement of inservice teacher education with a variety of support services.

Significant efforts towards achievement of Minimum Levels of Learning (MLL) were made by the NCERT during 1978 in connection with the UNICEF-assisted projects on 'Primary Education Curriculum Renewal' and 'Developmental Activities in Community Education and Participation'. As part of these projects, a 'Minimum Learning Continuum' was drawn indicating the learning outcomes expected to be achieved by all children completing Classes II, III, IV and V. The Primary Education Curriculum Renewal Project was evaluated in 1984 using a set of achievement tests developed for all the primary classes based on the competencies specified in the Minimum Learning Continuum. Utilizing the empirical evidences collected through this evaluation study and following the National Policy on Education 1986, the NCERT designed, 'Minimum Levels of Learning at the Primary Stage'. The Department of Education, Ministry of Human Resource Development organized a seminar in December 1989 on the theme, 'Basic Learning Needs and Levels of Attainment'.

The inservice teacher training programmes got impetus during the 1990s as part of District Primary Education Programme (DPEP). It was an ambitious national programme based on National Policy on Education 1986 aiming to achieve ‘Education For All by 2000. A.D.’. DPEP focused on a wide range of crucial issues related to both learner and teacher. Pedagogical practices and teacher training practices were refined and totally restructured during the years of programme. DPEP identified the significance of in-service teacher training and follow up programmes. State Level Pedagogy Unit, State Resource Group (SRG), District Resource Group

(DRG), Block Resource Group (BRG) were constituted and functioned for effective inservice teacher training programmes. The programme also incorporated financial provisions, course material production, systematic designing, implementation, monitoring, and evaluation.

The National Policy on Education, as revised in 1992, had emphasized the need for a substantial improvement in quality of education to achieve essential levels of learning. The Programme of Action, 1992, stressed the need to lay down Minimum Levels of Learning at Primary and Upper Primary stage. This need emerged from the basic concern that irrespective of caste, creed, location or sex, all children must be given access to education of comparable standards. Re-organisation of curriculum to meet local needs and in-corporating the concerns of the National Curriculum Framework 2000, Ministry of Human Resource Development (2000) prepared the Sarva Shiksha Abhiyan (SSA) Framework. SSA identified that quality issues in elementary education will revolve around the quality of infrastructure and support services, opportunity time, teacher characteristics and teacher motivation, preservice and inservice education of teachers, curriculum and teaching-learning materials, classroom processes, pupil evaluation, monitoring and supervision etc. Motivational inservice training and steps for developing capacity in pedagogy among inservice teachers for innovative practices are being conducted as part of curriculum and evaluation reforms of SSA. Inservice education play significant role in the professional growth of teachers and function as an agent for change in school-related practices and inservice training must be situated within the context of the classroom experiences of teachers. (NCERT, 2005)

Importance of Need Assessment

Many curriculum change efforts fail because reformers underestimate the difficulties and needs faced by the teachers who are the main tools for the implementation of curriculum. To overcome this, close relationship between the innovations and need-based inservice training for those who are involved in the action are to be maintained and monitored. (Wildy, Wallace & Parker, 1996). Provision for intensive inservice education and training is the solution for the hindered personal

development and the continuing development of teaching practices and strategies. For this identification of teacher needs must be a matter for negotiation between the providers and stakeholders (Day, 2000).

In any educational system, teachers are the sources of existence, energy and enrichment. National Policy on Education (NPE) of 1986 gives a rich amount of importance to inservice teacher education. But the discussions and designing in a core group of subject experts won't be sufficient for fulfillment of its real life practices. Child centeredness, Constructivism, Competency-based, etc are some of the technical and theoretical terms which are found to be over spelt and discussed in today's educational system. For completion of the circuits of perfections awareness and fulfillment of instructional needs of the inservice teachers are to be considered primarily.

Experimenting with application of Total Quality Management (TQM) in the field of education, scholars insisted on the importance for satisfaction of faculty needs and expectations. A teacher must continue to be informed, cultured, emancipated and self-actualised. Only then teachers can make efforts to create 'well educated' students. Schools need to develop ethos that would ensure continuing development and evolution of teachers and a paradigm of educational programme that would ensure holistic development of students (Mukhopadhyay, 2001). Journey to quality includes those studies that assess the current status, which throws light for the necessities and requirements of stakeholders to design policy makings and empowerment programs in future.

A better understanding of teachers' professional needs should enable professional curriculum developers and policy writers to help teachers to adapt to the dynamic, complex, social conditions of schooling. In other words, we need to detail the professional needs of teachers to better understand how professional developers can best meet the needs of teachers throughout their career (Boote, 2006). Studies conducted on inservice teacher needs assessment (Day, 2000; Dutt & Rao, 2001, and Paris & Combs, 2006) suggest that continuous need assessments are required in

parallel to ongoing professional development programmes of teachers in order to make them competent in the today's fast-paced world.

1.1 NEED AND SIGNIFICANCE OF THE STUDY

It is felt as the need of the hour for teachers to undergo self-criticism, to introspect regarding the deplorable state of affairs in the field of education. Significance of self-analysis from the part of teachers about their Strength, Weakness, Opportunities and Threats (SWOT) are with an alarming call. If the teachers are provided with necessary skills and competencies and are thus, empowered they can inculcate the skills in other persons and mainly in pupils (Dutt & Rao, 2001).

By the review of studies on the status of primary school teachers, inservice requirements, conduct of inservice training programmes, updating of knowledge in subject matter and pedagogical skills, and on opinions regarding professional improvement the investigator perceived ever-freshness demand for continuous and formative assessment in those areas. A need was felt for repeated researches on persistence of knowledge of Instructional Technology aspects, which teachers assimilated through their preservice teacher education days. Chapman and Adams (2004) cited the survey study conducted by the World Bank in 1997, titled 'Primary Education in India', among teachers of schools of Haryana and Kerala, which reported high level dissatisfaction in their preservice training programmes. Curriculum Framework for Quality Teacher Education prepared by NCTE reminds that professional development of teachers begins with preservice and gets renewed through inservice programmes. It, however, does not mean that there is a simple linearity between the two. There are elements of 'change' and 'continuity' in teacher education system, which necessitate renewal and upgradation of skills and competencies. The inservice programmes are also organised to sustain the 'survival competencies' that the teachers acquired years ago, during preservice education. Innovations and changes highly demand for intensively refreshing existing knowledge and skills. The field of education is continuously adapting and adopting knowledge and practices from other disciplines.

UNESCO (2001) while analyzing the world education indicators under the theme 'Teachers for Tomorrow's Schools', the experts gave much importance for 'what teachers are asked and what they are given' for their instructional competence. The discussion underlined the importance of needs of inservice teachers. The discussion concluded that teachers' subject-matter expertise must be complemented by instructional competence, with a focus on the transmission of a range of high-level skills.

Modules on Quality Dimensions of Elementary Education prepared by the Department of Elementary Education for NCERT (2004) as part of SSA related activities, stressed that, in a classroom setting, teacher competency depends greatly not only on knowledge and mastery of different subjects, but skills in using different instructional practices. This work recommended for (i) enhancement of the competency of teachers, restructuring and reforming of teacher training programmes in relation to the training needs of the teachers. (ii) assessing teachers' needs which will ensure that Inservice Education and Training (INSET) is implemented effectively and that the programme is realistic, feasible and within teacher's capacity, (iii) designers of inservice training programmes must concentrate on the conduct of need-based inservice courses and (iv) recording of the feedbacks and requirements from the part of stakeholders for the professional empowerment is the basic strategy for designing efficient inservice training programmes.

By the review of studies on primary school teachers, the investigator also noticed lack of updated assessment of their inservice training needs and of Instructional Technology Awareness among Primary School Teachers. It is a proven fact that awareness and practice of Instructional Technology are positively related with effective instruction. As a teacher educator, the investigator had involved as resource person to inservice training programmes for schoolteachers. The investigator thereby felt a need for scientific inquiry about the inservice training needs of schoolteachers, which they expect to satisfy in their future inservice training programmes. During several informal discussions by the investigator with the participants of inservice training programmes for teachers, majority of teachers

expressed the lack of rooms for expressing their needs and reporting their suggestions regarding the conduct of such programmes. It was sad to learn that, due to the tight-schedules, very few sessions were arranged as 'feedback sessions'. The investigator also noticed a thirst for updating knowledge on the part of teachers.

Teachers are highly aware that they need good volume of inservice training, self-learning and home works for fruitful implementation of innovations in instruction. As part of implementation of various educational policies and interventions primary school teachers are receiving a good number of inservice training experiences. Even then, a need for concentrating on quality aspects of inservice training programmes was felt from the opinions of teachers. If the expected needs of teachers are not satisfied through participation in those inservice training programmes, there comes chance for evolution of negative attitude towards inservice training programmes.

The fact that the number of needs assessment studies among primary school teachers is found to be less also inspired the investigator to conduct an inservice training needs assessment study among primary school teachers. For, a need assessment survey determines both what teachers want to know and what they need to know.

Reviewing the previous studies conducted both inside and outside India, it was found that survey studies for assessing the level of Instructional Technology Awareness and Inservice Training Needs of Primary School Teachers are very few in number and that assessment of the level or index of Instructional Technology Awareness and Inservice Training Needs among Primary School Teachers will pave light for planning effective inservice training programmes in future.

1.2 STATEMENT OF THE PROBLEM

The influence of the early twentieth century educational thinkers like Dewey, Kilpatrick, Russell, Montessori and Mahatma Gandhi spurred by the teachings of the great educators of the earlier periods like Rousseau, Pestalozzi, Herbart and Comenius have given an extended meaning to education and the practices to be adopted for instruction. All these agreed in that instructional strategies should be centered around the needs and dispositions of the learners. The quality of

educational operationals provided by an educational system will be decided by the quality of the transactional strategies used by the teachers in the system. The advent of Instructional Technology had revolutionalised our notions about transactional strategies and has introduced several practices which will agree with the quality of the educational delivery. Teaching under the new scenario becomes 'teaching to learn' and education is treated as a process where the learner is 'learning to learn'.

But, it is a fact that a vast majority of teachers do not have a belief in the use of modern scientific methods of teaching based on the new instructional technologies. This may be either the teachers are not fully aware of the instructional theories or the teachers may be reluctant in the application of such instructional technologies to classroom situations. This point out the necessity of researches in the area of teacher professional development attainable through inservice training programmes.

In this context, when we review researches in the field of inservice training programmes for school teachers, it can be seen that there are a number of studies inquiring on the instructional impacts and effectiveness of such programmes. Assessment of facilities and functioning of the inservice teacher training institutions were also there along with researches on designing and evaluation of new instructional strategies and techniques. Development of self-instructional packages for inservice teachers has also drawn attention in the current research scenario. But studies related to the level of teachers' awareness about relevant aspects of instructional strategies, use of audio visual aids, psychological bases of instruction, Information and Communication Technology, planning for instruction and evaluation of instruction are scantly seen eventhough orientations on these aspects are being conducted to a greater extent for inservice teachers. So also studies on the feedbacks of teachers regarding the functioning of inservice training programmes are also found lacking.

Need for grass-root level, baseline level studies, thinking from the perspectives and perceptions of inservice teachers were seen reported from the side of teachers themselves. Studies giving passion for listening those reflections are also found to be rare. To what extent the primary school teachers are aware about the

Instructional Technology aspects and theories of instruction? What percent of teachers are aware of the methodologies for developing multiple intelligences, strategies for promoting emotional intelligence, use of formative evaluation strategies etc? Whether the knowledge acquired through the preservice and inservice teacher education still persists? What are the instructional themes for which teachers are in need of further inservice training? How the teachers have evaluated their experiences and gains of inservice training programmes? Are there any significant variations in the perspectives of teachers on Instructional Technology and on the Inservice Training Needs between male and female teachers? Government and aided schoolteachers? Lower primary and upper primary school teachers? Well-experienced, experienced, moderately experienced and less experienced teachers? DPEP and non-DPEP district schoolteachers? TTC qualified and B.Ed qualified teachers? These are some of the questions the investigator is in search for answers, through this scientific investigation.

The problem is thus entitled **"INSTRUCTIONAL TECHNOLOGY AWARENESS AND INSERVICE TRAINING NEEDS OF PRIMARY SCHOOL TEACHERS OF KERALA"**

1.3 DEFINITION OF KEY TERMS

The key terms of the title are defined below for the operational meaning of each to have a better conception of the study.

1. Instructional Technology Awareness.

Many in different contexts defined the term Instructional Technology differently. In this study, the investigator has followed the definition given by Association of Educational Communications and Technology (2000) that reads as, Instructional Technology is the theory and practice of Design, Development, Utilisation, Management and Evaluation of Processes and resources for learning.

In the above definition, theory means concepts, constructs, principles and propositions derived in related fields serve as the body of knowledge. Practice is the scientific applications of that knowledge base to solve instructional problems. Practice can also refine the knowledge base through innovative information gained through experiences and researches. Processes are the series of operations or activities directed towards a particular result. Resources include the sources of support for learning, including support systems and instructional materials and environments. Design refers to the process of specifying conditions for learning. Development refers to the process of translating the design specifications into physical form. Utilisation refers to the use of processes and resources for learning. Management refers to processes for controlling Instructional Technology. Evaluation is the process for determining the adequacy of the instructional processes (Seels & Richey, 1994)

Awareness is the act of having or showing realization, perception or knowledge (Good, 1973). Awareness is the state of being conscious about existence or relevance of a thing, an act or a phenomenon.

In total, by the term 'Instructional Technology Awareness' investigator means the awareness on the major domains of Instructional Technology viz., Design, Development, Utilisation, Management and Evaluation.

2. Inservice Training Needs

'Needs' is the term used in theories of motivation to refer to the basic wants or desires that motivate people to behave in certain ways, either to attain a positive result or to avoid a negative one (Rowntree, 1981) 'Needs' refers to a view of the discrepancy between what is currently the state of an individual or group and the state that is believed desirable. (Packwood & Whitaker, 1988)

Inservice teacher education is the education and training activities engaged by primary and secondary school teachers and principals following their initial professional certification and intended mainly or exclusively to improve their

professional knowledge, skills and attitudes in order that they can educate children more effectively. (Husen & Postlethwaite, 1985)

By the term 'Inservice Training Needs' investigator means the instructional themes or content areas desired or wanted by the school teachers to undergo education and training during further inservice training programmes for improving their instructional competencies which lead to effective instruction and student learning at schools.

3. Primary School Teachers

Primary school Teachers are teachers of Standard I to VII of our formal schooling system after undergoing successfully preservice course in education, viz., Teachers Training Certificate (T.T.C) or Bachelor of Education (B.Ed.)

1.4 VARIABLES OF THE STUDY

The major objective of the study is to find the level of awareness on the various domains of Instructional Technology, viz., Design, Development, Utilisation, Management and Evaluation, and to assess Inservice Training Needs of primary school teachers. The variables involved in the study are therefore as follows.

Descriptive Variables

1. Instructional Technology Awareness
2. Inservice Training Needs

Classificatory Variables

1. Gender (Male/Female)
2. Teaching Level (Lower Primary/Upper Primary)
3. Type of School Management (Government/Aided)
4. Type of District of School (DPEP/non-DPEP)
5. Teacher Training Qualifications (TTC/B Ed./TTC+B Ed.)
6. Length of Service. (Service years up to 5; 6 to 15; 16 to 25 and more than 25)

1.5 MAJOR HYPOTHESIS AND OBJECTIVES OF THE STUDY

The present study is designed with the major hypotheses that,

1. The level of Instructional Technology Awareness of Primary School Teachers of Kerala is significantly moderate for the total sample and for sub samples of teachers when sub-samples are formed on the basis of Classificatory Variables
2. The mean scores of Instructional Technology Awareness is significantly different between
    a. Male and Female Teachers
    b. Lower Primary Teachers and Upper Primary Teachers
    c. Teachers working in Government and Government–aided schools
    d. Teachers working in schools of DPEP launched districts and non-DPEP districts.
    e. Teachers having qualifications T.T.C, B.Ed and with both T.T.C & B.Ed.
    f. Less experienced Teachers (Up to 5 years service), Moderately experienced (6 to 15 years service), Experienced (16 to 25 years service), and Well-experienced (more than 25 years service)
3. The Inservice Training Needs of Teachers will spread over all the five major Domains of Instructional Technology, viz., Design, Development, Utilisation, Management and Evaluation.
4. The Inservice Training Needs significantly depend on
    a. Gender of Teachers
    b. Teaching Level
    c. Type of Management of Schools
    d. Type of School District as DPEP or Non-DPEP
    e. Teacher Training Qualifications
    f. Length of Service.

The Major objectives of the study are therefore the following.

1. To find out the level of awareness in Instructional Technology for the total sample of Primary school teachers of Kerala and for the different sub samples of teachers formed on the basis of Classificatory Variables.
2. To test whether the mean scores of Instructional Technology Awareness is significantly different between
    a. Male and Female Teachers
    b. Lower Primary Teachers and Upper Primary Teachers
    c. Teachers working in Government and Government–aided schools
    d. Teachers working in schools of DPEP launched districts and non-DPEP districts.
    e. Teachers having qualifications T.T.C, B.Ed and with both T.T.C & B.Ed.
    f. Less experienced Teachers (Up to 5 years service), Moderately experienced (6 to 15 years service), Experienced (16 to 25 years service), and Well-experienced (more than 25 years service)
3. To assess the instructional needs of teachers for attending future inservice training programmes for their professional enrichment.
4. To identify the highly needed instructional themes for Inservice Training programmes.
5. To test whether the Inservice Training Needs depend significantly on.
    a. Male and Female Teachers
    b. Lower Primary Teachers and Upper Primary Teachers
    c. Teachers working in Government and Government–aided schools

d. Teachers working in schools of DPEP launched districts and non-DPEP districts.

e. Teachers having qualifications T.T.C, B.Ed and with both T.T.C & B.Ed.

f. Less experienced Teachers (Up to 5 years service), Moderately experienced (6 to 15 years service), Experienced (16 to 25 years service), and Well-experienced (more than 25 years service)

Along with these, the investigator has also attempted the following minor objectives.

6. To know the level of computer literacy among primary school teachers.

7. To know the opinions and evaluations of teachers about the effectiveness of on-going inservice training programmes.

8. To know the suggestions and requirements regarding the conduct of future inservice teacher training programmes.

1.6. METHODOLOGY

1.6.1. Sample

Population for the study is Primary School Teachers of Kerala State. Stratified sampling was the technique used for sampling. In drawing the sample, representation was given to strata like Gender, Teaching Level, School Management, District Type, Teacher Training Qualifications, and Length of Service. Thus six hundred and thirteen (613) primary school teachers belonging to ten districts of Kerala State drawn by stratified sampling technique formed the sample for the study.

1.6.2 Tools Used

The data necessary for the conduct of the study were collected using the following tools.

1. Test of Awareness on Instructional Technology (Sumangala and Kumar, 2005)

2. Check List on Inservice Training Needs (Sumangala and Kumar, 2005)
3. Questionnaire on Personal Information and Inservice Training (Sumangala and Kumar, 2005)

1.6.3 Statistical Techniques Used

The statistical techniques used in the analysis of the data are the following:

1. Percentage Analysis
2. Two-tailed 't' Test of Significance of difference between Means for large independent samples
3. One-way Analysis of Variance (ANOVA)
4. Scheffe` Test of Multiple Comparison for the Mean Scores
5. Chi-Square Test of Independence

1.7 SCOPE OF THE STUDY

Enrichment of inservice training programmes with need based courses for the professional benefit of primary school teachers of Kerala state is the main scope of the present study. The present study is a humble attempt by the investigator to assess the level of awareness on the different aspects of Instructional Technology among primary school teachers and also to identify their major instructional needs to undergo future inservice training programmes. That is the major objective and scope of the study were to know whether primary school teachers have the desirable knowledge in Instructional Technology and to know what are their instructional needs. At the time of data collection itself a good number of inservice teachers reported that the study really made a chance for them for a self-reflection on the awareness of the required theoretical knowledge on the various aspects of Instructional Technology. They also reported that the present study would serve as a good medium for expressing their needs and suggestions, with regard to their inservice training programmes.

Investigator has collected data for the study from ten districts of Kerala so as to get a statewide sample. The investigator hopes that the findings of the present study will be beneficiary for schoolteachers, inservice teacher trainers, and resource persons at various levels. The investigator also hopes that findings of the present study will be serving as guidelines for designing of inservice training programmes in future. Resource persons and teacher trainers in the field of inservice teacher education can give more attention to which aspect of Instructional Technology need more attention in future inservice training programmes. The inservice programme designers can also avoid inservice training programmes on the themes identified as less demanded from the part of inservice teachers participated in this study. The suggestions and requirements of inservice teachers regarding the conduct of training programmes will be useful for improving the quality of inservice training programmes. Necessary modifications and inclusions can be made in the inservice training programmes according to the suggestions reported by the 'consumers' of those programmes. The feedback comments from the inservice teachers will beneficiate the teacher trainers and resource persons for reflective thinking. Analysis of data is done for total sample and for different sub samples, so that the findings that have significant contrast between sub samples will be useful for designing special group-oriented inservice training programmes with empowerment perspectives. The service of excellent groups may also be utilised for collaborative inservice training programmes.

Even though the study was conducted among primary school teachers, the findings will also be reflective of the enrichment of pre-service teacher education programmes. The most required themes for inservice training as revealed by the study are equally considerable for preservice teacher preparation programmes also, because the demands are from the 'field' and 'live artists'. The pre-service teacher educators can notice whether the teacher trainees are well equipped with these high demanded themes. Totally all the personnels in the field of education, viz., inservice teachers, inservice teacher trainers, pre-service teacher trainers, training programme-curriculum designers, etc will be enjoying the benefits of the present study, and in

turn will energise school pupils who are the optimum target of any teacher preparation programme.

The investigator has taken all the measures and efforts to make the present study precise, comprehensive and objective as far as possible by taking a statewide sample on a stratified sampling basis. All the measures and care were taken so as to get reliable and valid data from the primary school teachers. Even then, the limitations of the study are listed in the following section.

1.8 LIMITATIONS OF THE STUDY

1. Even though the investigator attempted a statewide sample of primary school teachers; the size of the sample is only 613, which is only a minor proportion of the population.

2. Instructional Technology is a wider concept with a good number of sub-themes and components, and to assess the awareness in such a wider subject area is a big task for a researcher. The present study is therefore delimited to certain selected themes of Instructional Technology.

3. Instructional Technology Awareness is to be assessed by the empirical evidences of day-to-day practices of the schoolteachers in their real instructional situations. But in the present study the awareness assessment is limited to the responses obtained to a Test on Instructional Technology.

4. Inservice Training Needs of teachers are to be assessed by analysing data from comprehensive and multiple sources like that of pupils, head teachers, teacher trainers, resource persons, subject experts, policy makers and curriculum designers. Instructional Technology and Inservice Training Needs are more relevant to the practicing teachers, the investigator recorded responses and data only from inservice teachers.

5. Assessment of Inservice Training Needs is to be done through observations of performances of teachers in their real instructional situations. But in the present

study the training needs are assessed from the responses of a structured questionnaire given to the teachers and by direct interview with the teachers.

1.9 ORGANISATION OF THE REPORT

The report of the study is organised and presented in five chapters. Details of contents of each chapter are given below.

Chapter I deal with the need and significance of the study leading to the statement of the problem, definition of key terms, objectives, hypotheses, procedural framework and scope and limitations of the study.

Chapter II is concerned with the review of literature, which would provide a clear picture of the work done in the area and to draw conclusions at the end.

Chapter III illustrates the methodology adopted for the study which provides a detailed account of the variables, rationale for the selection of the variables, sample selected, data collection procedure, tools used, standardization procedures of tools and the statistical techniques employed in the analysis of the data.

Chapter IV gives detailed descriptions of the analysis of the data and interpretation of the results leading to discussion of results and findings thereafter and tenability of hypotheses.

Chapter V summarises the major findings of the present study, their implications and suggestions for further researches.

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REVIEW OF LITERATURE

- Studies on Instructional Technology
- Studies on Effectiveness of Inservice Training Programmes
- Studies on Inservice Training Needs Assessment
- Conclusions

Review of related literature is an important aspect of every study. It serves multiple purposes and is essential for a well-designed research study. It helps the investigator to acquaint him with current knowledge in the area in which he is going to conduct the research. It is a valuable guide in defining the problem, recognising its scope and significance, suggesting relevant hypotheses, gathering devices, making appropriate study design and sources of data.

The present study is an attempt to find out the inservice training needs and awareness about Instructional Technology among primary school teachers. The study purports to discuss trends, identify gaps, and visualizes future research needs in inservice training programmes and to quantify the index of Instructional Technology awareness among primary school teachers. The review of related literature is done in that perspective. The investigator has reviewed literature related to Instructional Technology , Inservice Training Programmes for schoolteachers, and on Inservice Training Needs Assessment.

The reviewed studies are therefore presented under three sub-headings, viz.,

2.1. STUDIES ON INSTRUCTIONAL TECHNOLOGY

2.2. STUDIES ON EFFECTIVENESS OF INSERVICE TRAINING PROGRAMMES

2.3. STUDIES ON INSERVICE TRAINING NEEDS ASSESSMENT

2.4. CONCLUSIONS.

2.1. STUDIES ON INSTRUCTIONAL TECHNOLOGY

Finn (1960) analysed the problem of teacher shortage, large size of class, and need for quality instruction in late nineteen-fifties in California. The study can be listed among the earlier research studies in the field of Instructional Technology . Hardware aspects of Instructional Technology were given more importance in the study. The study appreciated Instructional Technology for making reach of more students with fewer teachers. The study also identified a trend toward individual instruction utilising Teaching Machines. In that era, Instructional Technology was governed by such systems as Televisions and Films. There was such an explosion of applications and awareness of Instructional Technology that made the investigator to doubt that, 'the teacher and the school system could be eliminated if a combination of Instructional Technology and Individual Instruction is formed.

Allen and Coombs (1970) analysed the trends in Instructional Technology in the nineteen sixties. For this, forty numbers of experts in the field of Instructional Technology were supplied with questionnaire for the ERIC Clearinghouse on Educational Media and Technology. The study adopted both hardware and software perspectives of Instructional Technology . A panel discussion by an advisory council regarding the accomplishments, trends, future and effective use of Instructional Technology was arranged, in order to record the opinions of experts. The concept of individualisation of instruction, the application of the systems approach to education, development of trained personnel, establishment of experimental and demonstration schools, establishment of a public service system of broadcasting and demonstrated effectiveness of Instructional Technology were some of the accomplishments of that panel discussion. Immediate development of programmes in Instructional Technology was one of the recommended measures.

Armsey and Dahl (1973) conduced an inquiry into the awareness and uses of Instructional Technology in United State. The study collected details regarding the history of studies about the use of Instructional Technology and found that it was the Ford Foundation originally undertaken the first inquiry in this area. The first inquiry was to provide the Foundation itself with guidance for its support of efforts

to apply Instructional Technology . The Foundation inquiry report was a collection of responses of a wider audience and was subsequently adapted for broader distribution. Besides collecting historical data, the study examined different interpretations and definitions of Instructional Technology and found to be effective. The probability o success in the use of Instructional Technology was confirmed in the conclusion part.

Branson, et al. (1973) analysed and assessed the use of Instructional Technology in the army schools and training centres of United States. The report derived at conclusion that the atmosphere within Army training system was conducive to the use of Instructional Technology , but the management personnel need training in the design and implementation of instructional models. The study also reported about a need of greater dissemination of successful programmes. Following recommendations were cited in the study viz., (i) resource personnel were to be trained to develop training models utilising Instructional Technology , (ii) middle and upper management personnel were to be trained to prepared to administer the training programmes, (iii) systems for research, development, evaluation and dissemination in the areas of Instructional Technology and instructional systems were to be developed, and (iv) all instructional approaches used in training programmes were to be examined to determine the proper functions of each.

Rose (1976) conducted an inquiry about the use of Instructional Technology in Department of Defence, United States. The study reported that, since the Department of Defence was spending a huge amount annually on training and educational opportunities, new instructional technologies were constantly explored by the teachers to make education and training more cost effective. A variety of Instructional Technology applications were adopted in the training centres for more effectiveness. Importance of components like instructional systems based on behavioural objectives, instructional systems augmented by computer and audiovisual technology, learner centered instructional research, instructional television, cable television miniature computers, holography, rapid transmission and

storage system, satellite communication, computer assisted/managed instruction, and simulation were some of the inclusions in the report.

Midkiff (1983) described a model for designing efficient inservice training programme in computer literacy for teachers. An important guideline in the study was that planners of computer literacy inservice training programme for teachers must recognise that teachers may have psychological, mathematical, mechanical and professional fears concerning the computer and their own abilities to learn computer. A needs assessment survey can determine both what teachers want to know and what they need to know. The study suggested that assessment questions for teachers should focus on introduction to the microcomputer, the effect of computers on society and education, and what knowledge and skills are needed to make effectives use of computers in the classroom. The study recommended that the inservice training programmes should include sessions covering themes like introduction to computers, planned instruction in computer literacy, systematically designed programmes for individual instruction, techniques for working with children in the classroom and knowledge of administrative uses of the computer.

Scandura (1983) analysed the role of Federal government in promotion of the Instructional Technology during 1980s. The study identified that the Federal governments had promoted Instructional Technology in their states and localities to improve educational achievement. The study also had surveyed a brief history of federal support for educational research and its consequences. A critical analysis of strengths and weaknesses of Instructional Technology , and uses of instructional designs in computer based instruction development was another highlight of the study.

Hilgenfeld (1984) outlined the necessary components to meet the computer literacy needs to inservice and preservice teachers. A model plan for teachers' computer literacy inservice training programme was also designed as part of the study. The study evaluated the existing computer education programmes for teachers and identified the training needs of teachers. Perceived computer training needs of teachers showed significant differences in the content of courses currently offered.

The study recommended new versions of computer training in the inservice training programmes for teachers.

Leelavathy (1984) analysed basic theories and instructional strategies that influenced teacher education programmes in select developed and developing countries. A detailed reflective interpretation of emerging developments in the field of education was done as part of the study. The new educational developments were classified into two heads, viz., learning theories that have contributed to the developments and instructional strategies that have been outcomes of these theories. The study identified the importance of theories developed by Skinner, Piaget, Bruner, Gagne and Ausubel. Programmed Learning, Piaget's concept of Developmental Adaptation, Assimilation, Equilibration, Educational Technology, Systems Approach, Mastery Learning and Task Analysis were discussed in detail. The study concluded that any study on teacher education has to be built upon sound foundation of these theories. The study suggested that in order to supplement in-service courses for teachers, modern developments in educational theory and technology should be made available for teachers in the form of literature.

Senese (1984) illustrated the importance of Instructional Technology in the scenario of education. The study also prompted the whole teacher community to acquire knowledge about new instructional tools and technologies derived as part of Instructional Technology . The technology demanded higher level of awareness and skills from the part of teachers. The study predicted that in future computers would be able to assist in remedial work and higher still work, record keeping, and monitoring of students' progress.

Ely (1987) tried to answer certain issues about Instructional Technology and application in education, with a special orientation to Information Technology. The study analysed the question that how technology can be used to improve education by helping each individual to become increasingly responsible for his or her learning. The study derived a conclusion that Technology should not determine the goals of education but it can be used to achieve them.

Aust, *et al.* (1989) studied about the status and problems of the integration of Instructional Technology in educational institutions. The proper role of teachers in that context was specially analysed by the researcher. The nature of teachers' attitudes toward the integration of Instructional Technology , and the social and psychological factors that contribute to their acceptance or rejection of such technology was critically examined in this study. Structured interviews and factor analysis of an attitude responses form was adopted in the study. Professional public school educators with varying number of years of experience were interviewed as part of the study. The attitude response survey form was titled as 'Teacher Attitudes of Instructional Technology ' (TAIT). The factor analysis resulted in the identification of five prevalent factors that influence the use of fully mediated instruction; (i) curriculum content, (ii) extension of traditional methods, (iii) integration of Instructional Technology , (iv) teacher initiative and (v) what teachers believe the future holds. The study totally indicated that most teachers were excited about applying Instructional Technology in their classrooms. Most of the teachers responded that they believe the use of Instructional Technology was appropriate for all content areas they teach.

Okolo (1990) analysed the classroom uses of Instructional Technology with a special reference for learners with learning disabilities. More research and development activities for effective use of technology in the areas of reading instruction, writing instruction, problem solving instruction and distributed cognition were recommended in the study.

Patridge (1991) reviewed accounts of non-traditional schools in various parts of the United States, where computers were used in conjunction with practices such as the whole language approach, the language experience method, ability grouping and individualised instruction. Review of the accounts helped to derive the conclusion that properly implemented Instructional Technology has a definite place in the repertoire of educational strategies and can be integrated into existing instructional approaches. The study reported that proper use of computer technology helped to overcome a number of learning problems, including attention deficit disorders,

visual-spatial problems, vocabulary expansions and sequencing. The special capacity of Instructional Technology to address the unique learning needs of each student, especially in the case of learning-disabled students was appreciated in this study. The vital comment of the study was that, implementation of Instruction Technology heavily depends upon properly trained teachers. The awareness of different dimensions of Instruction Technology will surely help the teachers to attain effectiveness in their performance. The parental and public supports for proper implementation of Instructional Technology were given importance in the study. The study concluded that by enhancing the instructional effectiveness of schools, Instructional Technology can help move them closer to the goal of providing quality experiences for all children.

Duffy and Jonassen (1992) formed a dialogue between instructional developers and learning theorists about the implications of constructivism for instructional design practice. To study was titled as 'Constructivism: New Implications for Instruction Technology'. The perspectives of constructivism; design of generative learning environments; relationship between Instructional Technology and constructivism; application of constructivism for instructional design; reflections on the implications of constructivism for educational technology and methods of evaluating constructivist learning were some of the discussions made in the study. Detailed descriptions given in the study about the perspectives of application of constructivist principles in the field of Instructional Technology can be utilised in inservice training programmes.

Friedlander (1993) conducted a study to verify whether teachers and students were using Instructional Technology effectively. Community colleges in California were the institutional background and sample of the study. The study reported that due to adoptions of new technologies institutional operating costs were rising faster than cost-of-living adjustments from the state. The study also reported that for purchasing technology-based instructional delivery systems, certain funds were to be diverted from other areas of budgets. The study can be titled as 'Economics of Instructional Technology '. The study concluded that authorities should begin experimenting with

methods of incorporating Instructional Technology into restructured delivery systems that utilise the capabilities of technology while maintaining the benefits of existing systems.

Stiegmeier (1993) described the components of an Instructional Technology survey conducted by Alaska Department of Education. All the school districts and schools of Alaska were included in this survey. The main objective of the study was to determine what needs must be met in the schools in order to effectively employ Instructional Technology . The survey also collected data on types of instructional technologies currently employed in the schools. Assessment of priority for Instructional Technology in Alaska schools was also done in this study. The study revealed that nearly half of the schools principals rated Instructional Technology as a high priority for their institution. It was also reported that almost half of the teachers use some form of Instructional Technology daily. Principles estimated thirty-seven per cent of students use some form of Instructional Technology daily. Wide disparities were found across the state in the kinds of technologies available in schools and many computers in schools of Alaska State were found to be older models limited in their application potential to new and emerging instructional uses. The most prevalent need identified in the study was need of inservice training teachers to use technology properly. The urgent arrangement of inservice training programmes in Instructional Technology for schoolteachers was the main recommendation of the study. A Wide Area Network (WAN) infrastructure was recommended to ensure that all students of the school district have access to online data networks, video resources and distance education resources.

Askov (1994) conduced a study to determine the feasibility of using technology as an instructional strategy. The study identified privacy, individualisation, achievement gains, cost effectiveness, control of learning, open entry, open exit, and modernity as the benefits for using technology as an instructional strategy. Constant change, high cost, pressure to make rapid decisions, lack of expertise and training, inappropriate instruction, curriculum integration and role changes were found to be the barriers to using technology as an instructional strategy. Interactivity, feedback,

learner control, learner-controlled accessories, directions and help, consistency, organisation, and graphics were identified as instructional characteristics of technology. The study also investigated about available types of educational softwares in the current market, assessment and record keeping features of computer-assisted instruction, use of technology labs and effects of small groups as learning environments.

Albright (1995) analysed the evolving relationships between campus media, and information systems and services. The study criticised that as education rushes to embrace information technology, many vitally important Instructional Technology services were often left not funded. The study also criticised that Instructional Technology services were operating at its peripheral status outside academic factors. Instructional Technology should be understood not just in terms of computer hardware and software; but in terms of human skills, resource management, problem solving and instructional settings. The study reminded that important goals of Instructional Technology services included instructional development, learning resources, classroom technologies, media development, instructional telecommunications, academic computing, research and evaluation.

Anglin (1995) compiled the discussions of leading professionals in the field of Instructional Technology . The contents of the discussions were instructional designs, research and evaluation in Instructional Technology , future prospects for instruction technology and professional development in the field of Instructional Technology . All discussions rated positivism towards the effectiveness of Instructional Technology .

Albright (1996) established a definition for Instructional Technology that does not spell computer hardware and software, instead focusing on human skills, resource management, problem solving, and educational settings. The study was an attempt to list out the rewards, rights and responsibilities that Instructional Technology brought into the world of learning and teaching in higher education. The study also discussed the ways in which electronic technology like electronic mail and the World Wide Web penetrated institutions of higher learning and caused shifts in

learning and instructional paradigms. Faculty reported that lack of administrative commitment to poorly equipped classrooms, campus environment and disproportionate access as barriers for use of Instructional Technology . Institutional climate, campus wide Instructional Technology support infra-structure, easy access to technology-based display systems in the classrooms, reward system, institutional commitment to technology, proper planning documents, proper budget allocations, administration that pace with use of technology, consultation services, and production support services were some of the recommendations of the study. An appropriate inservice training programme related to classroom technology applications was the notable suggestion for attaining the effectiveness of Instructional Technology .

Brace and Roberts (1996) discussed in detail about the ways of supporting faculty development and the use of Instructional Technology . The study discussed the commitment to technology made by Middle Tennessee State University and the ways it helped faculty to develop Instructional Technology . The investigators were of the opinion that the use of Instructional Technology in a class and the impact that it has on students were almost wholly dependent on individual instructors. The study criticised that a very small percentage of faculty only integrated Instructional Technology into their classes, that itself will be by force of little prompting or assistance. The conclusion of the study was that, mainstream faculty typically need encouragement, ready access to technology, training, and supports for enhanced use of technology.

Furst-Bowse (1996) conducted a study to list out the required competencies to design and deliver training programmes using Instructional Technology . The study emphasised that the trainers using technological systems must posses the skills needed to utilise effectively the technology. The study provided information on the implementation of Instructional Technology , with special reference to employee training and the competencies needed by the trainers to utilise Instructional Technology in their jobs. Results of the study indicated that the major types of Instructional Technology used in training and development of competencies were

not changed dramatically over the rest of the 1990s. Self-study methods were found to be primary sources for competency development in Instructional Technology . The major barriers identified to implement Instructional Technology in training programmes were lack of time and financial resources. The study did not found any kind of lack of interest in using Instructional Technology from the part of trainers. Lack of other supports for training efforts in Instructional Technology was also not reported.

Moallem, *et al.* (1996) reviewed the concept of 'Technology Resource Teachers'. The study was titled as 'Technology Resource Teachers: Is this a new role for Instructional Technologists?'. Public schools of North Carolina, United States created the post of the Technology Resource Teacher (TRT) as an attempt to establish a technical and instructional support system at the school level to assure the proper usage of technology by both teachers and students. Major suggestions of the study were to recruit more potential instructional designers, to include internship component to Instructional Technology , and to formulate new designations like Technology Co-ordinator, Technology Resource Teacher and other positions in public schools. The study over emphasised the provision for inservice Instructional Technology training programmes for the public school teachers.

Schmidt (1996) conducted an inquiry about the establishment and functions of the Instructional Technology Support Centre (ITSC) of Tennessee, United States. Providing both preservice and inservice training in the use of Instructional Technology , improving teaching through expanded use of Instructional Technology and developing multimedia curriculums were reported as major functions of the support centre. A number of multimedia classrooms were available there for Instructional Technology inservice training programmes. Reporting of quite satisfactory attitude towards the services rendered by ITSC was the conclusion of the study.

Abel, *et al.* (1997) analysed and compiled fifty-seven research papers and presented at the 1997 national convention of the Association of Educational Communications and Technology (AECT), United States. Co-operative technology

education, children's learning strategies with hypermedia lessons, problem-based learning, interactive television design, visual aesthetics and functionality of web pages, electronic mail in foreign language learning, teaching educational technology, Instructional Technology benchmarks for teacher preparation programmes, strategies for electronic interviewing, motivational techniques, preservice teachers' perceptions of the future of computers in education, visual communication and effects of anchored instruction were some of the titles in the volume. The study can be utilised as guideline for designing themes for Instructional Technology courses and inservice training programmes.

Nailowfar (1997) conducted a study on utilisation of visual aids by primary school teachers in Malappuram District of Kerala. 100 primary school teachers participated in the study. Teaching of environmental science was given special reference in the work. Checklist was adopted for data collection. Out of 24 visual aids listed by the investigator only a few of the visual aids like blackboard, chart, pictures etc were found in use and in a moderate level. The study concluded that teachers were aware of only common visual aids.

Ranjit (1997) analysed the opinions of schoolteachers regarding the use of computers in administrational, instructional, evaluation, and library purposes. The study was conducted among 310 secondary school teachers from 24 schools in Malappuram District of Kerala. From the analysis of four areas of computer applications, teachers showed comparatively low response for instructional uses of computer. So it was suggested to conduct rigorous inservice training programmes to develop more positive views to use computers in different areas of instruction.

Sasilekha (1997) investigated about the utilisation of visual aids by teachers for teaching English in primary schools in Kozhikode District of Kerala. 150 teachers from 129 primary schools were administered with a questionnaire and a rating scale for data collection. The study reported that teachers are not much aware of different visual aids in teaching English. Teachers were found to be following conventional drill method for teaching English in primary classes.

Sheena (1997) collected and analysed the opinions of schoolteachers regarding the use of educational features in print media. The study was conducted among 215 secondary school teachers from 27 school of Malappuram District of Kerala. The inservice teachers showed desirable opinions for using educational features for classroom instruction. The study suggested that teachers may be advised to use more educational features for instruction.

Clagett (1998) surveyed about funding of information technology in Maryland community colleges. The study was conducted under the banner of Maryland Community Colleges Technology Council. Eighteen community colleges in the state were involved in the study to determine the status of instructional and administrative technologies. The study was also intended to learn the technological needs and plans of the colleges for the next five years. The survey inquired about Instructional Technology , intercampus networks and distance learning initiatives, technological support, administrative systems and campus technology infrastructure. Results indicated that only 28 per cent of the institutions employed current technology and they are in need of additional computers for the coming years. Faculty reported need of immediate inservice training in multimedia instructional techniques, distance learning methodologies, and administrative networks. The study concluded with recommendation of total upgrading of infrastructure and immediate inservice training programmes in current instructional softwares and technologies.

Imel (1998) analysed the impact of technology on learning and synthesised the current perspectives of the issue. The study was conducted with special reference to adult learning. Notable four approaches for integration of technology and instruction were suggested in the study; (i) technology as a curriculum, it means learn content through technology but also learn about technology itself (ii) technology as a compliment to instruction and extent learning, and (iii) technology as a delivery mechanism of instruction. The study concluded that educators can no longer afford to ignore the educational applications of technology, especially in the

case of adult education, however they must ensure that the focus remains on the process of learning and not on the technology.

Gabriner and Mery (1998) conducted a technology survey to assess the degrees of the computer expertise of the faculty, and the use of Instructional Technology . The study was conducted among faculty, staff and administrators of Community Colleges in California. The major findings of the study were (i) the level of computer expertise appeared to be increasing every academic year, (ii) a strong trend toward the adoption of computer technology was growing every academic year, (iii) use of e-mail, internet and other electronic technologies also increased though the majority reported a low to moderate self-rating of skills and experience of consuming internet, and (iv) most of the survey respondents use computer at least once a day and majority of their internet use was to access materials. The study focused specifically on the instructional faculty of the colleges and traced a wide range of both highest and lowest levels of computer expertise. The study also identified that the instructional faculty were the important source of computer and technology information for other college employees in the campus. The study concluded that the application of Instructional Technology benefited the faculty to attain enjoyment of teaching, access to new sources of knowledge and resources, and boosting of creativity.

Richey (1998) studied about the pursuit of useable knowledge in Instructional Technology . The study explored the dimensions of relevance of Instructional Technology , with respect to the scope of research in Instructional Technology . The study suggested that the research community can accommodate the needs and interests of inservice or practicing professionals who accommodate Instructional Technology . Perceived utility and credibility of Instructional Technology among professionals were the two suggested areas of further research.

Spinelli (1998) analysed the needs of reformations in the field of teacher education. The study indicated the urgency of promotion of interactive teaching strategies and authentic assessment for instruction process in schools. As increasing numbers of students with diverse needs were included in general education, the up dating and

revising of awareness among teachers were also needed. Students' skill levels range from gifted to severe delays, students of cultural differences, environmental deprivation, stress and health issues. The study found that awareness among teachers about all those areas was necessary for proper instruction. The investigator conclude that teacher educators need to revise traditional teacher education contents to include alternative instruction and assessment practices that provide all students with the curricular and programme modifications they need. The study suggested that inservice teacher training programmes should emphasise best practices that are interactive, authentic and performance based.

Tubbs (1998) conducted a study to determine Tapp Middle School's Instructional Technology staff development needs and developed a long-range comprehensive Instructional Technology staff development action plan. The study focused on the student as the customer who deserves access to the best technology available. The study purported the notion that Instructional Technology was not limited to computers but included any modernised method or device that assists the process of instruction. The analysis of subject responses indicated that Tapp Middle School's faculty and staff needed to become more familiar with MS-Windows based software, multimedia presentations, internet, network environments, multitasking and office software packages.

Ambily(1999) conducted a study on attitude towards activity based teaching strategy among primary school teachers of Kerala. 516 primary school teachers from Malappuram, Kozhikode, Kannur, Kollam and Pathanamthitta districts participated in the survey. The study revealed that primary school teachers of Kerala had moderately favourable attitude towards the activity based teaching strategies.

Draude and Brace (1999) assessed the impact of technology on teaching and learning with student perspectives. The survey results led to the following major findings, (i) use of Instructional Technology positively affected student learning, (ii) use of Instructional Technology increased student interest and satisfaction, (iii) role of faculty and their ability to use Instructional Technology were major factors, and (iv) certain Instructional Technology techniques better facilitated certain learning

activities. The study concluded Instructional Technology as an integral part of today's learning environment.

Rackow (1999) assessed the impacts of utilisation of Instructional Technology on science instruction in schools. The study identified Instructional Technology as a catalyst in science teaching in the schools. The study concluded that for proper application of Instructional Technology to improve teaching in the science classrooms, teachers must continue to be actively involved in the conceptualisation and development of new instructional technologies. Need for understanding of development psychology of children was also found to be critical for making Instructional Technology effective. Global classroom and technologically enhanced classroom were described as two general types of applications of Instructional Technology in today's classrooms.

Sparks and Simson (1999) presented proceedings of selected sixty-five research papers at the 1999 national convention of the Association for Education Communications and Technology (AECT), United States. Challenges for emerging instructional designers, Instructional Technology clinical experiences, instructional principles for self-regulation, systems approach new technology adoption, integrating science/mathematics curricula using computer-mediated communications, instructionist versus constructionist web-based collaborative learning environments, historical analysis of problem-based learning, strategies for learner involvement, secondary teachers' professional use of computers, psychological factors influencing web navigation, and designing online instruction using multidisciplinary approaches were certain titles under which discussions were made. The study can be utilised as guidelines for designing themes for Instructional Technology courses and training programmes.

Cherian (2000) analysed the strategies adopted by the primary school teachers in Kannur District for the transaction of environmental studies. 100 teachers participated in the work. Data sheet and observation schedule were adopted for data collection. Teachers adopted various learning activities to achieve competencies like observation, comparison etc. It was also reported that teachers adopted relevant

teaching strategies for the transaction of environmental studies. Teachers reported they felt lack of facilities and experiences for adopting strategies like activity, construction, field trips, and discussions.

Chirakkal (2000) conducted a study to identify the difficulties experienced by schoolteachers in teaching English. The study was conducted among 250 teachers teaching English hailing from Ernakulam, Malappuram, Kozhikode and Kannur districts of Kerala. A normative survey was adopted using questionnaire and interviews. The teachers reported that inservice training programmes were not at all beneficial as far as English was concerned. The studies revealed that majority of English teachers are in need of more inservice training for implementing effective English learning in schools. The usage of audio-visuals among the English teachers was found to be very rarely. Majority of English teachers rarely adopted modern approaches and methods of English teaching. The study noticed a very low awareness about modern instructional approaches and methods among English teachers. Teachers reported that lack of time as a great impediment in teaching English by adopting modern methods.

Sangeetha (2000) collected the opinions of primary school teachers of Kerala towards the use of computers. 300 teachers 41 primary schools of Kannur district participated in the study. Desirable opinions about the academic use of computers were reported from the part of primary school teachers. Emerging need for computer usage among teachers was given as conclusion in the work.

Shyni (2000) analysed the views of secondary and higher secondary school teachers regarding the use of computers in education. 160 secondary school teachers and 155 higher secondary school teachers participated in the study. It was identified both strata of teachers have almost similar views regarding the use of computers in education. The study emphasised need for encouraging computer education in schools and the need for making teachers competent to cope with recent changes in the field of computer technology.

Hung (2001) described the dominant schools of thought in relation to learning theories and how computer mediated technologies. The study illustrated how

learning theories can be integrated in computer instructional contexts. Behaviorism, cognitivism, constructivism, and social constructivism were discussed in the light of different instructional strategies.

Balasubramanian (2002) investigated about the need for computer education in teacher training programmes, both pre-and inservice teacher education. The study recommended that all teacher educational institutions and training programmes have to include computers as an integral part of their instructional aids. The study also identified that most private schools were comfortably placed in the accessibility of computers, but the same cannot be said about government schools. The study concluded with an urgency of computer literacy among schoolteachers and also recommended longer training programmes to prepare teachers to develop instructional software for their students.

Buendia (2002) examined the manner American primary school teachers deployed Instructional Technologies according to their contextual conditions and institutional systems of knowledge. The theoretical framework firmly identified the curricular initiatives and teachers' practices as another aspect of Instructional Technology . The study analysed the history of revolution of Instructional Technologies. Instructional Technology within the frame of study was conceptualized as devices, texts or instruments constructed to enable, shape or manage human beings to fulfill particular tasks.

Charalambous & Karagiorgi (2002) analysed two studies they conducted among teachers of primary schools in Cyprus to highlight teachers' inservice training background and inservice training needs. The first study focused on identifying the factors key to ICT implementation and the ways in which those factors influenced the implementation practices. To reveal those factors, the study aimed to explore several implementation aspects including primary teachers' inservice training needs. 386 primary school teachers participated in the study. The aim of the second research was to investigate the provision of ICT inservice training programmes for Cypriot primary school teachers and identify its strengths and limitations. 237 primary school teachers participated in the study. Both studies objectively analysed

the inservice training needs and expectations of primary school teachers. Semi-structured interviews, questionnaires and structured and non-structured observations were employed for data collection. Both studies indicated that majority of primary school teachers lack an ICT training background. A great demand for urgent and intensive inservice training in instructional dimensions of ICT integration was reported by majority of teachers participated in both two studies. Teachers also reported that they prefer school-based inservice training programmes in future.

Joy and Manickam (2002) conducted a study among fifty primary school teachers who were undergoing an inservice teachers' training programme. The major objective of the study was to assess the index of teachers' knowledge in computers and computer assisted instruction awareness. The level of teacher competency of the teachers undergoing inservice training did not shown any change as a result of the inservice training programme. The investigator commented that it may be a reflection of the reliability of the test. Gender difference was also not found in the achievement through inservice training. The study found that the teachers' attitude towards the use of computer became more favourable with the increase in the awareness about use of computers in the process of instruction. The study concluded with a suggestion that the contents that enrich positive attitude towards computer assisted instruction are to be included more in the future inservice training programmes for the teachers.

Rajagopalan (2002) investigated about teaching strategies adopted by schoolteachers and their pupils achievement. The study was conducted among 50 secondary school Malayalam teachers and 400 pupils. The study revealed that well experienced teachers especially in government schools were not using preferred teaching strategies for imparting effective attainment of the objectives envisaged through language education. The study indicated about the absence of timely implementation of inservice teacher training programmes that created lack of familiarisation among teachers with effective and new instructional strategies.

Rasku-Puttonen, et al (2002) investigated about the role of teacher in the promotion of successful learning and collaboration in Information and Communication

Technology based learning environments. Instructional scaffolding in the technology based learning environments was another key issue in the work. The persistence of important role of teacher even in the individualised and child-centered instructional environments was proven in the study. A need for research and developments for realising pedagogical innovations was revealed in the conclusions. The study concluded that novel practices in teaching will be challenging in inservice training programmes of teachers adopting technology based learning environments.

Swamy (2002) reviewed different areas of information technology and its context in the field of instruction. The study suggested that teacher educators and teacher training programmes should recognise the new skills and needs required for today's instruction process, and train teachers to develop those skills. The study concluded that the teacher community must welcome a partnership with new electronic instructional methods. The importance and features of on-line instruction were more discussed in the study.

Ushadevi (2002) reported an immediate need for orienting the inservice teachers in Information Technology skills. The study also recommended Information Technology as a compulsory content in the preservice teacher education courses. The study identified the areas required inservice training programmes for teachers. Hyper-text, multi-media instructional techniques, computer assisted instruction, internet, intranet, and intelligent tutor system are some of the areas identified, in which inservice teachers training programmes were to be conducted.

Al-Bataineh and Brooks (2003) undergone a historical look at the lessons learned in the twenty years of computer-based technology integration in educational systems in U.S.A. Phases of print automation of the 1980s, a more learner-centered shift in the early to mid 1990s, internet shifts focus to high order thinking in the late 1990s and current challenges were discussed. Vision with support and proactive leadership from educational system, skilled educators in the use of technology in learning, assessment of the effectiveness of technology for learning, technical assistances, ongoing financial supports and policies supporting new learning environments were the themes identified as current needs and challenges

Baker (2003) synthesized the reflections on emerging issues related to contemporary technology-enhanced assessment. Linkage to cognitive demands or requirements, methods for attributing validity for various assessment purposes, procedures for generating multiple instances of a task, analytic approaches for providing reports targeted to users, quality control routines to assure content quality, appropriateness to the learner and fairness were recommended as the minimum features that are to be included for technology design and assessment. Placing learning at the heart of the endeavor is to be considered vital in the synthesis of technology and assessment.

Andrea (2004) analysed the history of Information and Communication Technology education in Hungarian public education sector that dates back to the 1970s. In Hungary as well as in most countries that ICT education was introduced as a compulsory school discipline. The study reports that a shift was observed from a technology-centred towards a teaching-learning centred approach. Inservice teacher training programmes were introduced in large numbers to satisfy the accelerating needs of schoolteachers in the late 1970s. The study describes a design contest for school computers that was launched by the Hungarian Ministry of Education to equip a large number of schools with affordable and easy to use computers, completely with pedagogically valid educational programmes. An unrealised project was also illustrated in the study that was designed with objectives to give inservice training for schoolteachers of different disciplines to use computers in their preparation and daily teaching practices. The main problem identified for the dissemination of ICT-based instructional methods is the low level ICT competency among teachers. More intensive inservice training programmes on ICT for the schoolteachers were recommended in the study.

Angeli and Valanides (2005) conducted a study to evolve an Instructional Systems Design (ISD) model that was based on an expanded view of Shulman's concept of pedagogical content knowledge (PCK). The study was conducted among Cyprus preservice elementary teachers who participated in an Instructional Technology course. The main question that was investigated in the study was how to develop elementary teachers' Information and Communication Technology related

Pedagogical Content Knowledge. Totally 312 preservice teachers participated in the study which was designed into three phases. Case-based instruction was applied in the first phase of the design experiment. A new Instructional Systems Design model was developed and assessed in the two other sessions of the design experiment. In the first two phases of the study, teachers were guided to use multimedia-authoring tools, while in the thirds phase teachers were asked to use a modelling tool. The ISD model was found to be effective. The study constituted a starting point of intensive future research efforts for seeking more culturally bound or situated ISD approaches where the influence of school context and teachers' epistemological beliefs and experiences are to be more considered in ICT enhanced instruction. The study suggested that teachers are to be made more competent to teach with ICT with more knowledge about different tools and their affordances, specific pedagogies, specific contents, specific learners and in specific contexts.

Hennessy, et.al (2005) reported a collaborative programme of projects undertaken by 15 teacher researchers of Cambridge University using various forms of computer-based ICT to support subject teaching and learning. A typology of pro-active and responsive pedagogic strategies for mediating pupil interactions with ICT was identified. The strategies emerging illustrated how teachers structured instructional activities judiciously; supported guided and challenged, encouraged pupil collaboration, experimentation, reflection and analysis; avoided floundering and maintained a focus on subject learning; integrated the use of other resources; and developed information handling skills. The study was drawn on socio-cultural learning theory as a conceptual framework for analysing how teachers can structure classrooms activities and interactions during 'Technology-integrated Instructional Conversations'. A cross-case analysis was conducted by lesson observations, follow-up teacher interviews and teachers' research reports.

Kirkwood and Price (2005) discussed issues relevant for teachers and instructional designers anticipating using information and communication technologies.. The study summarised that although ICTs can enable new forms of teaching and learning to take place, they cannot ensure that effective learning outcomes are achieved. The

discussion concluded that it is not technologies, but educational purposes and pedagogy make students how to work with ICT and why it is of benefit them to do so. The importance of appropriate contextual instructional approaches and designs was revealed in this work. Knowledge about students' use of media as well as their attitudes and experiences can help teachers and instructional designers develop better learning experiences.

Unwin (2005) explored some of the reasons for the identified gulf between the rhetoric advocating use of ICT in education in Africa and the reality of classroom practices. The study also outlined a possible framework for the successful implementation of teacher training programmes that makes advantageous use of appropriate ICTs. Six fundamental principles of good practice were insisted in the study that is to be addressed for such programmes to be effective. The six principles were a shift from an emphasis on 'education for ICT' to the use of 'ICT for education', an integration of ICT practice within the whole curriculum, a need for integration between pre-service and in-service teacher training, a need for development of relevant and locally produced content, a need for appropriate educational partnerships and an emphasis on the development of sustainable costing models. The paper concluded with a framework for action to deliver the very real benefits of ICT for teacher training in African countries.

Braund and Reiss (2006) analysed the problems of science education in schools. The study suggested reformations in the science curriculum, pedagogy and nature of pupil discussions in science instruction. The study criticised that current science education is too routed in the science laboratories and substantially greater use needs to be made 'out-of-school' sites for teaching science in schools. The study revealed the importance teachers' competency to complement laboratory-based school science teaching by out-of-school science learning that draws on the 'actual world' through field trips, the 'presented world' in science centres, botanic gardens, zoos and science museums and via the 'virtual worlds' that are increasingly available through information and communications technologies.

Burnett, et al (2006) conducted a study on the transformative influence of new digital technology connections on the practical implications for transforming literacy in primary schools in U.K.. Children's' digital texts were analysed alongside interview and observational data were used for the study. The study revealed the emerging need for making primary school teachers to be equipped with latest digital technologies, to promote new literacy practices in the classrooms through production of new kinds of digital texts and new technology to offer children in classrooms, to explore broader notions of literacy, and new forms of communication and learning in primary classrooms. The study also documented the emergence of peer-based learning relationships and changing perceptions of teacher's role.

Carmichael and Procter (2006) conducted a study on the use of electronic networking in primary and secondary schools in U.K. The survey was conducted among 250 teachers. The study discovered that while use of IT is a well-established element of classroom practice, teachers made less use of electronic networks. The study made comment that time is needed for inservice teachers to make sense of new practices for themselves. More inservice training to make teachers sense of new practices in ICT for themselves was recommended in the study. The study concluded that there is still much to be done in the area of providing resources, services and online environments, which are supportive of innovation and knowledge creation about teaching and learning.

Chaudhary (2006) edited and analysed 15 papers of ICT initiatives and quality improvement in Elementary Education in India. The material revealed that teachers could facilitate learning process by building awareness on contextual issues, help children learn concepts, acquire theoretical knowledge about curriculum areas and also provide individualised instruction to learners.

Lee (2006) conducted a study on online learning in primary schools in Hong Kong. The study was conducted to explore how primary teachers use an online Integrated Learning Environment (ILE) catered for individual learning difficulties. The study recommended that when adopting ICT for teaching and learning in primary school classrooms, teachers should be sufficiently open-minded to explore different

approaches and apply adaptation strategies. The study concluded that teachers are to trained well to understand the rationale and philosophy for the use of ICT to cater for individual differences.

Passey (2006) analysed uses of ICT by primary and secondary schools in England. The study identified that the evolved wide diversity in the forms and uses of ICT had created challenges for teachers to select appropriate uses of ICT to support learning most effectively in specific situations. The study identified a clear need from the part of teachers to know how each form of ICT supports precise aspects of learning in each subject area, topic and activity. Teachers also need to consider the different forms of technological resources that are accessible, how these specifically work within learning environments in classrooms and other settings, and how uses of resources match social, behavioural, emotional and cognitive needs of pupils.

Postholm (2006) conducted a study on the teacher's role when pupils work on task using ICT in project works. The study acknowledged ICT and project work were challenging issues for many teachers to deal within the classrooms. The study was conducted in three classrooms in threes schools at the lower secondary school level in Norway. The data were collected through observation, tape recordings, video recordings and logbook entries throughout project periods in the classrooms. The study reported that ICT places great challenges on the teachers and heavy demands on both pre-service and in-service teacher training programmes in Norway. Teachers need to be trained to determine when and why ICT should be used, and also how the equipment should be integrated in proper instructional situations.

Su (2006) conducted a study among elementary school teachers in Taiwan to know how they perceive the benefits and obstacles of implementation of compulsory English education policy. Data were collected through teachers' interviews, classroom observation and document analysis. Results found that teachers had to plan their English classes with the constraints on a large class of students with mixed level of proficiency, limited teaching hours and resources.

Stemler, et al. (2006) proposed seven strategies for teachers for dealing with practical issues of teaching. The study highlighted the importance for inservice

training for teachers to have sound practical skills in interacting with students, parents, administrators and other teachers The study presented a new framework for conceptualising practical skills in dealing with others that follows directly from Sternberg's theory of successful intelligence. Comply, consult, confer, avoid, delegate, legislate and retaliate were the seven strategies suggested for teachers to improve their interpersonal skills.

Tan, et al (2006) conducted a study about data logging in Singapore schools. The study was conducted among 593 teachers who had used data loggers in last two years in science classes. Data logging methods involve the use of electronic sensors and interfaces to measure and record changes in variables during science experiments, for example, temperature and pH. Data were automatically collected and can be displayed in real-time in the form of tables and graphs on computer screens. The study identified need for inservice training for teachers on proper use of the data loggers, and their instructional applications. Teachers requested for more familiarizations courses on use of data loggers to supplement their inquiry science learning approach in schools.

Studies on Instructional Technology reviewed and their findings are consolidated in Table 1.

TABLE 1

Studies on Instructional Technology

Sl. No.	Author	Year	Findings
1	Finn	1960	Identified the scope of Instructional Technology and individualised instruction
2	Allen & Coombs	1970	Analysed trends in the field of Instructional Technology and inservice training programmes were suggested
3	Armsey & Dahl	1973	Success in the use of Instructional Technology was identified.
4	Branson, et al.	1973	Need training in design and implementation of more Instructional Technology Models
5	Rose	1976	New forms of Instructional Technologies were constantly explored by teachers
6	Hansen	1983	Suggested long-range planning of the inservice teacher training programmes and resource allocation for introduction of computer technology
7	Midkiff	1983	Psychological, mathematical, mechanical and professional fears of teachers related to computer education are to be considered.
8	Scandura	1983	Identified the uses of instructional designs in development of computer based instruction
9	Hilgenfeld	1984	Recommended updated and new versions of computer training in the inservice training programmes for teachers
10	Leelavathy	1984	Analysed basic instructional theories and strategies that influenced teacher education programmes
11	Senese	1984	Illustrated the importance and emerging trends of instructional uses of computers
12	Ely	1987	Technology should not determine the goals of education, but it can be used to achieve them.
13	Aust, et al.	1989	Teachers have positive attitude towards the use of Instructional Technology for all subjects

Sl. No.	Author	Year	Findings
14	Okolo	1999	Identified classroom uses of Instructional Technology with a special reference for learners with learning difficulties and suggested more research in this area
15	Patridge	1991	Implemented Instructional Technology in the sense of computers has a definite place in the repertoire of educational strategies and can be integrated into existing instructional approaches
16	Duffy & Jonassen	1992	Application of Constructivist principles in the field of Instructional Technology
17	Friedlander	1993	Need for experimenting with methods of incorporating Instructional Technology by restructuring delivery systems for cost benefits.
18	Stiegmeier	1993	Arrangement of inservice training programmes for effective utilisation of computer mediated resources
19	Askov	1994	Constant changes, high costs, pressure to make rapid decisions, lack of expertise and training, inappropriate instruction, curriculum integration and role changes were found to be barriers for effective of Instructional Technology
20	Albright	1995	Instructional Technology is to be conceptualised not just in terms of computer hardware and software, but also in terms of human skills, resource management, problem solving and instructional settings
21	Anglin	1995	All discussions revealed optimism towards the effectiveness of Instructional Technology
22	Albright	1996	Listed out the rewards, rights and responsibilities that Instructional Technology brought out into the world of learning and teaching
23	Brace & Roberts	1996	University faculties need encouragement, access to technology, training, and supports for enhanced use of technology for instructional purposes

Sl. No.	Author	Year	Findings
24	Furst-Bowse	1996	Instructional Technology is efficiently used for training programmes but need search for new forms of delivery systems
25	Moallem, et al.	1996	Relevance of technology resource teachers and assurance of proper usage of technology by both teachers and students
26	Schmidt	1996	Importance support services, technology support centers and material productions for effective utilisation of Instructional Technology
27	Abel, et al.	1997	Identified themes related to Instructional Technology for teacher preparation and support programmes
28	Nailowfar	1997	Teachers are aware only of common audio visual aids.
29	Sasilekha	1997	Inservice teachers were found to be not aware of different visual aids for teaching English and were following conventional drill method.
30	Sheena	1997	Inservice teachers showed desirable opinions for using educational features for classroom instruction and suggested more widened utilisation
31	Ranjit	1997	Need for conducting rigorous inservice training programmes to develop more positive views to use computers in different areas of instruction
32	Clagett	1998	Teachers reported need of immediate inservice training in multimedia instructional techniques, distance learning methodologies and networking
33	Gabriner & Mery	1998	ICT benefited faculties to attain enjoyment of teaching, access to new sources of knowledge and resources, and development of creativity
34	Imel	1998	Educators can no longer afford to ignore the educational applications of technology, but they must ensure the focus remains on the process of learning, and not on technology

Sl. No.	Author	Year	Findings
35	Richey	1998	Research community has to accommodate the needs and interests of inservice professionals who consume Instructional Technology . Their perceived utility and credibility of Instructional Technology are to be considered for future researches.
36	Spinelli	1998	Instructional Technology awareness is necessary for effective instruction and teacher educators need to revise traditional teacher education contents to include alternative instructions and assessments.
37	Tubbs	1998	Instructional Technology was not limited to computers but included any modernized method or device that assists process of instruction to result in effective learning. Designed a comprehensive Instructional Technology staff development plan.
38	Ambily	1999	Primary school teachers of Kerala had moderately favorable attitude towards activity based instructional strategies
39	Draude & Brace	1999	Instructional Technology use positively affected student learning, interest and satisfaction. Role of faculty and their ability to use Instructional Technology are crucial factors
40	Rackow	1999	Identified Instructional Technology as a catalyst in science teaching in schools. To improve science teaching teachers must continue to be actively involved in the conceptualisation and development of new instructional technologies
41	Sparks & Simson	1999	Designed themes for Instructional Technology courses and training programmes
42	Cherian	2000	Teachers reported lack of facilities and experiences for adopting instructional strategies like activities, constructions, field trips and discussions
43	Chirakkal	2000	Reported a very low awareness about modern instructional approaches and methods among teachers teaching English in schools

Sl. No.	Author	Year	Findings
44	Sangeetha	2000	Desirable opinions about the academic uses of computer were reported, and also identified an emerging need for computer usage among primary school teachers
45	Shyni	2000	Need for encouraging computer education in schools and making teachers competent to cope with recent changes in the field of computer technology
46	Hung	2001	Importance of applying different learning theories in the ICT based instructional contexts
47	Balasubramanian	2002	Urgent need for implementing computer literacy programmes for inservice teachers and longer training programmes to prepare teachers to develop instructional softwares for their students
48	Charalambous & Karagiorgi	2002	Primary school teachers lack an ICT training background. A great demand for urgent and intensive inservice teacher training in instructional dimensions of ICT was reported
49	Beundia	2002	Importance of perceiving curricular initiatives and instructional practices as vital ingredients of Instructional Technology applications
50	Rajagopal	2002	More experienced teachers especially in government schools were not adopting preferred instructional strategies. Necessity for more inservice training programmes was also revealed
51	Joy & Manickam	2002	Teachers' attitude towards the use of computers became more favorable with increase in the awareness about use of computers in education
52	Rasku-Puttonen, et al.	2002	Importance of research and developments on pedagogical novel practices in inservice teacher training programmes for adopting ICT based instructional environments
53	Swamy	2002	Teacher educators and inservice teacher training programmes should recognize the skills and needs required for today's instructional process based on information technology.

Sl. No.	Author	Year	Findings
54	Ushadevi	2002	Immediate need for orienting the inservice teachers in Information Technology skills
55	Al-Bataineh & Brooks	2003	Identified current needs and challenges related to ICT based educational systems. Effective leadership, skilled trainers, assessment of learning effectiveness, technical assistances, ongoing financial supports and supporting policies were the identified themes
56	Baker	2003	Linkage to cognitive demands, validity, analytical approach, content quality, appropriateness to learner and multi-task oriented were identified as minimum features for technology-enhanced assessment. Placing learner and learning in the heart of technology-based instruction is to be major concern.
57	Andrea	2004	Low level ICT competency among teachers and need more inservice teacher training programmes on ICT
58	Angeli & Valanides	2005	Need for culturally bound or situated instructional design approaches, that consider the school context and teachers' epistemological beliefs and experiences are to be more considered in ICT based instruction
59	Hennessy, et al.	2005	A typology of proactive and responsive pedagogic strategies for mediating pupil interactions with ICT was defined
60	Kirkwood & Price	2005	It is not technologies, but educational purposes and pedagogy make students how to work with ICT and benefit them.
61	Unwin	2005	Emphasis on ICT for education, integration of ICT within the whole curriculum, locally relevant and produced ICT content, and integration of preservice and inservice training were suggested.
62	Burnett, et al.	2006	Emerging need for making primary school teachers to be equipped with latest digital technologies and to promote new kinds of literary practices in the classrooms through production of new digital texts

Sl. No.	Author	Year	Findings
63	Carmichael & Procter	2006	More time and training are required for inservice teachers to make sense of new ICT practices
64	Chaudhary	2006	Teachers could facilitate ICT based learning process by building awareness on contextual issues, more theoretical conceptualisations and arranging more environments for individualised instruction
65	Lee	2006	Inservice teachers are to be trained well to understand the rationale and philosophy of ICT to cater for individual differences among pupils
66	Passey	2006	Teachers are to be aware of uses of ICT resources matching social, behavioural, emotional and cognitive contexts of their pupils
67	Postholm	2006	Teachers need to be trained to determine when and why ICT should be used, and also how it can be integrated in proper instructional situations
68	Braund & Reiss	2006	Current science education is too routed in the science laboratories and substantially greater use needs to be made 'out of school' sites for science instruction in schools
69	Su	2006	Importance of planning classroom instruction considering the number of students, mixed levels of proficiency, limited teaching hours and available resources
70	Stemler, et al.	2006	Importance of theoretical knowledge for teachers for dealing with practical issues in classrooms
71	Tan, et al.	2006	Need for inservice training for teachers on new forms of technological advancements like data logging that can be utilised in instructional situations

2.2 STUDIES ON EFFECTIVENESS OF INSERVICE TRAINING PROGRAMMES

International Bureau of Education & UNESCO (1962) compiled and analysed surveys conducted in 81 countries on further training facilities for primary school teachers in service and identified that further training for primary teachers were being organised in almost all countries. In the case of India, positive status of initiations for inservice training programmes for primary school teachers was reported.

Nair (1963) conducted a study to investigate the scope of in-service training programmes for high school teachers in Kerala. The study analysed the objectives, planning, implementation, content etc of the on-going in-service training programmes for secondary school teachers of Kerala. The study identified and recommended measures for improvement of the quality of on-going inservice training programmes for teachers. Proper planning and more participation of teachers were recommended.

Salam (1970) conducted and inquiry into the in-service training programmes for primary school teachers in Quilon District. The study was conducted among seventy teachers from three educational districts who had undergone the in-service training courses. Both the instructors and teacher participants had favourable opinions regarding the inservice courses. Teachers reported that inservice course for one-month duration would be more effective. Teachers expressed their intention for participating in such courses once in three years. Teachers were not favourable of conducting courses in summer vacation. The objectives and nature of the conduct of the in-service training programmes organised by State Institute of Education were investigated in the study. Teachers reported that they participated in the inservice training programmes to keep abreast of the modern developments in the field of education. Urgent need for proper planning, implementation and evaluation of the inservice training programmes was suggested in the study. The study recommended that all teachers are to be motivated to undergo more number of in-service training

programmes. The study inspired to take measures for making the inservice training programmes more effective.

Kurup (1974) conducted a study to consolidate the opinions of secondary school teachers of Kerala on the effect of in-service training programmes they attended. The study was conducted to special reference to teachers teaching English in secondary schools of Kerala. The study discussed the difficulties faced by teachers in teaching English and the benefits that teachers expect from participating in inservice training programmes. The academic and training qualifications in English teaching were found to be lack among the teachers who taught English in high schools. The study reported that teachers look forward for enrichment of their content knowledge through inservice training courses and they are in need of more in-service education programmes. Need for more proper planning, evaluation and monitoring follow-ups of inservice training programmes were revealed from the study. Assurance of participation by more number of teachers in future inservice training programmes was another recommendation of the study.

Samuel (1979) conducted an investigation into the organisation of the in-service education programmes for Hindi teachers in Kerala. The study was conducted among 300 teachers. One of the main objectives of the study was to enumerate the difficulties felt by the participant teachers. The study also inquired about the status and effectiveness of the on-going inservice training programmes. The teachers suggested at least one month as the duration of inservice courses. Teachers also suggested inservice training once in three years. Teachers expressed negative attitude towards conducting in-service courses in vacations and holidays. Teachers demanded for more number of courses in future. Project method, micro teaching, team teaching, heuristics and Dalton plan were some the themes suggested by the teachers for including in inservice training programmes in future.

Barham et al. (1980) conducted a detailed study of the teacher training programmes in Jamaica using historical documentations, statistics and a questionnaire survey. A special reference was given for adaptation of present inservice teacher training programmes to meet the needs of teachers who are in service in non-traditional

settings. The study concluded that teaches should be trained to work in both formal and information settings. Higher admission standards and salaries were other recommended factors for obtaining better teachers.

Makurat (1980) in a study indicated and stressed the need and importance of high quality inservice training programme for mathematics teachers of Wisconsin, United States. He conducted a detailed investigation about inservice education for mathematics teachers. The study criticised that inservice training for mathematics teachers were to be more responsive and potential. The first part of the study surveyed opinions on mathematics teachers' inservice needs and the second part investigated current inservice activities for 'mathematics teachers. Inservice training needs were identified in the areas of problem solving, mathematical applications, checking results of mathematical problems, mathematical approximation and estimation, computation, geometry, measurement, using graphs, charts and tables, probability, computer literacy and instructional methods. The study concluded that the listed inservice training needs of the teachers were not met even after attending the courses. Recommendations based on the study were made for improving mathematics inservice training programmes in Wisconsin.

Sbeha (1980) conducted a critical study of in-service courses in Geography for the secondary school teachers of Kerala. 300 teachers hailing from 10 educational districts participated in the study. The major objectives of the study were to identify the difficult areas in Geography teaching, to assess the effectiveness of inservice training programmes, to evaluated the usefulness of inservice courses to improve subject matter competency and to collect opinions of teachers regarding the necessity, duration, resource persons of the courses. The study reported that the teachers were of positive opinions towards the inservice courses and also they were in need of more courses. They demanded to increase the duration and number of inservice courses. Teachers demanded for more competent resource persons for the inservice courses in future.

Hendricks and Sloan (1981) conducted an experimental study to assess the impact of inservice programmes on the concerns and needs of secondary school teachers

toward mainstreaming. Questionnaire was administered to 127 experimental and 127 control teachers. Treatment consisted to an inservice programme on mainstreaming conducted by an in-house consultant. The pre and post-treatment questionnaire included information an demographics, mainstreaming needs, and teacher and administrator concerns toward innovation. Results revealed that the inservice training programme had little or not impact on the teachers' concerns or needs regarding mainstreaming. Findings supported a previous research that has indicated teachers' negative attitudes toward mainstreaming. The study concluded with a recommendation of a more prolonged approach and training in the area of mainstreaming. Implications touched upon the importance of considering individual needs of teachers in the next inservice training programmes.

Smoak (1981) critically assessed the training and professional development needs among South Carolina vocational educators. The sample of the study included 1270 vocational educators, 305 administrators and 36 teacher educators. The study was designed to identify the areas of skills that are used on a day-to-day basis by vocational teachers, those for which they receive training either prior to certification or in the course of inservice training programmes, and those which are used and felt to be important to the teaching process but for which little or not adequate training was provided to the teachers. In order to obtain information from different perspectives, three respondent groups were surveyed with a rating sheet listing 98 areas of skills. Most of the skills listed in the survey were responded as needs of teachers. There was many more skill areas in which teachers felt a need for themselves than were perceived by either teacher educators or administrators involved in the study. All groups indicated that inservice training programmes opportunities existed to a moderate extent, but that they were dissatisfied with the quality and quality of the training programmes. Teachers also said that inservice conferences were too far away and they have no professional leave. The study finalised with a scope that the identified skills ratings and perceived needs will be used by the authorities for betterment of future inservice training programmes for vocational education teachers in South Carolina.

Crabtree and Baum (1982) conducted a descriptive study of all and part-time home-economics teachers in Florida with special implications for inservice education. Data were gathered to provide a descriptive profile of educational, employment and experiential backgrounds of full and part-time home-science teachers in Florida. Those data were intended for use in designing inservice activities to provide professional development and more relevant inservice programmes. A survey tool was administered to 339 teachers in 6 Florida countries and gathered demographic information, information on current home economics adult programme involvement, etc. Inservice training needs of teachers were gathered and analysed specially in the study. In the second phase of the study the Delphi technique was used to identify and assign priorities to specific needs to be met through home-economics programmes, as perceived by 54 teachers. Data analysis showed that home-economics programmes do not reflect comprehensive coverage of all aspects of consumer and homemaking education. Teachers perceived the needs of their constituencies as broader than the programmes being offered. Ares of need in which teachers desired additional inservice training programmes included in the areas like nutrition, money management, child and family development, and sewing. The study also reported that teachers were receptive to variety of modes of inservice educational delivery systems.

While designing and implementing a programme namely English for Special Purpose (ESP), Kennedy (1983) identified that the over concentration of learner training needs had led to neglect of teacher needs, particularly in the case of teacher training programmes. Study recommended the ESP programme as a solution for the problem. The concept of ESP for teachers revealed the need for research into the language difficulties experienced by teachers participated in English language teacher training programmes. The study also recommended that course design of training programmes was to be adjusted to suit the conceptual and linguistic needs of teachers in each courses.

Raj (1984) conducted an investigation into the in-service education programmes for Malayalam teachers in the high schools of Kerala. The study was conducted among

200 teachers from 100 schools, who had participated in inservice courses conducted by State Institute of Education, Kerala. The main objectives of the study were to find teaching areas felt as difficult for teachers, to evaluate the usefulness of inservice education programmes, to examine their adequacy and to enumerate the potentialities of in-service training programmes. The study identified some lessons in textbook as 'hard spots' for teachers. The majority of teachers reported that they have benefited from the training in discussion method and explanation method for teaching Malayalam. The study reported that the teachers were in need of more inservice training in methods like story telling, discovery method, problem solving, projects and library-centered methods.

Thankachi (1984) conducted a study on the in-service training programmes for teachers of English of upper primary schools of Kerala. The study critically examined the objectives and conduct of in-service training programmes made available for upper primary school teachers. The study reported that the available in-service training programmes for primary school teachers were not effective. The study criticised that conceptualisation of in-service training including components for planning, implementation and evaluation was not sufficiently developed among the authorities.

Bell, et al. (1986) illustrated programmes of Arkansas College in U.S. Serving a largely rural area. Arkansas College had first hand experience with the problems and inservice training needs of teachers in rural schools. Due to the special sensitivity towards the inservice training needs of school teachers, the college had begun a 4-year programme of dual certification that will prepare teachers for elementary and special education assignments. The authors were well confident to state that the 'dual certification training programme' for teachers will not only increase the regular teacher's effectiveness but also to work better with the students in mainstream as special education teacher. Such teachers will know what the regular education teacher expects from the regular student and will better understand how to make the transition between regular and special education experience. A sample of the academic programme check sheet was also attached in the study.

Potti (1986) conducted a study on in-service training needs of mathematics teachers for teaching Modern Mathematics introduced at secondary school stage. The objectives of the study were; to find out the details of in-service training programmes attended by the mathematics teachers in secondary schools of Kerala, to assess how far the courses were useful for teachers, to identify whether there is need for orientation for teaching the revised syllabus and to identify the themes for future inservice training programmes. 115 teachers from the Trivandrum district participated in the study. The study reported that the index of total number of teachers attending inservice training programmes was increasing. Teachers preferred courses with duration from one week to two months. Teachers reported that the inservice training programmes are very much useful for classroom instruction and professional growth. Inservice training programmes in content of Mathematics, modern methods of instruction, and preparation of audio-visual aids were suggested in the study.

Samuels and Price (1986) summarised results of a project for design effective inservice training programmes for regular and special schoolteachers in Alberta, Canada. Teachers who had participated in inservice training programmes offered by the Government Learning Centre were the sample of the study. The suggested the importance of better identification of individual needs of teachers in planning future inservice training programmes. The review of related literature of the study revealed a lack of empirical data on the knowledge, skills and competencies needed by the special schoolteachers, and suggested that regular schoolteachers may need different competencies than special schoolteachers. But, the training needs assessment survey revealed consistencies across school systems, grade level taught, and regular and special education in terms of preferences for inservice delivery. Survey questions regarding self-ratings of competences indicated that special education teachers were more confident than regular schoolteachers in their competence and training. The study suggested for follow-up studies in future to validate the relevance of the knowledge, skills and competencies targeted in current inservice programmes. Consideration of several planning and delivery issues such as scheduling and

incentives to maximize participation of teachers in inservice training programmes was another suggestion of the study.

Butala (1987) conducted a critical inquiry into inservice training programmes conducted by secondary teaches' training colleges of Gujarat State. The study found that majority of teachers was not covered under any inservice programmes. No audio-visuals aids were employed in the training programmes. The inservice educational programmes concentrated mainly on school curriculum, no general affairs were included. The study also found that a very few training colleges focused on areas like Instructional Technology and modern trends in education. The teachers reported that they all are in favour in inservice training programmes organised in working days only. The second preference was for summer vacation camps. The centers of organization were found to be with inadequate facilities of the study was, the majority of teachers considered an attendance certificate to be a proper incentive for participation, because that attendance was considered as a necessary qualification for the purpose of their promotion. The study also reported the lack of proper assessment of inservice training programmes. The teacher participants reported that major achievements by the participation in inservice training programmes were up dating of teacher and content area, and developing of teaching skills. The study recommended special training programmes for the resource personnel of inservice training programmes.

Singh (1987) conducted an experimental study of the effect of remedial instructional microteaching course on the instructional competence of primary school science teachers who had participated inservice training programmes. The investigator also devised a *Remedial Instructional Micro-teaching* (RIM) course for improving physical science teaching in primary schools. The study also analysed problems of evaluation of effectiveness of the remedial courses. The skill of probing questioning, skill of explaining and illustration with examples and skills of experiment demonstration were specially considered in remedial courses. The duration of the entire experimental treatment in the programme was ten days at the rate of six hours per day. The effectiveness of the remedial course was tested by

computing pre-treatment scores and delayed post-treatment scores by using the 't' test. The RIM course was found to be effective in improving the skills of explaining and illustration with examples. The course was found to be effective in improving skill of probing questioning of both more or less experienced teachers. The study reported that teachers sustained the science instructional competencies strengthened by the RIM course even six weeks after the training programme.

Panchbhai (1990) conducted a survey of reactions of primary and secondary school teachers of western Nagpur regarding the comprehensive inservice training programme for the guidance of teachers under the National Education Policy (NEP) – 1986. The survey was an attempt to study the views of the teachers regarding the inservice programme launched at the national level for schoolteachers based on NEP. The study gathered views of teachers regarding the new dimensions and the thrusts in the NEP and their roles in the successful implementation of the programme of education. Majority of the teachers, about ninety percent, from primary and secondary schools expressed the common opinion that the negative attitude of the teachers towards the inservice training programmes had not changed. They also reported the non-co-operation and lack of motivational background from the part of their head of the institution. The study identified teachers' lack of professional gain in attending in inservice training programmes. The study reported that the teachers were not genuinely interested in the inservice education programmes. The investigator suggested that inservice education must be made compulsory for teachers and must be made more interesting so that teachers welcome it. Teachers should be more motivated for better participation in future inservice training programmes.

Pillai (1992) conducted a study on the role of DIET in promoting in-service education for primary school teachers. Compulsory in-service training programmes for all primary school teachers, strengthening of in-service training programmes organised in DIETs, equipping DIETs with more infrastructures and facilities, more intensive training for trainers, well organised and continuous follow-up programmes for the in-service training programmes provided by DIETs and evaluation/

monitoring by State Institute for Education were some of the suggestions cited in the study.

Sharma (1992) critically studied about the impact of inservice training programmes on the professional efficiency of postgraduate trained teachers working in Kendriya Vidyalayas of Lucknow region. The survey method was adopted for inquiry. A sample of sixty sciences postgraduate teachers and a few teachers of humanities was taken in the study. The tools used were Information Schedule, Questionnaires and Interview Schedule prepared by the investigator. Percentages were calculated for analysis. Graphical and pictorial presentation was done while treating the data. It was revealed that teachers in the age range of forty-five to sixty years or with experience of more than fifteen years were having less and unproductive impact of inservice education. Teachers having lot of non-instructional jobs were not able to justify themselves fully as teachers as far as their teaching responsibilities were concerned. Eight-five percent of teachers could get their concepts in their subject areas got cleared through inservice education programmes. Eighty-nine percent of teachers could get opportunity to discuss about the syllabus they taught. Seventy-five percent of the teachers could find a measurable change in the performance of their students after attending the training programmes. Majority of teachers felt confident and competent due to the participation in inservice training programmes. Fifty percent of the teachers agreed with the proposals in the new educational policy. Regarding the defects in the conduct of inservice training programmes, the maximum number of teachers listed defects such as unsuitability of time, insufficiency of incentives, lack of expertise, and lack of follow-up sessions.

Boyd (1993) conducted a detailed study about teachers' staff development. He suggested that for success of teaching staff development programmes, the organisers must attend to teachers' affective and humanistic needs. The paper presented ideal strategies for staff development that based in affective and humanistic needs. The following certain suggestions made for improving staff development programmes; (i) provide instructional activities that promote practice development and the maintenance of mental emotional development of teaching staff (ii) offer ways to

increase teacher governance like quality circles and (iii) offer activities that enhance collegiality adopting methods like team teaching, cooperative research, joint authorship, and mentoring. The investigator insisted that staff development programmes to be have a significant and positive impact on teachers and the programmes must be continuous and integrated processes incorporating attention towards personal and humanity needs of participants, particularly the needs for belonging and recognition of professional status.

Girija (1993) conducted a study to find out the level of awareness of primary school teachers about different strategies for developing written communication skills. The study also gathered opinions of primary school teachers about the sufficiency of present practices in developing written communication skills among primary school pupils. 250 teachers from Thiruvananthapuram and Alappuzha districts participated in the study. The study revealed that although the teachers are aware of strategies of developing written communication skills, they fail to practice them in real classroom situations. The study reported lack of enthusiasm among primary school teachers to attend inservice training programmes. Majority of the teachers who had attended courses had the opinion that the inservice training programmes helped them in understanding new instructional methods and strategies. The study commented that teachers were really lacking proper inservice training in varied instructional strategies. Majority of teachers were found to be aware of four basic language skills- LSRW- Listening, Speaking, Reading and Writing. Comparatively a good number of teachers gave preference for teaching writing skill. The study concluded that the primary school teachers are lacking proper inservice training as regarding the effective implementation of different strategies in the areas of handwriting, spelling, written grammar, style and written comprehension.

Gafoor (1996) studied about functioning and work efficiency of the DIETs in promoting preservice and inservice teacher education. In the case of inservice training programmes provided by DIETs somewhat satisfactory conditions were reported with regard to the training methods and number of participants. But unsatisfactory conditions were reported in the aspect of duration of courses, number

of courses in each year, planning of inservice courses, evaluation of participants' works, evaluation of course effectiveness and follow up programmes. The study also reported that no DIET had conducted any study for assessing the effectiveness of inservice courses they had provided.

Rayifa (1996) investigated about the constraints in the implementation of Minimum Levels of Learning Programme in Thiruvananthapuram District. The study reported that experienced teaches were not seen interested to extend their sincere involvement in the novel programme. Reading materials like Text Books and Hand Books were not provided in time. Lack of awareness of the programme details, inefficiency of infra structure, and association with the traditional style of classroom instruction were the other constraints felt by inservice teachers.

Agarwal and Kamalesrao (1997) conducted a study on the quality of in-service teacher training programmes for primary school teachers in Haryana and Uttar Pradesh. The study gave special reference for training programmes under DPEP and *Special Orientation Programmes for Primary Teachers* (SOPT). The study was formulated to assess the quality of in-service teacher training programmes in relation to coverage of content and transactional strategies and to ascertain the extent of transmission loss in training programmes. Observation schedules were adopted for the study. The major findings of the study were (i) considerable amount of content was not transacted in the inservice training programmes for resource persons, (ii) further content transmission loss was observed at teachers' training levels, (iii) training programmes gave emphasis on transmission of information and knowledge rather than on instructional strategies and activities (iv) training were mainly given through lectures and discussions (v) activity strategies, group works and demonstrations were less adopted, and (vi) DPEP training programmes , when compared to the SOPT programme provided better quality of training in terms of more coverage, adoption of child entered activities and less transmission loss.

Arora & Singh (1997) investigated about seven innovative modes of in-service teacher training projects conducted in India, viz., *Shikshak Samakhya Pariyojna* (Madhya Pradesh), *Eklavya, Shiksha Karmi Project* (Rajasthan), the *Lok Jumbish*

Project (Rajasthan), *Facilitating Excellence in Effective Leadership* (FEEL)-(Karnataka) and NCERT's Teleconferencing models *Programme of Mass Orientation of School Teachers* (PMOST) & *Special Orientation of Primary Teachers* (SOPT). The study suggested many features that were found to be effective in the investigated projects for incorporating in future in-service training programmes for in primary school teachers. Effective training of trainers, importance of reflective thinking, importance of action research, and ensuring of avoiding transmission loss were some of the ideas suggested.

Barak and Waks (1997) designed, conducted and evaluated a longitudinal in-service training programme for mathematics, science and technology schoolteachers in North Israel. The study was conducted to find the effectiveness of the three-year on-going in-school tutoring inservice training programme. Deriving practical solutions for the inservice training needs and issues of schoolteachers were the major concern of the three-year longitudinal study. A need assessment was also conducted so as to design the project. 213 teachers from 17 schools were involved in the programme. The study strongly criticised that the ongoing inservice training programmes were focused merely on narrow aspects of teachers' activities without adequately addressing varying instructional techniques. The study reported that majority of teachers lack knowledge how to organise and implement instruction. The knowledge of instructional methods among inservice teachers was found to be outdated. Inservice training programmes in future are to designed so as to make teachers competent enough in organising instruction through setting goals, collecting and self-preparation of learning materials, schedule design, identifying problem areas in subject matter and preparation of varied teaching devices. The study identified systematic organisation of lessons, confronting the unique needs of pupils, implementing multi level instruction, practical preparation of experiments, demonstrations and computer use, evaluating pupils' performance, providing proper feedback and instituting teamwork as components of proper implementation of instruction; and are to be included in future inservice training programmes for teachers. The study recommended conduction of effective inservice staff development programmes that create opportunities for teachers to work

collaboratively with their peers and educational experts for adopting new instructional practices successfully.

Beauchamp (1997) developed an INSET model 'within the school' for empowerment of current practices of non-specialist music teaching in the primary schools of England and Wales. The study was conducted among forty primary school teachers as representatives of primary school teachers in terms of age, age group taught and teaching experience. The study examined attitudes of teachers to the current strategies and reports on the use of audiocassette tapes as an alternative source for INSET, which supported the teachers through an active involvement within classrooms. Low self-esteem of inservice teachers and insufficient access to in-service training, which help them to use their abilities constructively, were reported in the study. Importance of perceived training needs and reflections of inservice teachers, use of audio video lessons for inservice training, written and print support materials, clear understanding of terms used in National Curriculum and more adequate education in fundamental disciplines were suggested in the study for inclusions in future inservice training programmes in any subject. The study suggested for implementation of more number of *teacher-active in-house inservice training programmes* in schools in other areas of curriculum.

Gupta (1997) analysed the inservice training needs of primary school teachers and identified the importance of enhancing the knowledge of teachers in the emerging concerns of primary education. With the assistance of Special Orientation Programme for Primary Teachers (SOPT) that was sponsored scheme of MHRD, an inservice training was given to 183 primary school teachers of Dehradun district and 142 primary teachers of Haridwar district. The training was reported to be very effective. The key strategy of the in-service training programme was a self-instructional package that was activity based and included exemplars on various real situations drawn from different school subject areas. The efficiency of multimedia and self-instructional approach in inservice training for primary teachers was proven in the study.

Institute of Education Sciences (1997) conducted a survey among inservice elementary teachers in U.S. Public schools and identified that teachers were in need of inservice training in nutrition education. The study also identified that teachers who had undergone inservice training were more likely to use appropriate instructional materials that were up to date and age than teachers with no training. The positive impacts of previous inservice teacher training programmes were clearly revealed in the study. Teachers reported that they are very much interested in attending more inservice training programmes.

Mayadevi (1997) studied about the role of DIETs in promoting qualitative improvement of teaching in primary schools in Kerala. The inservice teachers reported that the trained instructional methods were more theoretical and not practical in real classroom situations. Time consuming and wide syllabus were the main constraints felt by the teachers for implementing the instructional methods.

Phalachandra (1997) analysed the inservice training needs of primary school teachers and implemented an inservice training programme through interactive video technology. The technology adopted one-way video and two-way audio communication. The study reported that use of mobile training strategy and school based in-service education of teachers did not require teachers to move away from their place of work. The centralised inservice training strategy is found to be ineffective when inservice training is to be provided for a large number of teachers. The study also reported that 'cascade model' of in-service training, which is currently the pre-dominant modality, resulted in huge 'transmission loss' down the line from the experts at the national level to the resource persons at the level of different training venues. The interactive video technology inservice training programme assured coverage of maximum number of teachers during a same training cycle with same message and avoidance of 'dilution' in quality of training delivery. The reactions of the participant teachers in the programme indicated that teachers found the new training methods and inputs were effective and very informative.

Sabri (1997) collected opinions of schoolteachers so as to assess the effectiveness of in-service training programmes in Palestine. The study reported that in Palestine during last 30 years there was lack of inservice training programmes for upgrading teachers' skills and competencies. The study was conducted among 600 school teachers participated in a national inservice teachers training programme. Questionnaire was used as evaluation instrument. The participants of the inservice training programme reported that the concept of lesson planning as the most needed competency. The study recommended that the in-service teacher training programmes should place more emphasis on practical issues in classrooms and instructional techniques using a variety of training strategies and programmes. It was also found that teachers from different school levels might need different training programmes. The experience of teachers was also suggested as criterion for planning different training programmes for different strata of inservice teachers.

Thankamani (1997) assessed the training programmes provided for lower primary school teachers by Block Resource Centers of Wayanad District.200 teachers participated in the study. The study reported inservice training programmes are to be conducted on the themes subject wise content analysis, and guidance for preparing learning materials. Teachers expressed positive opinion towards the use of inservice training programmes for improving their teaching competence.

Fine, et al. (1998) prepared a detailed description about a research-based professional development inservice training programme designed by the North Central Regional Educational Laboratory of Illinois, United States. The training programme directed the participants the proper ways for applying Instructional Technology. Previous experience of Internet using and other computer-related technologies were the requisites for attending the training programme. The training programme composed of six sessions of two-hour duration. The engaged learning; identify the role of technology in instruction, refine existing lessons and design new lessons; design and use a planning framework to analyse design technology-supported lessons; analyse video, print and on-line instruction process; search and list out instructional resources available on the internet; and participate in collegial

networks. The sessions for mutual sharing of ideas among the participants and collegial feedback were arranged after each unit of training. A 'Facilitator's Guide' which included comprehensive notes on the course was also supplied to the participants. Aspects of professional development, main points of session-discussions held in the whole training programme, tips to support facilitation, suggested new syllabi, and resources and references were also included in the 'Facilitators Guide'. The study concluded that the training programme can be cited as demonstration of an ideal inservice training programme in recent Instructional Technology advancements.

Nath (1998) developed a self-instructional package for secondary school biology teachers for their in-service training. The themes included in the package were psychological considerations of learners, planning for teaching Biology, pedagogical analysis, instructional strategies, media and materials for teaching Biology, strategies of evaluation and classroom management. The package was found to be effective and suitable for providing in-service learning of secondary level Biology teachers

Riley (1998) highlighted new ways to improve teachers' quality in United States. The study was titled as, "The challenge for America: A high quality teacher in every classroom". The study was prepared by following a national search for models of excellence that addressed the inservice training needs of teachers at every stage of their career. The study explained that an outdated teacher training and support system couldn't be allowed to frustrate the hopes and dreams of teacher society. The role of local school districts in reshaping and inservice training of teachers was discussed in the study. The study also discussed the importance of incentives to keep the good teachers already in the system and offer them opportunities to keep on learning.

Aggrawal (1999) analysed the trends in access and retention in primary schools in DPEP districts. The study identified teachers as the most important resource for primary education and insisted a systematic effort to empower primary school teachers through intensive and repeated in-service training. The study also

recommended on-site academic support and involvement of teachers in the design and development of textbooks and other instructional materials. Inservice training for primary teachers was addressed as a continuous effort to reinforce pedagogical skills of teachers. Multi-level instruction and activity-based instruction were considered with special reference for designing inservice training programmes for primary teachers in future

Garcia (1999) critically analysed the different ways for helping teachers for increased use of multimedia Instructional Technology in their classrooms. Series of staff development workshops were identified as the best solution for the issue. The investigator designed an inservice staff development training incorporating multimedia Instructional Technology approach. The twelve-week programme focused on staff development of computer-related technology and found that the teachers gained expertise.

Nagpal (1999) conducted a study to inquire about the index of Human Resource Development (HRD) climate in District Institute of Education and Training (DIET) centres, where mainly the inservice training programmes for primary teachers are being conducted. The study insisted the HRD climate as something very essential element for effective inservice training programmes. Responsibility, risk-taking, top-support, feedback, supportive climate, openness, communication, trust, team-spirit and collaboration were the chief components of a HRD climate. The study was confined to 154 academic faculty members of 16 DIETs of Punjab, Haryana, Rajasthan, U.P, and Delhi. Analysing responses of difference samples, the study reported that many DIETs were lacking the basic infrastructure facilities required for the professional growth of academic staff. The study also reported that many State Governments had posted secondary school teachers in DIETs, who had no working experience in the area of elementary education. The study revealed that only 5 numbers of DIETs were having conducive HRD climate and 8 numbers of DIETs were found to be having very low HRD climate.

Chacko (2000) investigated about the availability and utilisation of educational media during inservice training imparted by Educational Technology faculty of

DIETs in Kerala. ET faculties of 8 DIETs and 400 primary school teachers who attended inservice training programme participated in the survey. The study reported that the inservice training programmes on operating technological equipments were far below the expected level. The study suggested to improve the quality of inservice training programmes on Educational Technology for primary teachers.

Johnson et al. (2000) illustrated a differential distribution of opportunities for inservice training of science teachers in post-apartheid South Africa. The study argued that northern/western ideas about teacher change and instructional practices were poorly suited to modeling practices and challenges for those countries, which are historically disadvantaged. Teachers working in economically developing countries were constrained by a somewhat different set of circumstances, have different perspectives on the work they do, and need different in-service provision to those in developed countries. Needs for modest steps in classrooms and in inservice teacher training were highlighted in the study. The study illustrated an in-service training programme on translation activities for teachers working in historically disadvantaged schools. The in-service training adopted only modest steps in classrooms so as to make teacher competent to work within the existing support infrastructures. The study encouraged the in-service teachers to extend their instructional methods and improve their content knowledge rather than demanding better conditions of services, salaries, resources, school buildings etc. All efforts were made to concentrate on what adjustments teachers can make within the systems in which they find themselves.

Yadav (2000) conducted a study about impact of primary school teachers' inservice education on classroom transaction, and as part of review of related literature of that inquiry, he had cited another study titled 'Teacher Policy, Training Needs and Perceived Status of Teachers', which the same investigator had done jointly with other experts under the banner of NCERT, New Delhi. That combine project study revealed the lack of academic support and incentives to teachers, inadequate facility for training, use of inappropriate approaches to the transaction of curriculum, etc.,

affected the efficiency and effectiveness of inservice training programmes which in turn affected the performance of teachers in their schools.

Ahlberg, et al. (2001) created and analysed a shared virtual environment for collaborative knowledge building in environmental education for inservice teachers in the form of a database program called 'Knowledge Forum'. The needs and problems of inservice teachers regarding environmental education were discussed in the forum. Fourteen schools from different parts of Finland were accepted to take part in the project and twelve schools participated. There were four main face-to-face meetings for discussions and training. In these meetings there were lectures about environmental education, collaborative knowledge building, training to use the 'Knowledge Forum' and discussions about the felt problems and future plans. Improvement of schoolyards, formation of eco friendly schools, process of composting, recycling of paper, saving energy etc were some of the themes discussed in the 'Knowledge Forum'. Teachers reported that the idea of knowledge building was an excellent one and they really benefited from using the 'Knowledge Forum' and it had potential in all kinds of inservice education if the cost of using is lowered, especially when working from their home the costs of connection have to be met by the user.

Bezzina and Camilleri (2001) analysed the status of professional development of inservice teachers in Malta. The study identified a mismatch between preservice education and inservice education since policy decisions are purely politically motivated rather than research based. A continuum comprising pre-service, induction and inservice professional development for all teachers was recommended in the study. Needs of schools, teachers and pupils, and school quality are to be more considered in designing inservice training programmes. Classroom-based and school-based researches are to be promoted among inservice teachers. The study reported that the inservice teachers are in need of training on inclusive education and gender equality in classrooms but they get a very few opportunities for that. The study suggested that Malta education has to get away from thinking of number and

qualifications of teachers and march towards the quality of inservice teacher education and educational practices in schools.

China Education and Research Network (2001) emphasized the importance of upgrading education of inservice teachers with qualified certificates. The certificate courses were conducted beside the conventional non-degree education of in-service teachers for continuing education. The certified training, titled Training Basic Skills of Primary School Teachers was mainly on strengthening political thoughts, ethics, educational theories and teaching abilities.

Joerger and Bremer (2001) conducted a detailed critical analysis of teacher induction programmes in the state of Ohio, United States. The study was mainly designed to find out the reasons for teacher shortages in the state. Causes for leaving teaching profession included school staffing actions, personal reasons, pursuing another job and dissatisfaction. The interesting finding in the study was that teachers who were prepared in traditional teacher education programmes and attended inservice education programmes ensured increased levels of student achievement and professional satisfaction. The study reported that beginning Career and Technical Education (CTE) teachers were in increased pressure to have a wide range of knowledge and skills. Research on the experiences, concerns and needs of teachers leaves little room for controversy; the majority of beginning CTE and non-CTE teachers requested to arrange more teacher induction programmes. The investigators suggested teacher induction programme as the only solution to retain and further developing the skills and professional satisfaction. The study was concluded with a comment that inservice training programmes will reduce chances for leaving teaching profession and increase professional satisfaction.

Sathyanesan (2001) conducted a study to assess the effectiveness of in-service training programmes for teachers and headmasters by DIETs. The study was conducted as a normative survey among 784 schoolteachers, 210 headmasters and 36 members of DIET faculty. The study adopted questionnaires, interviews and observation schedules for data collection. The study evaluated the in-service training programmes organised by DIETs with special reference to need assessment,

planning and implementation, training techniques and strategies, and monitoring and evaluation. The study revealed that most explored themes in the in-service training programmes delivered were learner-centered approach, objective-based instruction, environmental based approach, and teaching of mother tongue. The study also reported that action research and teaching of Hindi were the least covered topics in the inservice training programmes for teachers. The study also reported that the rate of teacher participation in the in-service programmes were not up to the expected level due to lack of administrative power to DIETs for giving compulsory directions to the school authorities, lack of motivation among teachers, and lack of long-term planning and monitoring of data bank of inservice teachers. There was no systematic arrangement in DIETs for extending the resource support to the schools. The study identified that even though the DIET guidelines underlined the importance for need assessment of inservice teachers, the DIETs haven't given sufficient importance for need assessment and need-based inservice training programmes.

Schnackenberg et al. (2001) conducted a need assessment study among primary school teachers in Quebec by collecting teachers' perceptions regarding the integration of new information technologies and communications into pedagogical practices in schools. Conduction of interviews was adopted as method for data collection. The study was limited to two Quebec elementary schools. The study revealed that teachers were currently using computers primarily for word processing and to prepare report cards. Concerning pedagogical and technical supports, the general consensus among the teachers was that the current inservice training and supports did not meet their instructional needs. Teachers were found to be very much dissatisfied with the on-going inservice training programmes and they got a very little follow-ups and monitoring. But the teachers expressed a high interest to receive inservice training on how to better incorporate technology into their day-to-day instructional practices.

Sreedevi (2001) conducted a study to know the attitude of primary school teachers of Kerala towards the inservice training programme based on newly revised school curriculum. 300 primary school teachers from Kottayam, Ernakulam and Thrissur

districts participated in the survey, which adopted an attitude scale for data collection. An unfavourable attitude of primary school teachers towards the in-service training programmes was reported in the study. Majority of teachers responded that the available in-service training programmes did not improve their creativity and the programmes were ineffective to improve their instructional skills. In training programmes no sufficient opportunities for activity-based training were available. Activities given to teachers in the training programmes were reported to be very poor to cope with real classroom situations. Teachers also pointed out that no training is given to handle audio visual aids and to make low cost teaching learning materials. Majority of teachers have complaints that after training they did not get any opportunity for regular contact with resource persons, faculty members of DIETs and BRC trainers. Teachers also reported that they lack clear guidance about how continuous and Comprehensive Evaluation is possible and how far learning experiences can be stated as effective.

Subrahmanian (2001) conducted a study on the impact of DIETs on the work efficiency of primary school teachers of Kerala State. The study was conducted among 400 primary school teachers. The study assessed the work efficiency of teachers after undergoing inservice courses in DIETs with regard to content enrichment, class management, evaluation, and community participation. The study reported that after attending the in-service training programmes teachers have positive impacts on their work efficiency in schools.

Angelides (2002) criticised the existing patterns of in-service training programmes for schoolteachers in Cyprus and argued that the important factor behind the unsuccessful attempts in training programmes was the limited attention given to the method of approaching the inservice teachers. The study reported that a good number of inservice training programmes, seminars etc are being conducted by the Pedagogical Institutes but those activities will help only to promote individual learning without connecting it directly to practice or live world problems. An alternative way namely, ‘Collaborative Approach’, for helping inservice teachers to improve their instructional practices is suggested in the report. A collaborative

discussion with an inspector, a superior or an academic scholar is the key recommendation in the study. The approach also includes action researches that encourage teachers themselves to scrutinise their instructional practices and problems. The process seems to enable inservice teachers to understand instructional situations, evaluate the effectiveness of their actions and recommended alternative approaches to improve their practices. The study concluded with optimist view that when teachers work in collaboration with their superiors or university people, their morale goes up and they feel themselves to be better professionals.

Basheer (2002) investigated about the problems and prospects of teaching of environmental studies in lower primary classes. The study was conducted among 400 lower primary school teachers of Kasargode, Malappuram and Palakkad Districts of Kerala state. Majority of teachers have not received sufficient inservice training on EVS teaching in primary classes. Low competency of trainers, lack of assistance from resource persons, incapability of handbooks, low awareness of instructional methods like projects and unsuitable EVS curriculum were reported from the part of teachers as problems for effective implementation of the programme.

Educational Consultants India Limited (2002) compiled 217 research abstracts in Primary education conducted during 1999- 2002 as part of DPEP. Conducting need based training programmes, more training on preparation and use of TLM, preparation and supply of literatures on theoretical aspects for in-service teachers, arrangement of continuous follow up/monitoring after in-service trainings, and orientation on proper instructional planning were revealed as key areas to be considered in future in-service training programmes.

Gupta (2002) conducted a research to discern the causes of low achievement in Kanpur primary schools. The study reported that most of the teachers lack perception of their professional roles. They teach as and when they feel like teaching. The study suggested that sufficient inservice training and compatible management systems need to be developed at local levels. Establishment of a Local Resource Centre to enhance teachers' capabilities and to meet their inservice training

needs was the major recommendation of the study. The study concluded that teachers' inservice training programmes have a definite positive and systematic effect on pupil achievement.

Jiji (2002) analysed the reactions of primary school teachers of Kerala towards Continuous and Comprehensive Evaluation. 450 teachers from Kozhikode and Malappuram districts participated in the study. The study reported the need for providing effective in-service programme for all teachers on CCE. The study also identified the need for ensuring proper functioning of School Resource Groups.

Kosunen and Mikkola (2002) analysed the scenario of teacher education in Finland. The study was an attempt to build up a science of teaching to meet objectives and reality in teacher education. The study analysed the national international evaluations and research studies done in the field of teacher education, both preservice and inservice. The study gives importance for linkage between preservice and inservice teacher education, knowledge of teachers in psychology and instruction, reality of inservice teachers' work, and inservice training needs of teachers. The study stressed that, instead of mere initial qualifications, the importance of inservice training needs of a teacher should be calculated as an entity comprising entry training and inservice training.. The findings of project namely OPEPRO conducted in 1999 which produced fifteen reports, identified the anticipated needs in preservice and inservice teacher education were also discussed in detail in the study. ICT was identified as the most popular content in inservice training of teachers. Majority of teachers were in need of more training in student assessment and self-evaluation. Special needs education, student's welfare and student's guidance were also expected to be contents of in-service training programmes. Responsibility of local authorities for planning inservice teacher training through identification of the local needs of inservice teachers was also stressed in the work. The study concluded that more research data are needed about everyday reality and practical knowledge of teachers working in the field.

Monroe, et al. (2002) conducted a survey among inservice schoolteachers in North-eastern Florida to assess inservice teachers' needs for environmental education

services. The survey was conducted in the form of mail-survey among 500 teachers, which reports a feeble response rate of 25%, and a follow-up survey was conducted two months later among the non-respondents, which yield 50% responses. The teachers reported in detail regarding their view of barriers for conducting effective environmental education in schools. The major barriers were the lack of preparation time, lack of budget and lack of class time. School based environmental education activities in the state of Florida are supported and encouraged by five Regional Service Projects (RSP) of the Florida Department of Education. In the study, the inservice teachers reported that they are quite pleased with current services of RSP and should continue to provide those quality resources. Teachers suggested that RSP should develop more materials and workshops that help inservice teachers to fulfill curriculum objectives. The teachers also requested to maintain school-contacts, direct communication with teachers, increase publicity and communication with subject matter specialists from the part of Regional Service Projects. Totally teachers have a positive attitude towards the on-going inservice training in environmental education and also they are in need of more amounts of quality services. Importance of need assessment researches that refers to the usefulness of the question under investigation to stakeholders and users is over emphasised in the study.

Ramachandran (2002) assessed the inservice training programmes for primary school teachers and difficulties they face in implementing the Integrated Education Programme (IEDC) for the disabled children. The study was conducted in the primary schools of Thrithala educational district, Kerala. 330 primary school teachers from 50 primary schools participated in the study. Questionnaire and informal interviews were adopted in the data collection procedures. Trainers, conveners, and parents were also made involved in the investigation. The study reported that majority of teachers were not able to identify the disable children in their classrooms. Learning materials received from IEDC were not sufficient for classroom activities. It was also reported that timely sufficient inservice training was not given for teachers. Lack of effective monitoring was also identified.

Gopalan (2003) discussed certain quality issues in the field of teacher education programmes. The study recommended co-ordination between inservice and preservice teacher training programmes in order to supplement and compliment each other. The study reported that, thee was hardly any co-ordination between those two levels of teacher training. The study reminded teachers to continuously enrich their competencies to enhance their professional performance.

Prahallada (2003) from his long years of experience and studies regarding programmes of teacher orientation, enrichment and up-gradation, listed a good number of views regarding inservice training for teachers. He analysed the Inservice Training (INSET) programmes under certain District Institute of Education and Training (DIET) centers. The study reported that both qualitative and quantitative performance of DIETs were not satisfactory for giving inservice training programmes for primary school teachers. The authorities of the training centers mostly kept their interest on expenditure and vouchers. The study commented that though there is a good coverage and a good number of teachers were participating in training programmes, but still it was inadequate in the angle-view of total number of teacher in service. The study identified that although the mode of course transaction was shifted from conventional 'teacher-dominated method of child-centered' to activity based, yet the teachers were not practicing those skills and competencies in their actual classroom condition. The study strongly criticised that most of the administrators and organisers were interested in spending money to exhibit their annual performance in quantitative terms. Quality of the inservice training programmes was none of their concerns. Lack of follow-up and evaluation programmes were reported by the investigator. The study requested the researchers to find whether the teachers trained in inservice programmes were performing better than the others, and to analyse their existing needs that persist even after participating in training programmes. The study concluded with an urgent need of research studies to assess the actual outcomes, inservice training needs and results in the institutions and fields.

Schlager & Fusco (2003) reminded the importance of the institutional contexts and teacher differences are to be considered among education practitioners, providers and researchers while designing technological interventions and innovations for instructional improvement. A need for supporting and strengthening of local communities of practice within the teacher works was revealed in the work.

Yadav (2003) reflectively analysed the teacher support services in India. The study identified that necessary competencies, in terms of knowledge, skills, attitude, etc can be inculcated among inservice teachers through effective support services. But for continuous enrichment the teacher need to be equipped with research based teaching learning materials, transactional approaches, use of ICT, community support, adequate physical facilities, congenial school climate, incentives, monitoring and evaluation.

Ha, et al. (2004) conducted a study to evaluate the effectiveness of an inservice training programme for physical education teachers and to understand teachers' receptivity to curriculum change in physical education in primary schools of Hong Kong. A survey using questionnaire and unstructured interviews were conducted among 183 primary school teachers. The felt problems and needs of inservice teachers were discussed in the study report. Even though the responses shown that, the in-service training were needed to equip the teachers with curricular changes, the teachers suggested that the inservice training programmes are to be on collaborative basis for becoming more practical and effective, and there should a continuous dialogue between the in-service teachers, subject experts, researchers and the Government.

Ozer (2004) analysed the status of in-service training of teachers in Turkey. A survey was conducted so as to highlight the perceptions of inservice schoolteachers about their inservice professional development. It was found that most of the teachers stated they needed professional development, but only a small number of teachers (31.3%) reported their willingness for attending inservice training. The rest of the teachers (68.7%) stated that they were not willing to attend any in-service professional development programmes. The teachers who declared that they felt

need for in-service training suggested trainings to enrich their views and understanding on general education, to renew and refresh their knowledge in heir specific teaching fields, to increase their professional respect and satisfaction and to improve their knowledge and skills in methodology. The main obstacles reported by the school teachers for participating in inservice training programmes were financial constraints to buy and read new publications, lack of motivational factors, lack of activities in schools, neglecting of teachers' opinions before deciding on subjects and contents for in-service training programmes, not able to choose the programs that teachers wish to attend, not considering teachers needs in selecting trainees for the programmes, and lack of competent instructors. The study also reported that subjectivity rather than needs of teachers was the criterion in selecting teachers who attended in-service training programmes in Turkey. The study suggested that channels for in-service training of schoolteachers are to be increased. Different alternative approaches including distance education are to adopted. Different kinds of programs with different purposes could be implemented through the Internet, television, radio and printed materials. The number of periodicals and publications could be increased moreover; those materials could be distributed to all inservice teachers and schools.

Mattheoudakis and Nicolaidis (2005) identified the increasing demand for in-service training in Greece and launched inservice training programmes for schoolteachers especially in English as a Foreign Language (EFL) under Aristotle University of Thessaloniki. As part of designing inservice training programmes they consulted with the inservice teachers and conducted a national level questionnaire survey so as to investigate practicing teachers' needs in their teaching contexts. Importance of an on-going interaction between theory and real world practice was underlined in the study report. Teaching in mixed ability classes, model lessons, educational psychology, teaching vocabulary, proper lesson planning, use and adaptation of authentic materials, teaching children with learning disabilities, textbook evaluations, extra curricular activities, learner autonomy, student motivation and educational management were some of the themes recommended by the in-service teachers for future teacher training programmes. The study conveyed message that

inservice teachers are to view as active thinkers and doers, focusing on the process of learning and teaching and on promoting change. More, the inservice training programmes organised by a university or state department may not respond to teachers' practical needs. The feedback received from the practicing inservice teachers empowered planning and policy decisions for future.

Raina (2005) conducted a study on opinion of secondary school teachers on the effectiveness of in-service training programmes in enhancing their professional competencies. A normative survey method was adopted to collect data and analysed the opinions of 320 teachers belonging to 43 secondary school s in Thiruvananthapuram district. The study reported that the in-service training programmes are effective in developing professional competencies of teachers. Fifty one themes were listed in the questionnaire under the major areas viz., changes in the school curriculum, methods of evaluation, knowledge in Educational Technology, knowledge in Educational Psychology, class management, developing relationship with others, motivating teacher performance, developing teacher ethics, leisure utilisation and enhancing job satisfaction. It was reported that in-service training programmes were found to be not effective in the areas viz., knowledge in Educational Technology, class management and enhancing job satisfaction.

Vijayakumar (2005) conducted a study on inservice teacher training programmes under SSA in Kerala. The study was conducted by involving primary school teachers including heads, teacher trainers, parents, and experts. 788 teachers from Kollam, Thrissur and Palakkad districts were surveyed as part of the study. Nine thrust areas viz., planning, management, subject, evaluation, computer, CE components, co-scholastic, action research, learning materials were placed before teachers for self evaluation to state their views on the quality of training they received. The study reported that in general the quality of training given maintain only average standard. The study also reported that inservice training on computer, action research, co-scholastic and continuous evaluation need much improvements. A training need analysis from teachers' perspective was also done in the study which found that more inservice training programmes are to be conducted on preparation

of study materials, art work experience, co-scholastic areas, participatory training, continuous evaluation and integration. The aggregate analysis also revealed an unhealthy trend that teachers make some changes in the training received while they face class room situations. These changes are self imposed, and adopted after discussing with colleagues and parents.

Barnett and O'Mahony (2006) attempted to expand the understanding of the power of reflection by demonstrating the principles and practices associated with building a reflective culture that facilitate school improvement. The study suggested inservice teachers to observe and critique one another's teaching practices, jointly plan, deliver and evaluate teaching materials, conduct demonstration classes, discuss actual teaching and learning activities, such as lesson plans, student evaluations and curricular materials; and to explore and critique actual cases of instructional and student assessment practices. The study concluded that meaningful school improvement only thrives when there exists a culture of reflection that focuses on teaching and learning process.

Christie and Kirkwood (2006) described the development of a new framework of professional standards for Scottish teachers as an attempt to enhance professional learning within which reflective practice among inservice teachers was a clear expectation. The study focused on the derivation of a model through a four-stage research process that yielded defining standard for the chartered teacher (SCT). In the fourth face of the research, data was gathered from all 60,000 serving teachers in Scotland. The study suggested that in every sphere of work, a teacher should review practice, search for improvements, turn to read and research for fresh insights and relate all those ideas into classroom and school practices. Reflective practices, continuous learning and research activities among inservice teachers were given a heavy emphasis in the report.

Denham, et al. (2006) evaluated the two social skills training interventions in six primary schools conducted by Brent Educational Psychology service, U.K. The teachers reported that they are in need of training for implementing social skills education in their classrooms. The study identified peer mentoring and students

training as two successful approaches for social skills education in diverse and challenging primary schools. The study concluded that educational psychologists have a vital role to play in the implementation and evaluation of social skills training in primary schools.

McGregor and Gunter (2006) conducted a study on a two-year in-service teacher training programme on developing thinking capability among pupils. The study was conducted among 91 schoolteachers in Connecticut, USA. The study revealed that in in-service training programmes teachers are to be more engaged in actions or processes and those actions are to be transformed into conceptual objectives to influence their learning. The study gave importance for collective reflections of teachers in the training programmes to objectify connections between learning process and learning outcomes. The study suggested pragmatic interpretation and application of learning theories in classroom situations and suggested several instructional strategies. Creating interactive groups to support more collaboration, developing more strategic ways to question pupils, more reflection on and about learning, emphasising the value of prediction, enriching nature of pupil discussions, creating appropriate authentic and piquing learning activities, and using provocation effectively were the teaching strategies emphasised for inservice teacher training and also for promoting thinking and learning among pupils. As a result of the study pedagogic principles to support learning and cognitive development in science and learning generally were proposed.

TABLE 2

Studies on Effectiveness of Inservice Training Programmes

Sl. No	Author	Year	Findings
1	International Bureau of Education & UNESCO	1962	Positive status of initiations for inservice training programmes for primary school teachers in 81 countries
2	Nair	1963	Proper planning and more participation of teachers in future inservice training programmes
3	Salam	1970	Reported favorable attitude towards inservice training programmes and suggested measures for making inservice training programmes more effective
4	Kurup	1974	Need for more proper planning, evaluation, monitoring and follow-ups of inservice training programmes
5	Samuel	1979	Teachers demanded for more inservice training programmes in future.
6	Barham et al.	1980	Inservice training is to be conducted for teachers working in both formal and informal settings.
7	Makurat	1980	Inservice training programmes are to be more responsive and potential
8	Sbeha	1980	Teachers demanded for more number of inservice courses and more competent resource persons
9	Hendricks & Sloan	1981	Inservice training programmes had little impact on instructional needs of inservice teachers
10	Smoak	1981	Teachers were dissatisfied with quantity and quality of inservice training programmes
11	Crabtree & Baum	1982	Teachers are receptive to variety of modes of inservice training delivery systems.
12	Kennedy	1983	Inservice training programmes are to be adjusted to suit the conceptual needs of teachers.
13	Raj	1984	Teachers reported need for more inservice training in different instructional methods

Sl. No	Author	Year	Findings
14	Thankachi	1984	Planning, implementation and evaluation of training programmes were not satisfactorily conceptualised by authorities
15	Bell et al.	1986	Revealed the importance of inservice training in special education along with elementary education
16	Potti	1986	Reported inservice training programmes are very much useful for classroom instruction and professional growth.
17	Samuels and Price	1986	Importance of identification of individual needs of teachers in planning future inservice training programmes
18	Butala	1986	Suggested total modification and enrichment of existing patterns and contents of inservice teacher training programmes
19	Singh	1987	Teachers sustained instructional competencies as effect of a microteaching course.
20	Panchbhai	1990	Majority of teachers expressed negative attitude towards the inservice training programmes.
21	Pillai	1992	Overall strengthening of inservice programmes for teachers provided by DIETs.
22	Sharma	1992	Teachers reported defects like unsuitability of time, insufficiency of incentives, lack of expertise, and lack of follow-up sessions
23	Boyd	1993	Staff development programmes must be continuous and integrated process incorporating attention towards personal and humanity needs of participants
24	Girija	1993	Primary school teachers are lacking proper inservice training in varied instructional strategies.
24a	Gafoor	1996	Unsatisfactory conditions were reported in the aspect of duration of courses, number of courses, planning of courses, evaluation of participants' works, evaluation of course effectiveness and follow-up programmes

Sl. No	Author	Year	Findings
25	Rayifa	1996	Lack of awareness of policy details, inefficiency of infrastructure and over emphasis with traditional instructional methods were identified.
26	Agarwal & Kamalesrao	1997	Content transmission loss, less emphasis on instructional strategies and less adoption of demonstrations were reported
27	Arora & Singh	1997	Effective training of trainers, importance of reflective thinking, action research and avoiding transmission loss were suggested
28	Barak & Waks	1997	Future inservice training programmes are to be well designed to develop competent teachers in planning of instruction, collection and self preparation of learning materials, schedule designs and identifying problem areas
29	Beauchamp	1997	Suggested implementation of more number of 'within the school' inservice training programmes for teachers
30	Gupta	1997	Efficiency of multimedia and self instructional approach in inservice training for primary teachers
30a	Institute of Education Sciences, U.S.A.	1997	Teachers who had undergone inservice training were more likely to be using appropriate and updated instructional materials
31	Mayadevi	1997	The trained instructional methods were more theoretical and not practical in real classroom situations.
32	Phalachandra	1997	In the place of centralized inservice training, decentralized strategies, school based inservice training programmes will be more effective and can avoid transmission loss.
33	Sabri	1997	Inservice teacher training programmes should emphasis on practical issues in classrooms, different status of teachers, training of instructional techniques using different training strategies
34	Thankamani	1997	Teachers expresses positive opinion towards the use of inservice training programmes

Sl. No	Author	Year	Findings
35	Fine, et al.	1998	Illustrated an ideal inservice training programme in recent Instructional Technology advancements
36	Nath	1998	Self-instructional mode of inservice training and education was found to be effective.
37	Riley	1998	An outdated teacher training and support system couldn't be allowed to frustrate the hopes and dreams of inservice teacher society. Offer them maximum opportunities to keep on learning
38	Aggrawal	1999	Insisted on a systematic effort to empower primary school teachers through intensive and repeated inservice training programmes
39	Garcia	1999	Incorporating multimedia Instructional Technology approach the inservice staff development programme found to be effective for inservice teachers
40	Nagpal	1999	Components of Human Resource Development like responsibility, risk-taking, feedback, supportive climate, openness, communication, trust, team spirit and collaboration were identified as essential elements for effective inservice training.
41	Chacko	2000	Inservice training programmes on operating technological equipments were far below the expected level and suggested to improve the quality of inservice teacher training programmes
42	Johnson, et al.	2000	Northern/western ideas about teacher change and instructional practices are not suit to model practices and challenges for those historically disadvantaged countries. Teachers can make adjustments within the systems in which they find themselves.
43	Yadav	2000	Lack of academic supports, inadequate training facilities, inappropriate approaches to curriculum transactions, etc affected the effectiveness of inservice teacher training programmes
44	Ahlberg, et al.	2001	Teachers reported the benefits of a shared virtual environment database for collaborative knowledge building called 'Knowledge Forum', as an innovative mode of inservice teacher education

Sl. No	Author	Year	Findings
45	Bezzina & Camilleri	2001	Need for a continuum comprising preservice, induction and inservice professional development programmes for all teachers, and are to be research based rather than politically motivated
45a	China Education and Research Network	2001	Importance of upgrading inservice teacher education through different certification courses beside the conventional non-degree training programmes
46	Joerger & Bremer	2001	Inservice teacher induction programmes ensured increased levels of student achievement and professional satisfaction.
47	Sathyanesan	2001	Inservice training programmes are to be more need based
48	Schnackenberg, et al.	2001	Inservice training and supports did not meet teachers' instructional needs. Importance of follow-ups and monitoring was also revealed.
49	Sreedevi	2001	Teachers responded that inservice training programmes did not improve their instructional skills. Importance of follow-ups and supports was also revealed
50	Subrahmanian	2001	Teachers reported that after attending inservice training programmes they have positive impact on their work efficiency in schools
51	Angelides	2002	A good number of inservice training programmes, seminars etc are being conducted by the pedagogical institutes, but those activities will help only to promote individual learning without connecting it directly to practice or live world problems
52	Basheer	2002	Low competency of trainers, lack of further assistance from resource persons, incapability of handbooks, low awareness of instructional methods and unsuitable curriculum for environmental studies
53	Educational Consultants India Limited	2002	Need based inservice training programmes, preparation of Teaching Learning Materials, theoretical orientations, continuous follow-ups, monitoring, and proper instructional planning were identified as key issues for future inservice teacher training programmes

Sl. No	Author	Year	Findings
54	Gupta	2002	Sufficient inservice training programmes and compatible management systems need to be implemented at local levels
55	Jiji	2002	Need for providing effective inservice training programmes for all teachers and ensuring proper functioning of School Resources Groups
56	Kosunen & Mikkola	2002	Importance of linkage between preservice and inservice teacher education, knowledge of teachers in Psychology and Instruction, reality of instructional situations, and inservice training needs of teachers were emphasised
57	Monroe, et al.	2002	Teachers are of positive attitude towards ongoing inservice trainings and also in need of more number of programmes. Importance of need assessment researches was underlined.
58	Ramachandran	2002	Inservice training received in implementing the Integrated Education Programme for the disabled children were not effective in actual classrooms
59	Gopalan	2003	Need co-ordination between inservice and preservice teacher training programmes in order to supplement and complement each other. Inservice teachers must continuously enrich competencies to enhance professional performance
60	Prahallada	2003	Both qualitative and quantitative performance of DIETs was not satisfactory for giving inservice training programmes for primary school teachers. Teachers were not practicing the trained strategies in actual classrooms.
60a	Schlager & Fusco	2003	Importance of institutional contexts and teacher difference in designing teacher professional development aiming technological and instructional enhancement.
61	Yadav	2003	For continuous enrichment of inservice teachers, they must be equipped with research based teaching learning materials, transactional approaches, use of ICT, community support, adequate physical facilities, monitoring, and evaluation etc.

Sl. No	Author	Year	Findings
62	Ha, et al.	2004	Inservice training programmes are to be on collaborative basis to be more practical and effective. Need continuous dialogue between the inservice teachers, subject experts, researchers and the Government
63	Ozer	2004	Channels for inservice teacher training are to be increased. Alternative approaches including distance education and self-instructional mode can be adopted.
64	Mattheoudakis & Nicolaidis	2005	Inservice teachers are to be viewed as active thinkers and doers, focusing on the process of learning and teaching. Feedback from inservice teachers empowered planning and policy decisions for future
65	Raina	2005	Inservice training programmes were perceived by teachers as effective in developing professional competencies
66	Vijayakumar	2005	Quality of training given maintain only average standard.
67	Barnett & O'Mahony	2006	Importance of reflective practices within the school for effective professional development
68	Christie & Kirkwood	2006	Importance of reflective practices, continuous learning and research activities among inservice teachers
69	Denham, et al.	2006	Educational psychologists have a vital role to play in the implementation and evaluation of inservice training programmes
70	McGregor & Gunter	2006	Importance of collective reflections of inservice teachers during training sessions, connection between learning process and outcomes, and pragmatic application of learning theories n classroom situations

2.3. STUDIES ON INSERVICE TRAINING NEEDS ASSESSMENT

Devakiamma (1963) conducted a study to investigate about the difficulties experienced by teachers in teaching Social Studies in the schools of Kerala. Normative survey using questionnaire and interview was conducted to draw data from a sample of 200 teachers. The study identified that gradation of subject matter was the only concern among the teachers. Integration was neglected in the classroom instruction and was felt not desirable among the teachers. Undue importance was given to oral method of instruction, and the teachers were with opinion that was the only possible method of instruction under the existing institutional conditions. Teachers reported difficulty in access of sufficient reference materials. Availability and usage of teaching aids were very poor. The study noticed very seriously that teachers were not given any kind of inservice training through seminars, workshops and summer vacation courses. Teachers also reported that numbers of pupils were so wide making it impossible for them to conduct and supervise individual and group work. Provisions for teacher development and inservice training programmes were the highlighted recommendations in the study.

Menon (1967) conducted a study to inquire about the instructional methods adopted by teachers in the schools of Trivandrum city. Social Studies Instruction in high school classes was given special reference in the study. The study reported that the teachers on the whole, need intensive training in new methods of instruction. Lack of pupil participation in the instructional methods was highlighted in the findings. Teachers were in need of more strategies for socialisation and democratisation. Teachers merely concentrated on how to impart factual knowledge to pupils. None of the teachers adopted methods to make pupils inquiry-oriented. The study expressed sufficient in-service training programmes for teachers could make them enough competent in creative instructional methods.

Nair, D (1967) conducted a study to investigate about the methods adopted by Natural Science teachers in standard X in the schools of Trivandrum city. The study was designed so as to find out the objectives of teaching science in high schools, identify the methods adopted by science teachers, to assess the competency of

teachers to use different methods of teaching science, and in total to assess the quality of teaching science in high school classes. The study identified that the main objective so f science teaching were to impart factual information to pupils, developing interests in the surroundings and to develop the power of observation among pupils. Lecturing and demonstration were the most commonly used methods of teaching in classrooms. A very few teachers were reported to use methods like problem solving methods and supervised study. The study revealed that teachers are aware of more effective teaching methods but due to lack of time, overcrowded classrooms and workload etc made them to limit to adopt methods like lecture-demonstration. Importance of in-service training programmes for teachers for effective natural science teaching were revealed in the study.

Nair, V (1967) conducted a study to identify difficulties experienced by teachers in teaching General Mathematics in the high schools of Kerala. A normative survey method was adopted in the study. The subject competency of teachers who taught mathematics was a crucial issue discussed in the study. Shortage of Mathematics graduate was also identified. The study also reported that a very few number of teachers had undergone inservice training programmes. Teachers were in need of strategies for paying individual attention and evaluation of pupils in overcrowded classrooms. Even though teachers were aware of effective teaching in classrooms, lack of time and heavy workload made barriers for implementation. Subject councils in the schools were not functioning properly. An urgent need for in-service training programmes on the varied themes related to secondary school Mathematics teaching was reported in the study.

Pillai (1967) identified problems related to classroom instruction felt by upper primary school teachers of Mavelikkara Educational District in Kerala. . The study was conducted with a special reference to Geography teaching in upper primary classes. Normative survey using questionnaire and interview was adopted for data collection. The lack of subject competency among the teachers was reported in the study. Majority of teachers were not having adequate academic qualifications and professional training for teaching Geography. Lack of availability and usage of

instructional aids was identified. Teachers felt lack of time and over workload as hazards for better instruction in classrooms. Methods like assignments and outdoor studies were not adopted due to the inadequate co-operation from parents. The study recommended a good number of in-service training programmes for enrichment of both content competency and teaching competency among the teachers

Prasad (1967) conducted an investigation into the common difficulties experienced by the physical science teachers in the high schools of Kerala. The study was done among 200 physical science teachers. The study reported that majority of teachers have not attended any kind of in-service training programmes. Teachers reported that no encouragement was given for teachers to obtain inservice education or additional qualifications. Teachers felt need for training in dealing with individual differences among their pupils. Local contexts and needs were not considered in teaching and learning. The inadequacies in the content of the textbooks and their non-availability were reported by a good number of teachers participated in the study. A felt need for continuous and compulsory inservice training programmes for teachers was identified in the study.

Discussion about promoting self-disciplined learning Peck (1970) commented that If American education is to turn out the independent and creative type of person, teachers were to be given inservice training to perceive those needs. The study gave special reference to training for teachers in the area of individualised teaching methods. The investigator also pointed out the importance of research of effects of such training programmes on both teachers and their students. The study reported that need for research studies to identify the teacher training strategies that work most effectively with each kind of teacher considering individual difference of teacher. The investigator conducted and experimental inservice training programme in public schools in Austin, Texas aimed at meeting such training needs of teachers.

Fitzgerald (1973) compared inservice needs of elementary school teachers and undergraduate studies in elementary school teacher preparation programmes. Both groups indicated that creativity, co-operation, dedication and overall job satisfaction were teachers' major inservice needs. Both groups agreed that work

accomplishment, recognition and advancement were low priority career needs. The study suggested that more flexible staffing schedules would increase job satisfaction for teachers, schools of education must present a more realistic view of the teaching profession, stronger efforts are to be made for attracting more male towards this professions and more studies are to be conducted that relate satisfaction of teachers to their measured instructional effectiveness.

Brottman (1974) conducted a historical survey about teacher training and school needs. A review of historical events, documents of national surveys, educational practices and needs revealed that the teacher inservice training practices were slow in responding to identified needs of schools and society. Need for inservice training programmes having both qualities i.e., need-based and time-based was highlighted in the report. The study concluded that not only school needs or social needs, but also the personal needs of teachers are to be considered in preservice and inservice training process.

Scherwood (1974) conducted a study among public school reading programme teachers to assess their awareness of theoretical needs for reaching instruction. The investigation was with an intention to determine whether teachers in public schools were aware of specific, differentiated needs in relation to the ethnic or racial background of their pupils. The writer investigated the perception of inservice teacher in Dade Country, south-eastern Florida U.S. The schools were divided into three types: black, white and Cuban. The analysis of the responses of teachers showed that the teachers who teach reading in schools were almost unanimous in their selection of four basic needs for reaching instruction; (a) an understanding of children's individual differences, both intellectual and emotional, (b) development of the ability to use classroom assessment technique to determine children's readiness, instructional and independent levels in relation to reading, (c) ability to diagnose children's needs in the basic skills areas, and (d) knowledge of variety of techniques for teaching reading programme to meet pupil's individual needs. All these training needs were considered in future inservice training programmes.

Viera, et al. (1975) conducted a study to formulate a framework for the inservice training of Bilingual teachers in the schools of Holyoke. The bilingual education professions programmes also conduced a needs assessment survey to find out the status of teachers and their inservice training needs and problems they face in classrooms. The main objective behind the study was to improve both preservice and inservice teacher programmes. The study revealed that individual differences among teachers were to be taken in account for all teacher-training programmes.

Inservice training needs of monolingual teachers in Texas were identified by, Ward et al. (1975) as part of a formative evaluation of a bilingual project implemented in Texas, United States. Kindergarten and first grade teachers were interviewed for the study. The amount and areas of help needed by the teachers from the part of project staff were keenly identified. Need for giving inservice training in teaching Spanish and lack of cultural activities were the two major conclusions of the study.

Rose (1976) conducted an inquiry about the use of Instructional Technology in Department of Defence, United States. The study reported that, since the Department of Defence was spending a huge amount annually on training and educational opportunities, new instructional technologies were constantly explored by the teachers to make education and training more cost effective. A variety of Instructional Technology applications were adopted in the training centers for more effectiveness. Importance of components like instructional systems based on behavioural objectives, instructional systems augmented by computer and audiovisual technology, learner centered instructional research, instructional television, cable television miniature computers, holography, rapid transmission and storage system, satellite communication, computer assisted/managed instruction, and simulation were some of the inclusions in the report.

Byrd (1977) developed and administered a research instrument, namely 'Teacher Inservice Professional Skills Survey' (TIPSS) to assess the perceptions regarding the teaching-topics and teacher-skills that led to effective instruction and are to be included in future inservice training programmes. Teachers, administrators and educators were the groups interviewed for this study. Respondents were asked to

react on a Likert-type scale to a number of statements concerning teacher professional skills and knowledge areas. Responses were coded as to how great need there is for inservice training in this skill or knowledge for teachers. The areas of inservice training needs were identified in the study were planning, diagnosing, instruction, classroom climate, classroom control and evaluation. The interesting finding of the study was that all the six areas were perceived as needed in teacher inservice training programmes. The results pointed out the need for teacher inservice training programmes based on systematic models of instruction. Similarity in perception pointed in the study should aid the collaborative process, enabling constituency groups to work toward common goals. A discussion about the crucial factors in programming and governance of inservice training programmes were also included in the study.

Carey (1977) investigated about the validity of using self-evaluation instruments to identify inservice instructional needs among teachers. In this study teachers' self perception about their teaching skills, needs and performance were compared with their actual competencies and performance in classrooms. Results showed that teachers' perception scores were significantly higher than their actual performance scores especially in the case of recall of verbal information, concept identification and problem-solving questions. As a conclusion, it was recommended that instructional needs of inservice teacher training programmes were too be determined not by teachers' self-reporting but by the teachers actual performance.

Evans, et al. (1978) supported the contention that teachers should be involved in programmes' design, implementation, and evaluation of their own inservice training programmes. The study attempted to gain information concerning the self-perceived inservice training needs of teachers in an urban setting. Developing pupil interpersonal skills, planning instruction, implementing instruction, classroom management, individualising instruction, and diagnosing student needs were the six areas of inservice training needs identified in the study. A relationship was found with these inservice training needs and variables like the number of years teaching, academic qualifications, etc. Results of the study also supported the notion that

inservice training programme developers should take into account the differentiated inservice needs of teachers.

Tadlock (1978) analysed the vocational education needs in Washington State with a special reference for educating youth with handicapping conditions. One of the high priorities among identified needs was that teachers need to increase their knowledge of special education. The study also recommended that vocational teaches need to be able to use specialised instruction techniques and methods.

Bartos (1979) examined the need for and proficiency in 15 instructional competencies as viewed by practicing teachers in Georgia, United States, Major elements for which responses were solicited were planning instruction, managing instruction, providing the learning environment, evaluation and being a professional. Relevance of the findings to undergraduate and inservice training programmes was noted in the study.

Vale et al. (1979) conducted a comparative study about inservice training needs of teachers of the visually impaired and teachers of the hearing impaired in California. A statistical analysis of the needs of both groups in instructional media and materials is provided at both the cluster and area curriculum levels. Demographic characteristics and needs of public and non-public/instructional schoolteachers were also differentiated. The top three priorities of teachers of the visually impaired for material development at the cluster level were in the social development, language and perceptual/motor curriculum domains. The top three priorities of teachers of the hearing impaired for material development at the cluster curriculum level were in reading, social development and cognitive development.

A survey was conducted by Ragland (1981) in Connecticut, the north-eastern corner state of United States, to find out the needs of high school teachers and students, which writers and publishers of study textbooks should keep in mind. The needs of teachers included an emphasis on teachability of materials, clear objectives, adherence to sound psychological principles, appropriateness of topics covered, and teaching techniques and activity suggestions.

Stafford (1981) assessed the inservice training needs of part-time adult basic education teachers in Washington, giving special attention to the part-time teachers' demographic characteristics and inservice training needs. This study also compared the teachers' statement of needs with those of administrative supervisors and of state-level officials of adult basic education programmes. All the three groups surveyed expressed a need for inservice training. The coordinators and officials reported more needs than the teachers. The teachers rated three items as their highest needs; training in practical ways of motivating their students, knowledge about other school and community resources for referral and methods for raising students' self concepts. Recommendations were made for more inservice training programmes and for incentives for part-time teachers to attend more inservice training sessions.

Marshal, et al. (1982) conducted a comparative study relating two procedures that can be adopted for assessing needs of inservice teacher education programmes namely (i) informal assessment technique consisting of an interview questionnaire developed and pilot-tested by project staff, and (ii) formal computerised questionnaire assessment technique. The level of consistency of information between the two methods and the comparative validity of the two types of needs assessment were critically correlated in the study. The informal assessment method provided micro-level information suitable for individual and small group instruction, while the formal assessment method provided macro-level information useful for planning group-learning experiences. The study derived in a final conclusion that there is moderate positive relation of assessed needs in both formal and information assessment procedures. The investigators recommended using both procedures for assessing inservice training needs of teachers in future research programmes.

Vas, et al. (1982) conducted a two-part study for assessing the use and needs of paraprofessional in special education in the state of Nebraska. The second part of the study dealt with the inservice training needs of paraprofessionals. Classes on school policy, legal issues, ethical issues and tutoring techniques were the significant teacher needs identified in the study.

Hansen (1983) critically examined policy issues for State Education Agencies and assessed their implications in the introduction of computer technology in the Northwest and Pacific Schools. Serious long-range planning of the programme, inservice training programmes for staff development, and responsible resource allocation were the important suggestions of the study.

Duffy (1984) from the District of Columbia introduced a concept namely 'Diagnostic Conferencing in Supervision'. The Diagnostic Supervision was formulated by including both the supervisor and teachers in a process of recognising inservice training needs, stating problems, and objectives for the teachers' instructional improvement. The Diagnostic Conference was a tool used with the process that helps the supervisor to diagnose the needs, interests and abilities of teachers in relation to the needs of their school districts. The Diagnostic Conference Planning Questionnaire (DCPQ) was a planning instrument using two lists, one concerning the role expectations for teachers, and the other concerning job-related psychological needs of teachers. The teachers selected the items of interest to them; the supervisor then met with each teacher to discuss their selections. During the final conference the needs of the teacher will be identified, confirmed, and restated as problems to be solved in future.

McGroarty (1985) conducted a study among two groups of teachers of English as second language, a California group and a Venezuelan group to survey about their perceived areas of instructional needs. The tree top needs of the California group were instruction in content areas, programme design for preliterate students and development of instructional materials. The instructional needs expressed by the Venezuelan teachers included strategies to teach reading in English, teacher knowledge of language learning and instruction methods to use in very large classes. The common elements in the two lists of teacher concerns showed the teachers' awareness of some of the themes current in second language learning theory and research. Both group of teachers mentioned need for mastery of variety of teaching techniques as important for professional excellence. The differences in the lists of teachers' needs demonstrated the profound influence of student population and

institutional setting on second language instruction. The study concluded that results can help those authorities developing materials to serve the needs of teachers in different settings with different objectives.

Balajthy (1986) noted that the principles of writing process instruction typically offered to elementary teachers were less readily adapted to intermediate classroom emphasizing content area learning rather than basic language skills. The study explored two themes important to the successful implementation of writing process instruction; (i) teachers' needs to understand clearly the philosophies and theories underlying writing process approaches, and (ii) teachers' needs to assume the role of researcher in their classroom to understand their students' writing needs and to determine how their strategies meet or fail to meet those writing needs. The investigator firstly described the concepts underlying the 'whole-language approach' and also examined the problems and needs of intermediate grade teachers as they teach writing process in their classrooms. The major training needs identified through the investigation were the need to broaden children's perspectives on different kinds of writing, the need to integrate writing with content area learning, and the need to become researchers in the classroom.

Joseph (1986) conducted a study to identify the difficulties of social science teachers in teaching physical Geography in secondary schools of Kerala. A questionnaire was used to collect data from the sample of 25o social science teachers from selected secondary schools. The study reported that the teachers handling the subject were not competent to teach physical Geography in secondary schools. Majority of teachers adopted only demonstration and observation methods to teach physical geography. Even though the teachers are aware of different methodologies they were not in a state to adopt them due to excess number of pupils in class and lack of time.

Jamuna (1987) conducted a study to inquire about the training needs of upper primary school teachers in English. The study was conducted among 100 upper primary school teachers. The major objectives of the study was to identify the areas of inservice training programmes in English for upper primary school teachers, to obtain opinions of teachers, and to suggest new themes for inservice training

programmes. Summer vacation as the apt time and State Institute of Education as the apt place were recommended for in-service training programmes in future. The study reported that majority of teachers are in need of content related inservice education programmes for teachers in future. Participation of teachers in inservice training programmes was found to be very low. Teachers were in need of inservice training programmes in new methods of English teaching. The study reported more number of in-service training programmes is to be conducted on the themes related to both content and methodology of English teaching in upper primary classes. Provision and promotion of motivation among teachers to participate in more inservice training programmes were highlighted in the conclusions of the study. The study also recommended the instructors to visit the schools as part of follow-ups of the inservice training programmes conducted.

Mercykutty (1987) conducted a study to identify the difficulties experienced by the teachers in teaching mathematics in the secondary schools of Kerala. A normative survey method using questionnaire and interviews was adopted for data collection from 125 secondary school mathematics teachers. The study reported that majority of teachers felt difficulty in teaching Basic Mathematics. The teachers also felt need for clarity in the content areas in Basic Mathematics. Majority of teachers reported that they are in need of in-service training for content areas, methods of mathematics teaching and use of audio-visuals.

Yanito, et al. (1987) prepared a paper as product of a three-year project namely, 'Functional Mainstreaming for Success' designed to develop a model for instructional mainstreaming of handicapped children 3-6 years old in community settings. Teachers' knowledge needs concerning laws and rights, teachers' knowledge needs concerning handicapping conditions, teaches need to understand the mainstreaming process, teachers' other training needs, teacher attitudes and support services like training programmes for these needs were considered in this study. Up dating of teachers' knowledge and skills were defined as main screws for success of any education programme. The importance of frequent need-assessment surveys in the field of education was underlined in this study.

Remadevi (1988) conducted a study on the difficulties of teachers in teaching mathematics in the upper primary schools of Kerala. The major objectives of the study were to study the difficulties of teachers in the content of mathematics prescribed for the upper primary classes, teaching the content area, using of aids for teaching, evaluating pupils and in giving and evaluating home assignments. The major findings were majority of teachers felt difficult in the content areas, teaching methods, using aids for teaching, evaluating students, giving and evaluating home assignments and need more number of in-service trainings in those areas.

Bereik and Blair-Larson (1989) conducted a study with special reference to induction year needs of new teachers. The purpose of the study was to provide data on teacher induction and to find ways in which a college or university may provide assistance to a school with teachers in their induction year. Information regarding needs and problems of new teachers were gathered through interviews and observations of classrooms. Important concerns in each school, and the areas of needs identified required inservice training were special student needs, new instructional methods, groupings, discipline, student placement, retention problems and parental demands. Workshops for new teachers concentrating on classroom management and discipline were conduced as a part of induction programmes.

Eckert and Bey (1990) analysed the inservice training needs of beginning teachers. Report of their study addressed the need for teacher induction programmes and presented several alternative support mechanisms for beginning teachers, especially those who dealt with at-risk students. The second section of the study focused on beginning teachers and their needs. A knowledge bank of issues related with at-risk students under ten headings viz., teachers, parents, peers in class, student's self-image, assessment, curricula, instructional materials, classroom environment, school environment, and home environment, was attached as appendix.

In a study about the perceptions of beginning teachers McKee (1991) synthesised detailed descriptions about an induction programme conducted by the West Virginia Department of Education. Although state guidelines suggested certain common elements, the investigator commented that each country would set up localised

programmes to identify and meet the needs of teachers in every country because, a rich source of information for suitable and appropriate programme planning was available from teachers themselves. A needs assessment survey was conduced among 38 beginning teachers in 2 southern countries. Inservice training needs were assessed in the areas of instruction, management skills, rules and procedures, interaction skills, and curriculum. Topics of interest to beginning teachers included motivational techniques, instructional strategies, discipline, and guidance and student self-esteem. Teachers expressed interest in reading handbooks and attending staff development programmes. To investigator suggested that programmes planners can use the findings to create more effective programmes that meet the training needs of new teachers. He also recommended that higher education institutions can use those findings to assess classroom teaching and to create collaborative projects with the public schools.

Laly (1993) conducted a study about the strategies adopted by teachers for teaching Malayalam in the upper primary schools of Kerala. The study also investigated about the usefulness of inservice training programmes for helping teachers to adopt new strategies for teaching Malayalam in upper primary classes. The study reported that even though teachers were aware of different strategies than can be adopted in primary classrooms; they don't put them into practice. A few kinds of strategies were adopted in the classrooms. Testing of previous knowledge, reading, pronouncing words, question-answer methods etc were some of the strategies used in the classrooms. The study reported that teachers were in need of inservice training for using modern teaching aids and mass media in classrooms. The study also reported that only a few primary school teachers had attended inservice training programmes.

U.S. Department of Education (1995) conducted a contemporary research in the United States, Germany and Japan about the teacher preparation and teacher lives. The study revealed important role of continuous research works on inservice training need assessment of working teachers for the improvement of teacher quality in

Japan. The importance of training for beginning teachers and their need assessment was also highlighted in the report.

Ambika (1996) conducted a study to identify the difficulties experienced by the teachers in DIETs of Kerala. Sixty-seven teachers participated in the study. Questionnaire and interview techniques were adopted for data collection. One of the major objectives of the study was to identify the difficulties experienced in Educational Technology branches in the DIETs. All the teachers demanded special training programmes for the improvement of teaching. Computers and other audio-video equipments were not used due to their unavailability. Periodicals, journals and materials on current trends were inadequate in the libraries.

Kadel-Taras (1996) listed findings from a qualitative research conducted among all the teachers in a single urban public high school. The study argued that teachers' needs are to be teacher centered in order to change their practices and work toward improvement for the benefit of themselves and their students. The study recognised that teachers needed to centre some of their energy and efforts on their own interests and requirements as learners, and on their own needs for control, security, power, and a life outside of school. The teachers in the particular school acted on their own desires as learners and maintained control in the classroom and control over self in order to change their practices. The paper was presented at the annual meeting of the American Educational Research Association, New York, April 1996. The study concluded that efforts to empower teachers as change-agents of the society, must recognise teachers' inservice training needs and allow teachers to articulate they can best be supported in their own work to change and improve.

Praveen (1996) conducted a study to identify the competencies and training needs of DIET faculty members in DPEP districts of Kerala state. The sample for the study constituted the entire population of DPEP-DIET faculty members in Kasargode, Malappuram and Wayanad Districts. The study was in the form of survey using a Performa listing eighty competencies based on DIET guidelines prepared by MHRD in 1989. Competencies in teaching, guidance and counseling, instructional design, designing training programmes, subject related issues, research and data processing,

evaluation and dissemination were the broader areas included in the study. The study was designed with an approach to assess the competencies required, the competencies possessed and their inservice training needs of faculty members. All DIET faculty members tend to perceive themselves as fairly competent. The study noticed that faculty members wanted to be on the safer side by not declaring themselves as not competent or less competent. It was also seen contradicting that, in the case of few competencies wherein faculty members have perceived themselves highly competent have also demanded training for the very same competency. A research on competencies and inservice training needs of primary school teachers was suggested in the work.

Rani (1996) conducted a study to identify the difficulties experienced by the schoolteachers while teaching English poetry in secondary school classes. 100 schoolteachers from Thiruvananthapuram district participated in the survey. The study identified that majority of the teachers are not aware about different methods of teaching poetry. Teachers were also found to be lacking effective procedures to evaluate appreciation of English poetry The lack of availability and usage of audio visuals in English poetry classes was also reported in the study. The study concluded that more inservice training programmes are needed to make teachers competent in teaching of poetry.

Monahan, et al. (1997) conducted a random survey throughout South Carolina to evaluate their attitude towards inclusion of students with special needs in general classroom under a vision of common basic human rights. Collecting interview responses of 100 school administrators, 125 counselors and 342 teachers the study was conducted in South Carolina. Majority of the total sample agreed with the inclusion, still most general educators were marginally comfortable in co-teaching with special educators. The results indicated an urgent need for teacher preparation on faculty development through inservice training programmes on the theme inclusive education.

Agrawal (1998) analysed the scope of revitalising evaluation procedures at the primary school level. The role of inservice training programmes of teachers in the

subject area was studied with special reference. The study was presented in the International Teacher Education Conference (ITEC) at Shanghai, China. The primary school teachers were recommended to develop competencies of preparing objective-based tests and diagnostic tests, and conduction of remedial teaching for their students. The study was concluded with a recommendation of short term inservice and orientation programmes in the area of educational evaluation for primary school teachers.

Dasan (1998) surveyed about teaching learning activities followed in Government lower primary schools in Ernakulam District. Even though variety of teaching learning activities were followed in the primary school, the study reported lack of inservice training for teachers for effective and innovative teaching learning methods. The teaching learning activities were found not sufficient for the social development of the pupils. The study recommended that lower primary teachers should be trained in Child Developmental Psychology.

Educational Consultants India Limited (1998) analysed the trend of all research works (160 studies) in elementary education from eight states Andhra Pradesh., Assam, Haryana, Karnataka, Kerala, Tamil Nadu, Uttar Pradesh, and West Bengal during the period of 1992-97 carried out by the universities, educational and socio-research institutions, NGOs and individual experts as sponsored activities. The report revealed that research needs are felt to be priority areas for national level intervention across all states on usefulness of various methods of teaching learning practices in classrooms, use of educational materials and teaching learning aids in classroom situations, evaluation of inservice teacher training in terms of reliability, relevance, time, content, materials used etc. and job satisfaction of teachers. Research gaps identified in the area of teacher education and training in Kerala state were usefulness of various methods practiced in classrooms, evaluation of teacher training, competency of teachers in different subjects and content needs and job satisfaction of teachers.

EvNet'98 Conference (1998) on educational research discussed a paper on the role of need analysis in teacher in in-service training programmes. Yael Nisan, Heidi

Schnackenberg and David wells of Concordia University presented the paper. The paper criticized that even though so many research works have been done on inservice teacher training, but majority concentrated on effectiveness of implemented programmes. Need analysis of teachers was recommended as a main agenda for future researches in the field of inservice teacher education.

Kumar (1998) identified the needs and requirements for implementing the activity-based curriculum in the primary schools of Kerala. Different forms of observation schedules, document analysis, questionnaires and discussions were adopted for data collection. Classroom observations derived conclusions with notable positive changes in the patterns of teaching learning activities in DPEP schools. Teachers had internalised the changed role of teacher with significance of teachers' knowledge about learner, learning theories, child's privilege and different approaches in curriculum. The study also reported that teachers were not capable of finding suitable learning activities suitable to curricular statements, especially multi-level ones. Different approaches to classroom management skills, integration, language instruction, mathematics instruction, and spiraling, and environmental education were found to be areas that teachers were in need of more clear conceptualisations.

Association of Christian Schools International (1999) identified the needs of middle school teachers and engaged in a Master Inservice Program plan for the plan period 2000-2005. The inservice training program emphasized the importance of making teachers competent in development of creative learning materials, handling multigrade classrooms, instruction of exceptional children, prevention of child abuse, elimination of drug abuse, handling classrooms with multi cultural sensitivity, development of critical and creative thinking among pupils, and pupil counseling.

Ertmer (1999) analysed the barriers and strategies for technology integration in education. The study identified that although the inservice teachers recognise the importance of integrating technology into their curricula, both extrinsic and intrinsic teacher barriers often limit the efforts. The extrinsic or the first order barrier included equipments, time, training and support that are either missing or

inadequately provided in teachers' implementation. The intrinsic or the second order barriers are rooted in teachers' underlying beliefs about teaching and learning. The study discussed the relationship between the two kinds of barriers and suggested specific strategies for circumventing, overcoming and eliminating the changing barriers that teachers face as they work to achieve technology integration in instructional practices. The study revealed that inservice teachers need skills for designing technology-enhanced curricular units, selecting and adapting software, organising projects that make use of technology, guiding students in the use of computer-based resources and assessing individual student learning in project-based collaborative technology-based work. The study concluded that without those skills, teachers might find integrated technology use too distant goal to achieve.

Quick and Davies (1999) conducted a study to identify the Instructional Technology needs of the inservice teachers of Colorado State. The study insisted that, all faculty development programmes must concentrate on continuous faculty assistance in the development of quality curricula using current and expanding teaching technologies. The study acknowledged that any step in helping inservice teachers to reach their respective goals is to help theme to articulate their instructional needs. Eighteen faculty members of community colleges participated in the study. In-depth personal interview was adopted as research method. The study identified need for more inservice training on the themes, information literacy, enhancement of lecture methods, time management for accomplishing instructional ideas, and incorporation of more technological developments in the classrooms. The teachers also expressed their desire for inservice training programmes that fit their time schedules and locations.

Sabar and Hashahar (1999) conducted a study to understand the effect of 'School-focused in-service training' (SFIT) as a new phenomenon in the Israeli educational system. School focused in-service training programmes refers to training courses that specifically addressed problems arising within the school and the needs of all of the stakeholders in the instructional process: teachers, students, parents and all other partners. The investigation was conducted in ten Israeli elementary schools through

observations, interviews and document analysis. SFIT supported advanced initiatives in teaching methods, and encourages teachers to reflect on and study their teaching methods, their experiences and the curricula they implement. The study reported that SFIT envisaged the schools as organisations whose members were constantly expanding their ability to generate desired outcomes and in which the learning process was a collaborative venture. In the study the SFIT was found to be very effective. The study illustrated the features of 'School-based in-service training' (SBIT), which was developed in response to criticism and disappointment in traditional in-service training courses. The SBIT referred to any training course conducted 'in the school' by an external expert. In developing SBIT INSET programmes, schools were given the option to invite external experts or private organisations to run the programmes. In 1993, the Israeli Ministry of education issued a number of publications related with school-based in-service teacher training to the introduction of pedagogical innovations. The study reported that by the year 1996, the school-based training in-service training programme covered more than 85 percent of the in-service teachers by participating 2750 Israeli schools. The study also reported that topics selected by schools were varied. Innovative instructional methods, co-operative staff development and computer education were the most wanted themes in the inservice training programmes. The study identified that school-based inservice trainings (SBIT) made the schools much closer to that of autonomous schools in which the school focused inservice training (SFIT) culture is central. The study concluded that the inservice training programmes in future must derive their contents directly from the needs and interests of the school and stakeholders primarily, from the inservice training needs of teachers.

Sadanandan (1999) evaluated the functioning of District Primary Education Programme in Wayanad District. 130 teachers from 24 primary schools participated in the study. Majority of teachers complaint about the over work load. Effective field trips, instructional strategies for children with special needs, proper utilisation of local texts, and continuous and comprehensive evaluation procedures were some of the areas identified as teachers were in need of training.

O'Sullivan (2000) conducted a study on effective In-service Education and Training (INSET) strategies and inservice training needs assessment exercises. The study was to suggest an effective model of needs assessment of INSET for unqualified primary school teachers. The main objective of the study was to assess the inservice training needs of unqualified primary school teachers in Namibia. 87 unqualified teachers from 31 primary schools in Namibia participated in the study. Usually need assessment studies explore their process focus on the use of questionnaire and interview methods. The author felt these methods only wouldn't meet the need of needs assessment of unqualified primary school teachers. As part of the study, a need assessment exercise namely Baseline Needs Assessment Exercise (BNAE) was designed and implemented. The model was found to be effective for needs assessment. A good number of data collection methods were adopted which included interviews, document analysis, structured observations, unstructured observations, lesson observation, assessing learners, photographs and discussions. The assessed inservice training needs were basic teaching skills, classroom management skills, skill for interpreting the content of syllabus, skill for writing lesson plans, keeping a record of daily works, using the local environment for teaching aids and content, elements of learner-centered education, simplified communicative approach and methods of teaching four English language basic skills. The study endorsed the critical role of continuous needs assessment for effective planning of inservice training programmes.

Parambat (2000) conducted a study on stress and professional efficiency of the heads of primary schools in Kerala. Compulsory inservice training to the heads of schools including all dimensions of educational administration was recommended by the study. The study revealed that the heads of schools were experiencing stress.

Ramakrishnan (2000) conducted a comparative study of the perceived teacher competence of TTC holders and Bed holders working in primary schools of Kerala State. 300 teachers from Kozhikode, Palakkad and Malappuram districts participated in the study. A rating scale was adopted for data collection. The study revealed the superiority of TTC holders working in primary schools over the B.Ed. Holders.

Special refresher inservice training programmes for senior teachers were recommended in the report. The study also revealed that teachers were needed to be equipped with new teaching learning strategies and techniques.

Crawford (2001) conducted an investigation about inservice teacher training programmes conducted by the Society for Information Technology and Teacher Education (SITE) in Texas, United States. The important topics covered in the study were ways to integrate technology into the classrooms, information and communication technology for teachers, models of professional development courses in Instructional Technology for teachers, an inservice methodology course via the internet, and training of electronic information research skills for schoolteachers. The analysis regarding inservice training needs of school teachers with special orientation towards Instructional Technology moved the investigation a little more into the section of action research.

Poulson (2001) analysed the evidence bases for applying research on subject knowledge of teachers in primary schools of Britain. The report reviewed deeply a number of policies and research findings in Britain, which had attempted to strengthen the subject knowledge of primary school teachers. The study identified that strong subject matter knowledge among schoolteachers is needed to teach the core curriculum in primary schools. The study concluded that researchers and policy-makers would do well to reconsider the emphasis on subject knowledge of primary school teachers in inservice training programmes.

Public School Needs Assessment Conference (2001) held between the University of Maryland and Prince George's County Public Schools discussed the practical issues to improvement student achievement in language arts and mathematics, barriers negatively impacted student achievement and recommendations for improving student achievement in language arts and mathematics. The Conference emphasised classroom management skills, instructional specialists in all schools, a professional development calendar, expansion of in-service programs with workshops that are relevant to specific, daily needs of the school teachers, follow-up on inservice

training programmes, establishment of professional development centers in schools, and special orientation programmes for new teachers

Jarvis, et al. (2003) conducted a study on elements of primary school science teachers' subject knowledge and process skills required in the primary pupils' Science National Curriculum in United Kingdom. As part of the study, an in-service training programme was designed and evaluated its effectiveness. A test to assess inservice schoolteachers' knowledge and understanding was developed to monitor change over the two years of in-service training. Seventy teachers from 31 schools participated in the programme. A poor teachers' science understanding was reported in the study. The study also reported that even though the in-service training programme enabled majority of teachers to improve their knowledge in science; the progress did not always take the teachers to a scientific stage. The study revealed that the inservice teachers need a thorough understanding of interrelated concepts beyond the requirements of the children's National Curriculum, as without it may develop misconceptions that might interfere with children's understanding. The study recognised the urgent need for inservice training for schoolteachers to develop a more conceptual approach to teach science topics at primary level. The primary school science teachers must not only have a good understanding of the science concepts so that they can help the pupils to explain observed phenomenon accurately. Importance of awareness of nature and process of scientific investigations among primary school teachers was stressed in the study. The study indicated that in-service training needs of primary school teachers use to be sustained over a considerable length of time.

Karikuzhi (2003) conducted a study to identify the in-service training needs of secondary school mathematics teachers. The data was collected from a sample of 310 secondary school mathematics teachers of Malappuram district using an Inventory and unstructured interviews. The study enabled to understand that the available in-service courses are not fit to meet the actual professional needs of teachers. The in-service training programmes were not based on pre-assessed needs of working teachers. The study also reported the opinions and suggestions of in-

service teachers were not sought for consideration while preparing modules for in-service training programmes. The teachers revealed that they are in need of knowledge to deal with practical and real classroom practices, which are beyond the theoretical knowledge obtained during their pre-service training courses. Methodology of teaching mathematics, methods of evaluation, technology based teaching, problems of classroom management, and dealing with children with special needs were the most wanted themes identified as to be considered for future in-service training programmes

Lakshminarayana and Babu (2003) investigated about the indicators of teaching competence of teachers in DPEP and non-DPEP schools in Andhra Pradesh. The sample consisted of 640 primary teachers, 320 were DPEP teachers and 320 were non-DPEP teachers. The study revealed that teaching competence of teachers was influenced by motivation, adjustment towards teaching and attitude of primary teachers in both DPEP and non-DPEP districts. Intensive and well-planned in-service training programmes to enrich teaching competence of primary teachers and their motivation, attitude and adjustment were suggested in the study.

Mohanty and Mishra (2003) identified content needs of primary school teachers in language, Mathematics and environmental science for preparing a self-instructional package. The study was conducted among primary school teachers in DPEP districts of Orissa. The inservice teachers were also involved in the production of package. The study reported an intense desire of primary school teachers to improve their professional status. The instructional package was found to be effective when it was used with support of inservice training and recurrent collaborative sharing among inservice teachers. The study recommended continuous need assessment for primary school teachers both in content and instruction areas. It was also suggested that self-instructional packages could be developed at Block and Cluster levels after identifying the local needs of teachers.

O'Sullivan (2003) explored the application of the needs assessment model for in-service education and training, which was developed and used effectively in Namibian context to an INSET programme for primary school English teachers

working in the United Arab Emirates. The model was found to be effective in the Emirati context also. The main objective of the study was to identify the inservice training needs felt by primary school teachers while they implement the rigid English syllabus in real classrooms. Twelve primary school teachers participated in the study. Various methods like participant observation, structured and non-structured observations, lesson observations, questionnaires, group discussions, interviews, research diary, analysis of documents and textbook analysis were adopted for data collection for the study. The study reported that teachers are in need of more inservice training programmes for improving their English teaching skills and how to use group work and pair works more effectively. The study also suggested that the new English curriculum is to be more flexible so that teachers can use varied instructional methods and available resources. The study also suggested exploring new ways and means of providing INSET, which take the classroom realities into account.

Srivastava (2003) assessed the academic needs of primary school teachers in Madhya Pradesh. 200 class V students, 11 elementary teacher educators and 121 teachers were participated in the assessment. Concept of MLL, Teaching Methods to achieve MLL, subject-wise MLL based teaching, concept of CCE, training for implementation of CCE, activity based teaching methods, special methods for multi-grade teaching, training in use of *Operation Blackboard Kit*, Training to teach mentally retarded and physically handicapped students, appropriate teaching methods to handle large classes and child centered teaching methods were identified as most rated inservice training needs. The study suggested more content enrichment and pedagogical training of primary school teachers.

Unnikrishnan (2003) analysed the Primary School Curriculum and identified that inservice primary school teachers have to be trained in pedagogy to improve classroom practices. The primary school teachers of Kerala were not found to successful in internalizing the theoretical and psychological constructs behind the pedagogy of experiential learning and activity based transaction. The curriculum was recommended to be restructured by incorporating the necessary IT inputs. The

curriculum models and materials did not accommodate the utilisation of modern IT in textbooks.

Education-line Database (2004). discussed a paper on psychological aspects of in-service teacher training presented at the European Conference on Educational Research, University of Crete, September 2004. The paper revealed that factors like how teachers select educational events to participate in, which forms and topics they prefer, and how they define their expectation and needs in relation to their own professional development. Recognition of those aspects was found to be important in order to sustain the efficiency of in-service teacher training.

Srivastava & Bala (Eds.) (2004) compiled selected studies conducted on various issues related to primary school teachers under DPEP. Analysing the reported 20 studies on impact of in-service teacher training programmes, a mixed type of impact on classroom practices was revealed. Preparation and use of Teaching Learning Materials, multi-grade classroom management skills and activity based instructional activities were found to be the areas that demanded further inservice trainings for primary school teachers.

Tuomi (2004) conducted a study among Finland inservice teachers as considering the teachers as experts with experiences for suggesting themes to be included in future training programmes for both in-service and pre-service sector. The main objective of the programme was to plan teachers' professional development for global education. Involving *teachers from the field* was found to be essential in identifying critical areas for future training programmes, as well as for appropriate means and implementation. For identification of inservice training themes, seminars and discussion forums were organised among these interested and experienced teachers. Suggestions and ideas from inservice teachers were considered as the prime source for identification of themes for future inservice training programmes. A survey was conducted among thirty-five inservice experienced teachers who were participants in the seminars and discussions. Nine major themes were identified as to be included in future in-service training programmes, viz., skills for making rational

decisions in the classrooms, more educational philosophy of human being, training in more teaching methods, more about world and world cultures, tailoring curriculum for varied skills and special situations, skill of teaching reading and writing, skill in working with language interpreters, skills in working with parents and the skill of collaboration with other teachers to create a *culture of consultations* at school level. The study reported that the inservice teachers were intensively involved in the design and realisation of the in-service training programmes.

U.S. Department of Education (2004) as part of the National Programme *No Child Left Behind* underlined the importance of need assessment of inservice teachers. The teachers were directed to participate compulsory in the District Needs Assessment outlining activities that must be implemented to give teachers the content knowledge and the teaching skills they needed. On-line facility for submitting the statements of instructional needs was also made available for inservice teachers. The project had overemphasized the importance of inservice teacher empowerment for achieving the objective, offering educational excellence to every child. The crucial areas identified in the *Tool kit for Teachers* were effective student assessment, teaching of reading, scientifically based researches, English Instruction, helping teachers to improve Mathematics and Science Education, effective instructional methods for disabled children. A good number of support learning materials for inservice teachers were included in the tool kit. Additional resources for teachers through internet resources were also offered by the government for enhancement of instructional practices in American Schools.

Wong et al. (2004) conducted a study to examine the experiences of primary school teachers in teaching children with special needs in mainstream schools and how they see and evaluate the feasibility of the new integration education initiatives in Hong Kong. The data were collected based on questionnaire surveys, individual interviews and focus group interviews with general class teachers, resource teachers and principals of mainstream schools admitting students with special needs. Resource class teachers as well as ordinary class teachers were given equal importance in the study. Teachers reported that there is a conflict at the systemic

level between the philosophy of academic excellence defined by grades on the one hand and philosophy of equality and inclusion on the other. Teachers also reported that availability of inservice training to teachers in inclusion education and additional manpower in counselling are the most urgently needed resources in facilitating teachers to engage in teaching students with special needs alongside others.

Fok, et.al. (2005) conducted a study on in-service teachers' training needs in Hong Kong. The study was conducted among 219 teachers attending a 5-week in-service training programme. A 5-point scale measuring teacher's perceived competencies and teachers' perceived training needs was adopted for data collection. The teachers were found themselves not competent in school-based curriculum design, handling students with special learning needs, integrative subject design, whole person development, curriculum adaptation and educating the new immigrants. The most demanded themes for inservice training were innovative teaching methods, school based curriculum design, whole-person development, handling children with special needs, and conducting project learning. The study also reported that there was small and mostly no significant correlation between teachers' perceived competencies and their perceived needs.

Panhandle Area Educational Consortium (2005) identified needs and offered online support for schoolteachers and teacher educators. The consortium designed a variety of professional development activities that included action researches in schools, inquiry learning, safe use of Internet, curriculum policies, classroom literary practices, reading strategies, raising achievement in writing, computational fluency mastery, differentiated instruction, and mathematics instruction.

Roux and Ferreira (2005) reported on In-Service Education and Training (INSET) workshops offered in Limpopo and Mpumalanga Provinces, South Africa in the field of environmental education. The purpose of these workshops was to assist practising teachers to enhance their teaching skills, to infuse environmental education in their teaching and to participate in solving environmental problems in

their communities. The perceptions and recommendations of participants were recorded for improving similar inservice training initiatives. All the participants indicated follow-up workshops were desired. More number of inservice training programmes on other environmental issues, lengthening the duration of workshops, providing policy documents to teachers in advance so as to prepare for workshop discussions, discussing local environmental issues in greater detail, guidelines for addressing environmental problems in communities and inviting more than one teacher from each school were some of the recommendations from teachers. The study also reported that the teachers were too inexperienced to meet demands of the new curriculum and they were reluctant to take initiative in introducing new concepts and approaches to their teaching.

School District 47 Crystal Lake (2005) made clarified the questions of parents and community members that teachers of their District are required and encouraged to continue their professional training throughout their career. The District had identified a variety of professional development activities for inservice teacher training programmes after school and over the summer. The District also acknowledged the responsibility to ensure that all teachers are up to speed on exactly what and how to teach.

Zakaria and Alias (2005) conducted a study to identify the perceived professional needs of Mathematics schoolteachers in Malaysia. The study was conducted among 44 teachers attending a mathematics education course at a training institution using a set of questionnaires of a modified Mathematics Teacher Inventory of Needs. Provide remediation for low achievers, update knowledge of mathematics-related career opportunities, select appropriate instructional strategies, learning new methods of teaching mathematics, methods of motivating students to learn mathematics, update knowledge of applications of mathematics, teaching students with learning problems, delivery of mathematics concepts to students, prepare instructional and learning activities and evaluating students' progress were the ten most preferred needs of Mathematics teachers. The study identified that although in-

service courses were offered to enhance the teachers' professional skills but the courses were not relevant to their needs.

Marable and Raimondi (2007) conducted a study to analyse teachers' perceptions during their first year of teaching. The sample consisted of 326 teachers in New York State. The beginning teachers reported need for training in curricular policies and procedures, role of a teacher, organisational skills and strategies, and classroom management. The study recommended for a high quality in-service training for new teachers. The study highlighted the need for increased awareness of new teachers' needs.

TABLE 3

Studies on Inservice Training Needs Assessment

Sl. No	Author	Year	Findings
1	Devakiamma	1963	Teachers are in need of intensive inservice training programmes on new methodologies
2	Menon, K.S.	1967	Social science teachers need more inservice training programmes on new instructional methods
3	Nair, D.	1967	Need for inservice training programmes on effective science instructional methods
4	Nair, V.	1967	Urgent need for inservice training programmes on the varied themes for mathematics teachers
5	Pillai	1967	Inservice training programmes on content based and teaching competency based
6	Prasad	1967	Continuous and compulsory inservice training programmes for teachers
7	Peck	1970	Identified importance of inservice training on individualisation of instruction
8	Fitzgerald	1973	Stronger efforts are to be made for realising the expected instructional effectiveness.
9	Brottman	1974	Inservice teacher training programmes are to be need-based and time-based.

Sl. No	Author	Year	Findings
10	Scherwood	1974	Identified theoretical needs related to Developmental Psychology for teaching reading in schools.
11	Viera, et al.	1975	Individual differences among teachers are to be considered in inservice teacher training programmes.
12	Ward, et al.	1975	Lack of support from the part of project staff and need for inclusion of cultural activities
13	Byrd	1977	Need for inservice teacher training programmes based on different models of instruction.
14	Carey	1977	Inservice training needs of teachers are to be assessed from actual performance situations.
15	Evans, et al.	1978	Self-perceived needs of inservice teachers were identified.
16	Tadlock	1978	Need for inservice training on special education
17	Bartos	1979	Importance of inservice training on planning, implementing, managing and evaluating instruction
18	Vale, et al.	1979	Need for development of materials at cluster levels
19	Ragland	1981	Teachers demanded orientation on psychological principles, and teachability of textbook contents
20	Stafford	1981	Principles of motivation, community resource utilisation and self concept development of students were the highly rated needs
21	Marshal et al.	1982	Identified a moderate positive relation of assessed needs in both formal and informal assessment techniques
22	Vasa et al.	1982	School policies, legal issues, ethical issues and tutoring techniques were identified as needs
23	Duffy	1984	Developed a 'Diagnostic Conferencing Supervision' for identifying and meeting the needs of inservice teachers

Sl. No	Author	Year	Findings
24	McGroarty	1985	Need for developing variety of materials to serve the needs of teachers in different settings with different objectives
25	Balajthy	1986	Methods of teaching writing, philosophies and theories underlying writing process, and role of research in classrooms were identified as needs
26	Jayasree	1986	Identified a variety of themes for inservice training programmes in future including different instructional methods
27	Joseph	1986	Teachers are aware of different methodologies but due to excess number of pupils and lack of time they were not adopting in classrooms
28	Jamuna	1987	Need for inservice training programmes on content related and new methodologies.
29	Mercykutty	1987	Need for inservice training programmes on content areas, methods of mathematics teaching and use of audiovisuals.
30	Yanito, et al.	1987	Importance of frequent need assessment surveys for success of any educational system
31	Remadevi	1988	Teachers felt need for inservice training on content areas, instructional methods, usage of audio visuals, assignments, and student evaluation
32	Bereik & Blair-Larson	1989	Dealing students with special needs, new instructional methods, class management and parental demands were identified as teacher needs
33	Eckert & Bey	1990	Reported need for teacher induction programmes and presented several alternative mechanisms for beginning teachers with at-risk students
34	McKee	1991	Inservice training needs were assessed in the areas of instruction, management skills, interaction skills and curriculum.
35	Laly	1993	Teachers were in need of inservice training for adopting different instructional strategies effectively and using modern teaching aids and mass media

Sl. No	Author	Year	Findings
35a	U.S. Department of Education	1995	Importance of continuous research works on inservice teacher need assessment for the improvement of teacher quality, especially for beginning teachers
36	Ambika	1996	All the teachers demanded special training programmes for improvement of teaching
37	Kadel-Taras	1996	Teachers' needs are to be teacher centered in order to change their practices and work
38	Praveen	1996	DIET faculties perceived themselves as fairly competent and also expressed need for inservice training
39	Rani	1996	Majority of teachers are not aware about different methods of poetry teaching and in need of inservice training
40	Monahan, et al.	1997	Indicated an urgent need for inservice teacher training programmes on inclusive education
41	Agarwal	1998	Suggested inservice training programmes in the areas of preparation of objective type test construction, diagnostic tests, and remedial teaching
42	Dasan	1998	Lack of inservice teacher training programmes on effective and innovative teaching learning methods
43	Educational Consultants India Limited	1998	Instructional research needs are felt to be priority areas for national level intervention on usefulness of various methods of instructional practices in classes
43a	EvNet'98 Conference	1998	Importance of need assessment studies, than that of studies on effectiveness of inservice teacher training programmes
44	Kumar	1998	Different approaches to classroom management skills, integration, language instruction, mathematics instruction, spiraling and environmental education were found to be areas that teachers were in need of more conceptualisation

Sl. No	Author	Year	Findings
44a	Association of Christian Schools International	1999	Development of creative learning materials, handling multigrade classrooms, instruction of exceptional children, development of creativity and pupil counseling were some of the identified training needs of inservice teachers
45	Ertmer	1999	Although inservice teachers recognize the importance of integrating technology into their curricula, both extrinsic and intrinsic teacher barriers often limit the efforts
46	Quick & Davies	1999	Identified need for more inservice training on information literacy, lecture methods, time management, and incorporation of more technological developments in classrooms
47	Sabar & Hashahar	1999	Inservice training programmes in future are to be school based and school focused so as to derive their contents directly from the needs and interests of the school and stakeholders
48	Sadanandan	1999	Effective field trips, instructional strategies for children with special needs, utilisation of local texts, and continuous and comprehensive evaluation procedures were areas identified for inservice teacher training programmes in future
49	O'Sullivan	2000	Basic teaching skills, classroom management skills, skills for interpreting the content of syllabus, skill for writing lesson plans, recording daily works, utilisation of local resources, learner centered education, communicative approach and English teaching methods were the reported needs
49a	Parambat	2000	Need compulsory inservice training to the heads of schools including all dimensions of educational administration. Importance of inservice training for teachers on psychological concerns like stress reduction was also revealed
50	Ramakrishnan	2000	Teachers are to be equipped with new teaching learning strategies

Sl. No	Author	Year	Findings
51	Crawford	2001	Identified themes for inservice training of school teachers with special orientation towards Instructional Technology
52	Poulson	2001	Researchers and policy makers would do well to reconsider the emphasis on subject knowledge of primary school teachers in their inservice training programmes
53	Public School Needs Assessment Conference, University of Maryland	2001	Classroom management skills, instructional specialists in schools, professional development calender, need based workshops, follow ups of inservice training programmes, professional development centers in schools, and induction programmes were identified as needs
54	Jarvis, et al.	2003	Urgent need for inservice training for school teachers to develop more conceptual approach to teach science topics at primary schools
55	Karikuzhi	2003	Methodology of teaching Mathematics, evaluation methods, technology based teaching, classroom management, and dealing with children with special needs were the most wanted themes for future inservice training programmes
56	Lakshminarayana & Babu	2003	Need for intensive and well planned inservice training programmes to enrich teaching competencies of primary teachers with special reference to their motivation, attitude and adjustment
57	Mohanty & Mishra	2003	Need for continuous need assessment surveys for primary school teachers both in content and methods. Self instructional packages for inservice education could be developed at local levels after identifying the local needs of teachers
58	O'Sullivan	2003	Need for more inservice training programmes on varied instructional methods for English teaching.
59	Srivastava	2003	Need more content enrichment and pedagogical training for inservice primary school teachers to achieve the objectives of MLL programme

Sl. No	Author	Year	Findings
60	Srivastava & Bala	2003	Preparation and use of Teaching Learning Materials, multigrade classroom management skills and activity based instruction were found to be the areas that demanded inservice training
60a	Unnikrishnan	2003	Inservice primary school teachers have to internalize the theoretical and psychological constructs behind the pedagogical practices and they are in need of intensive inservice training programmes on modern computer mediated instructions.
60b	Education-line Database	2004	Importance of need assessment with special reference to psychological aspects of inservice training programmes
61	Tuomi	2004	Involvement of inservice teachers was found to be essential in identifying critical issues for future inservice training programmes
61a	U.S. Department of Education	2004	Importance of continuous need assessment of inservice teachers and on-line facility for submitting the statement of instructional needs
62	Wong	2004	Need more inservice education for facilitating teachers to engage in teaching students with special needs along with others
63	Fok, et al.	2005	The most demanded themes for inservice training were innovative instructional methods, school based curriculum design, whole person development, handling children with special needs, and projects
63a	Panhandle Area Educational Consortium	2005	Importance of continuous need assessment research works. The Consortium offered online support for need assessment and pedagogical practices.
64	Roux & Ferreira	2005	Follow up workshops, more number of inservice training programmes and supply of policy documents

Sl. No	Author	Year	Findings
64a	School District 47 Crystal Lake	2005	Importance of teachers' commitment to parents and community members that, to be always updated in the sense of what and how to teach pupils. Importance of continuing professional training through out the teaching career was also revealed.
65	Zakaria & Alias	2005	Remedial teaching, selection of appropriate instructional strategies, innovative methods of mathematics teaching, student motivation, content enrichment, and evaluation techniques were the highly demanded inservice training needs
66	Marable & Raimondi	2007	Beginning teachers reported need for training in curricular policies, instructional procedures, role of a teacher, organizational skills, and classroom management

2.4. CONCLUSIONS

The investigator reviewed studies both foreign and Indian on Instructional Technology , on the conduct and effectiveness of Inservice Training Programmes and on the Needs Assessment studies of Inservice Training programmes.

The review of the related studies revealed the following,

1. Studies on Instructional Technology were available from 1960 onwards even though the third phase of the History of Instructional Technology is from 1900 to the present. The major reflections of the review on Instructional Technology are,

(i) Needs training in the Design and Implementation of Instructional Technology Models.

(ii) Technology should not determine the goals of education but it can be used to achieve them.

(iii)Teachers have positive attitude towards the use of Instructional Technology .

(iv) Constant changes, high costs, lack of expertise and training, inappropriate instruction and rapid role changes are the barriers of effectiveness of Instructional Technology

(v) Instructional Technology is to be conceptualised not just in terms of computer hardware and software but also in form of human skills, resource management, problem solving and instructional settings.

(vi) Research community has to accommodate the needs and interests of inservice professionals who consume Instructional Technology

(vii) Instructional Technology has to place learner and learning in the heart of technology based instruction.

(viii) Effective implementation of Instructional Technology depends on properly trained teachers.

2. Studies on inservice training programmes and on their effectiveness are largely made from the 1960's itself.

(i) Inservice Training Programmes are highly needed for continuous professional development.

(ii) Inservice programmes are to be more needs based.

(iii) Collective reflections of inservice teachers during training sessions, connection between learning process and outcomes, and pragmatic application of learning theories are essential

(iv) Incorporating multimedia Instructional Technology approach the inservice staff development programme were found to be more effective.

(v) Inservice Training programmes on operating technological equipments were far below the expected level

(vi) Inservice teacher education and training are to be upgraded through different certification courses.

(vii) Needs coordination between preservice, induction and inservice training programmes.

3. From the studies on needs assessment, it was understood that.

(i) Needs assessment studies are more important than studies on effectiveness of inservice training programmes.

(ii) Training needs are to be more teacher centered.

(iii) Inservice training needs of teachers are to be assured from actual performance situations

(iv) Continuous research works are needed on inservice training needs assessment.

(v) Inservice programmes are to be school based and school focused so as to derive contents directly from the needs and interests of the school and stakeholders.

(vi) Studies identified Inservice Training Needs belonging to all the five dimensions of Instructional Technology viz., Design, Development, Utilisation, Management and Evaluation.

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Χηαπτερ Τηρεε

METHODOLOGY

- Design and Variables
- Tools used
- Sample
- Data Collection Procedure, Scoring and Consolidation
- Statistical Techniques employed for Analysis

Research is a series of systematic processes to provide answers to questions by interpreting unwrapped facts for formulating generalisations (Tuckman, 1972). Research advances knowledge and improves practices (McMillan & Schumacher, 1989). Research is a scientific process of systematic collection and logical analysis of data for deriving purposeful information. Research process entails a series of practical activities in the world: observation, analysis and reporting (Freebody, 2003). Social research is a systematic and scholarly application of the scientific principles to the problems of people within their social contexts and to the clarification of issues (Cohen, Manion and Morrison, 2000). Research in education has come to serve several purposes. The scientific goal of educational research is to discover laws or generalisations, which has implications in educational situations (Travers, 1969; Englehart, 1972). Educational research has been used to inform, advance, or obstruct policy and practice in education. Research in education employs empirical and scientific inquiry to test out theoretical ideas that inform practice (Freebody, 2003).

The scientific status of research process depends on the quality of methods and methodology adopted for the inquiry. Methods in research refer to techniques and procedures used in the process of data gathering and methodology helps to understand not the products of scientific inquiry, but the process itself (Cohen, Manion and Morrison, 2000). Methodology refers to the description of those scientific, systematic and purposeful procedures for arriving at solutions. In other words, methodology describes the ways and means that investigator adopted to collect relevant data and analyse objectively to yield trustworthy information. Methodology is to be designed harmoniously synchronized with the research questions posed by the research problem.

The present investigation is to assess the level of Instructional Technology Awareness and the Inservice Training Needs of Primary School Teachers of Kerala. Research is very important in ensuring that development programmes are appropriate to the needs they aim to address. Research has got its utilities for variety

of purposes, to explore issues in order to plan programmes, to ask stakeholders about their needs, to collect information about an endeavor, to plan, monitor, evaluate or review a programme, and to make a case for change. Documenting special needs of certain groups of clients forms a key premise of educational research (Laws, Harper & Marcus, 2003).

Methodology followed for the present study is described under five major headings viz.,

1. Research Design and Variables
2. Tools Used
3. Sample Used
4. Data Collection Procedure, Scoring and Consolidation
5. Statistical Techniques Used for Analysis

3.1 RESEARCH DESIGN AND VARIABLES

This study is an inquiry to assess the level of Instructional Technology Awareness and Inservice Training Needs of Primary School Teachers. The study also wants to answer whether the level of Instructional Technology Awareness and Inservice Training Needs vary among different sub samples of teachers formed on the basis of their Gender, Teaching Level (LP/UP), Type of School Management (Govt/Pvt), Type of School District (D.P.E.P/ Non-D.P.E.P.), Teacher Training Qualifications (T.T.C., B.Ed. & both T.T.C. & B.Ed) and Length of Service. Thus, this investigation is of the descriptive survey design. A descriptive survey research describes existing phenomenon and is used to assess the nature of existing conditions of something.

The study involves two types of variables viz., (i) Descriptive Variables and (ii) Classificatory Variables.

Descriptive Variables

1. Instructional Technology Awareness
2. Inservice Training Needs

Classificatory Variables

1. Gender
2. Teaching level (LP/UP)
3. Type of School Management
4. Type of District of School (D.P.E.P. & Non-D.P.E.P)
5. Teacher Training Qualifications
6. Length of Service.

3.2 TOOLS USED

The data necessary for the conduct of the study were collected using the following tools.

1. Test of Awareness on Instructional Technology (Sumangala and Kumar, 2005)
2. Checklist on Inservice Training Needs (Sumangala and Kumar, 2005)
3. Questionnaire on Personal Information and Inservice Training (Sumangala and Kumar, 2005)

Each of these tools is described below for the details of the content, and mode of development.

3.2.1 TEST OF AWARENESS ON INSTRUCTIONAL TECHNOLOGY

This is a test on Instructional Technology to know the level of Awareness on Instructional Technology among Primary School Teachers of Kerala. The Test was developed and standardised by the investigator under the expertise of the supervising teacher. The issues and theoretical bases related to the five domains of Instructional Technology, namely, Design, Development, Utilisation, Management, and

Evaluation were the content areas for the preparation of the test. Details of the test construction are given below, under four major sections viz., Planning, Preparation, Try-out and Finalisation.

I. Planning.

Planning of the Test was done by an extensive reading of literature in the area of Instructional Technology. A detailed review of literature was done including books on Instructional Technology, new trends in instructional strategies, usage of audiovisuals, new trends in curricular planning and development, planning for instruction, assessment and evaluation of instruction in primary schools, Information and Communication Technology, and theories on psychological bases of instruction, self instructional and awareness packages for primary school teachers prepared by NCERT, New Delhi; Instructional packages for primary school teachers on theoretical bases of curriculum published as part of District Primary Education Programme, Kerala; handbooks prepared by SCERT, published and distributed by Department of Education, Kerala State for primary school teachers of Standard I to VII, and the like. Based on the review, the term Instructional Technology was defined accepting the definition given by the Association for Educational Communications and Technology (2000). The definition reads as 'the theory and practices of Design, Development, Utilisation, Management and Evaluation of processes and resources for learning'. The test was planned to be of objective type test items, each with four alternatives, as the test is to measure 'awareness' which is of the knowledge level. The Investigator also decided to have 40 items in the awareness test. It was also decided that the form of questions as objective and the duration of the test as 40 minutes.

II. Preparation

The investigator prepared test items based on the facts and concepts related with the major five domains of Instructional Technology viz., Design, Development, Utilisation, Management and Evaluation.

Details of each domain and sub domains coming under each are described below.

Design Domain

Design is the process of specifying the knowledge, skills and dispositions to design conditions for effective learning. The domain of Design includes the sub domains, viz., Instructional Systems Design, Message Design, Instructional Strategies, and Learner Characteristics.

Examples of test items under this domain are given below.

1. Which of the following is renowned as 'Socratic Method' in Instruction?

   A. Co-operative Learning B. Dialogic Learning

   C. Collaborative Learning D. Self-regulated Learning

2. The basic concern of Multi-level Instruction is

   A. Variety of subjects in curriculum

   B. Variety of instructional skills among teachers

   C. Variety of learning paces and learning styles among pupils.

   D. None of these

Development Domain

Development is the process of translating the design specifications into physical form. The domain of Development is highly related to other areas of theory, research, design, evaluation, utilisation and management of instruction. The domain of Development includes the sub domains, viz., Print Technologies, Audiovisual Technologies, Computer-based Technologies and Integrated Technologies

Examples of test items under this domain are given below

1. 'Cartoons' are meant

   A. Only for Ironical illustrations of political issues

B. Only for Entertainment purposes

C. Not at all for Instructional purposes

D. Also for instructional purposes

2. Pick out the odd from the following.

A. Collage B. Charts C. Film D. Posters

Utilisation Domain

Utilisation is the act of using processes and resources for learning. The process of utilisation includes matching learners with specific materials and activities, preparing learners for interacting with those materials, providing guidance during engagement, providing assessment of the results, and incorporating usage into the continuing procedures of the organisation. The domain of Utilisation includes the sub domains viz., Media Utilisation, Diffusion of Innovations, Implementation and Institutionalisation, and Policies and Regulations

Examples of test items under this domain are given below

1. The usages 'html', 'http', 'www' etc are directly connected with

A. Television B. Newspapers

C. Radio D. Websites

2. As an instructional medium, the key attraction of computer is the

A. Storage facility of instructional materials

B. Availability of colour printouts

C. Digital Technology D. Potential for individualised instruction.

Management Domain

Management involves controlling Instructional Technology through planning, organizing, coordinating, and supervising. Management is a process involving

motivating, directing, coaching, supporting, monitoring, delegating and communicating. The domain of Management includes the sub domains viz., Project Management, Resource Management, Delivery System Management, and Information Management

Examples of test items under this domain are given below

1. During instruction, which strategy is useful for making questioning effective?

A. Repetition and redistribution of questions

B. Explanations for more clarity

C. Giving cues of correct answers

D. All of these

2. Which of the following is included in EDUSAT services?

A. Internet facilities B. Multimedia lessons

C. VICTERS D. All of these

Evaluation Domain

Evaluation is the process of determining the adequacy of instruction and learning. A variety of activities under problem analysis, criterion-referenced measurement, formative evaluation and summative evaluation are to be done for effective evaluation. The domain of Evaluation includes the sub domains viz., Problem Analysis, Criterion-referenced Measurement, Formative and Summative Evaluation, and Long-Range Planning.

Examples of test items under this domain are given below

1. Which is to be considered as basis for Evaluation?

A. Content/Lessons B. Instructional Materials

C. Learning Activities D. Instructional/Curricular Objectives

2. The main objective of Action research is

A. Training in scientific research B. Training in historical research

C. Problem solving D. Science experimentation

Considering the five domains of Instructional Technology, viz., Design, Development, Utilisation, Management, and Evaluation the investigator framed seventy-five objective type items to test for the Awareness on Instructional Technology. Details of test items in the draft test with regard to five domains of Instructional Technology is given in Table 4

TABLE 4

Distribution of Test items in the Draft Test of Awareness on Instructional Technology

Sl. No.	Domain	Test Item Number	Total Item
1	Design	1, 6, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 22, 23, 24, 25, 26, 27, 29, 31, 32, 33, 34, 36, 37, 39, 41, 43, 47, 48, 50, 51, 54, 60, 61, 63, 64, 71, 73	41
2	Development	4, 5, 8, 21, 46, 52, 53, 66	8
3	Utilisation	2, 3, 7, 42, 44, 58, 68, 69, 70, 74, 75	11
4	Management	30, 38, 55, 56, 57, 59, 65, 67	9
5	Evaluation	28, 35, 40, 45, 49, 62, 72	6
Total			**75**

Scoring Scheme

As all the test items are objective type, the scoring scheme is to give ‘one score’ each for each correct answer and ‘zero score’ for every incorrect answer. A copy of the draft test is given as Appendix No.

III. Try out

1. Pilot Test.

The prepared draft test on Instructional Technology Awareness was pilot tested on a group of 40 primary school teachers. The Teachers were directed to read carefully each test item and to record their answers by putting a '√' mark against the letter indicating the answer in the response sheet given separately. All kinds of measures were taken to make teachers very relaxed to record their responses without fear of whether their answers are correct or not. Teachers were also directed to reflect what they know and how much they are aware of the areas included in the test.

The main objectives of conducting the pilot test were (i) to fix the time limit, (ii) to know the ambiguities, if any, of the test. Based on the performance of majority of the Teachers, the time limit of the draft test was fixed as 70 minutes and rectified all the ambiguities pointed out by the teachers.

2. Try Out of the Test

After completion of the preparation and printing of the draft test of Instructional Technology Awareness, the investigator made an experimental try-out of the test, on a sample of 100 primary school teachers. The sample was a stratified one, considering all the representative traits of classificatory variables to be considered in the study viz., male and female teachers, lower primary and upper primary school teachers, government and aided school teachers, schools of DPEP and non-DPEP districts, TTC and B.Ed qualified teachers and teachers having varied length of services. The scope of the try-out test was to secure data both for qualitative and quantitative analysis. The qualitative analysis includes the checking and finalizing administrational procedures of the test, identification of faulty instructions and questions, rectification of the identified defects and in total quality improvement of test items. The quantitative analysis is concerned with the determination of selecting the best items in terms of item Difficulty Index (DI) and item Discrimination Power

(DP) for inclusion in the final test. To determine these, the investigator used the Ebel's method. By this method,

$$\text{Difficulty Index (DI)} = \frac{U + L}{2N} \quad \text{and} \quad \text{Discrimination Power (DP)} = \frac{U - L}{N}$$

Where,

U = The number of correct responses in the upper group

L = The number of correct responses in the lower group

N = The number of individuals in each group

The estimated indices of Discrimination and difficulty of the seventy-five objective test items are given in Table No. 5

The selection of the test items for the final test was done following the criteria of satisfactory Difficulty Index (around 0.50) and the Discrimination Power (greater than 0.40).

TABLE 5

Results of Item Analysis of the Test of Awareness on Instructional Technology

Item No.	DP = (U-N)/L	DI = (U+N)/2L	Item No.	DP = (U-N)/L	DI = (U+N)/2L
1	0.0614	0.7634	40 (*14)	0.4060	0.8909
2 (*1)	0.4962	0.6303	41 (*15)	0.4181	0.7454
3	0.2156	0.2121	42	0.2030	0.5454
4 (*2)	0.4515	0.8939	43 (*16)	0.4666	0.4272
5	0.1337	0.7787	44	0.0000	0.2200
6 (*3)	0.4575	0.6575	45 (*17)	0.4969	0.4606
7	0.2123	0.3633	46	0.0000	0.2700
8	0.2212	0.3787	47 (*18)	0.4669	0.7424
9 (*4)	0.4848	0.6333	48 (*19)	0.5818	0.4606
10	0.0000	1.0000	49 (*20)	0.4181	0.4263
11	0.1336	0.9365	50	0.1330	0.4646
12	0.1224	0.9145	51 (*21)	0.4606	0.4090
13 (*5)	0.5151	0.4939	52 (*22)	0.4484	0.6848
14	0.2110	0.8383	53 (*23)	0.4030	0.4424
15	0.0712	0.3365	54 (*24)	0.5272	0.6636
16 (*6)	0.4090	0.6515	55 (*25)	0.4696	0.4636
17	0.2036	0.9010	56 (*26)	0.4131	0.3818
18 (*7)	0.4000	0.3939	57	0.1330	0.5662
19 (*8)	0.4636	0.6969	58	0.2132	0.4752
20	0.2010	0.5420	59 (*27)	0.4909	0.6060
21 (*9)	0.4854	0.8000	60 (*28)	0.4606	0.6969
22 (*10)	0.4484	0.5272	61 (*29)	0.6666	0.5575
23	0.0000	0.0600	62 (*30)	0.4575	0.6151
24	0.0700	0.3740	63	0.1220	0.5662
25	0.1330	0.3320	64 (*31)	0.4121	0.5030
26	0.0000	0.3320	65 (*32)	0.4636	0.2626
27	0.0000	0.6000	66 (*33)	0.4030	0.4404
28	0.0700	0.1720	67 (*34)	0.6181	0.4606
29	0.2100	0.4320	68 (*35)	0.4787	0.7818
30	0.0720	0.2332	69 (*36)	0.4060	0.6769
31 (*11)	0.4484	0.5333	70 (*37)	0.4787	0.7757
32	0.2020	0.4320	71 (*38)	0.5757	0.5363
33 (*12)	0.4151	0.4363	72 (*39)	0.4969	0.6515
34	0.2020	0.7420	73	0.2020	0.4662
35	0.2000	0.9020	74	0.2030	0.5454
36	0.1330	0.2720	75 (*40)	0.5151	0.5606
37	0.2020	0.3323	*** Selected Items for the final Test and Item Number in the Final Test**		
38	0.2000	0.5740			
39 (*13)	0.4242	0.5636			

IV. Finalisation of the Test

The final Test thus consists of 40 objective type items. The selected test items were got printed in the form of a booklet. Separate response sheet was also made ready. Time required for the final test was fixed to 40 minutes. A copy of the final test is given as Appendix No III.

The psychometric details like validity and reliability of the final test were then established. Details are given below.

1. Validity

The Test of Awareness on Instructional Technology was prepared by giving weightage to the five domains of Instructional Technology. 'Awareness' is the act of having or showing realization, perception or knowledge. All the items included in the test are in the form of objective type test items, to avoid subjectivity in the valuation and for easiness of responding. All the test items were prepared by studying each of the five broad domains of instructional Technology and by understanding the sub domains and themes coming under each Domain. Items were prepared considering the sub themes of Instructional Technology and thus the test possesses Content Validity.

The investigator also consulted with a number of subject experts in the field of Instructional Technology so as to verify the content validity and face validity of the Test. On examination of the test items by subject experts, it was opined that all the test items are items to measure knowledge in various aspects of Instructional Technology. The test thus possesses face validity and content validity.

2. Reliability

The 'test-retest method' was used to estimate the reliability of the test. An interval of two weeks was made between the test and retest. The test-retest was administered on fifty-four primary school teachers. The scores thus obtained in the two tests were correlated by the product-moment co-efficient of correlation method. The reliability of the test thus estimated was found to be 0.78., which indicates that the test is highly reliable. Details of items in the Test of Instructional Technology Awareness are given in Table No:6.

TABLE 6

Content Details of the

Test of Awareness on Instructional Technology

Final Test Item No.	Domain of Instructional Technology	Sub-domain of Instructional Technology
1	Utilisation	Media Utilisation
2	Development	Print Technologies
3	Design	Instructional Strategies
4	Design	Instructional Strategies
5	Design	Learner Characteristics
6	Design	Learner Characteristics
7	Design	Instructional Systems Design
8	Design	Instructional Strategies
9	Development	Audio Visual Technologies
10	Design	Instructional Strategies
11	Design	Instructional Systems Design
12	Design	Instructional Strategies
13	Design	Learner Characteristics
14	Evaluation	Formative and Summative Evaluation
15	Design	Instructional Strategies
16	Design	Learner Characteristics
17	Evaluation	Long-Range Planning
18	Design	Instructional Strategies
19	Design	Instructional Strategies
20	Evaluation	Problem Analysis
21	Design	Learner Characteristics
22	Development	Integrated Technologies
23	Development	Audio Visual Technologies
24	Design	Learner Characteristics
25	Management	Delivery Systems Management
26	Management	Delivery Systems Management

Final Test Item No.	Domain of Instructional Technology	Sub-domain of Instructional Technology
27	Management	Resource Management
28	Design	Instructional Systems Design
29	Design	Instructional Systems Design
30	Evaluation	Formative and summative Evaluation
31	Design	Instructional Strategies
32	Management	Resource Management
33	Development	Computer-based Technologies
34	Management	Information Management
35	Utilisation	Media Utilisation
36	Utilisation	Media Utilisation
37	Utilisation	Media Utilisation
38	Design	Message Design
39	Evaluation	Problem Analysis
40	Utilisation	Media Utilisation

3.2.2. CHECKLIST ON INSERVICE TRAINING NEEDS

The present study is also to assess the inservice training needs of primary school teachers of Kerala. In the process of making a teacher an effective one, researches found that inservice programmes play an effective role. To know what are the present training needs of Primary School Teachers to attain through inservice courses in the context of enriched curriculum, modernized Instructional Technology etc., the investigator prepared a Checklist on Inservice Training Needs. Details of the Checklist construction are given below.

1. Planning.

For developing the 'Check list on Inservice Training Needs', the term 'Inservice Training Needs' is defined as the preferred themes or areas teachers wish to undergo education and training during inservice courses for improving their

instructional skills leading to effective teaching and learning at schools, and the requirements and facilities regarding the conduct of such inservice courses.

In order to prepare the checklist the investigator conducted participatory observations of a number of inservice training programmes for primary school teachers; made a detailed review of literature on planning and conduct of Inservice Training for Teachers; on themes of inservice training programmes; impact of inservice training programmes; new trends in planning and implementing of inservice training programmes; effectiveness studies and surveys related to inservice training programmes, role of Information and Communication and Technology in inservice teacher training programmes; documentations done by various inservice training institutions like SCERT, DIETs, BRCs and CRCs; published self instructional modules and awareness packages for primary school teachers prepared by NCERT; Instructional packages for primary school teachers on theoretical bases of curriculum published as part of District Primary Education Programme, Kerala; and handbooks prepared by SCERT, Kerala for primary school teachers of Standard I to VII.

Beside these review of literatures and participatory observations the investigator conducted a number of unstructured interviews and discussions with various subject experts and Teacher Trainers of various inservice teacher-training institutions like SCERT, DIETs, Block Resource Centers, and Cluster Resource Centers. The investigator also made detailed discussions with a number of inservice teachers for identifying the 'hard-spots' of inservice training programmes. All these experiences gave the investigator an outline of the ongoing inservice training programmes and inservice training needs of primary school teachers.

On the basis of these, different aspects of Inservice Training Needs coming under the five domains of Instructional Technology viz., Design, Development, Utilisation, Management, and Evaluation; were selected for the preparation of Checklist. The criteria for selection of these five domains of Instructional Technology were their significance and potentialities of inservice training in those themes for empowering day-to-day instructional practices in the primary schools.

2. Preparation

1. Analysing the different aspects of Inservice Training Needs of Primary School Teachers, on the basis of the five domains of Instructional Technology viz., Design, Development, Utilisation, Management and Evaluation the investigator framed seventy-three themes for the checklist on Inservice Training Needs. Details of the five domains and their sub-themes included in the preparation of Checklist on Inservice Training Needs are given in Table No. 7

TABLE 7

Content Details of the Checklist on Inservice Training Needs

I. **DESIGN DOMAIN**	
DESIGN DOMAIN – Sub themes	1.Projects
	2.Assignments
	3.Seminars
	4.Collections/Records
	5. Experiments
	6. Field Trips
	7.Debates
	8.Discussions
	9.Symposiums
	10. Workshops
	11.Interviews/Surveys
	12.Camps
	13.Club Activities
	14. Library Activities
	15. Learning corners
	16. Play way Activities
	17.Observations
	18. Notes Making
	19.Psychological Bases of Instruction

	20. Philosophical Bases of Instruction
	21. Sociological Bases of instruction
	22. Activity based Curriculum
	23. Child centered Curriculum
	24. Competency based Curriculum
	25. Constructivism- Learning Experiences
	26. Multiple Intelligence –Learning Experiences
II.**DEVELOPMENT DOMAIN**	
DEVELOPMENT DOMAIN – Sub themes	1.Preparation of Improvised Instructional Materials
	2. Teaching Learning Materials – New trends and perspectives
	3.Instructional Use of Computers
	4.Contents Newspapers, Magazines, Journals, Weeklies, etc
	5.Charts, Pictures, Flash cards etc
	6.Over Head Projector, Film Projector, Slide Projectors etc
	7.Other Audio Video Media, Equipments etc
	8.Posters, Collage, etc
	9.Preparation of Magazines, Newsletters, Special issues, Broachers
	10. Local Texts preparation
III. **UTILISATION - DOMAIN**	
UTILISATION DOMAIN- Sub themes	1. Integrated Approach –Learning Experiences
	2. Spiral Approach –Learning Experiences
	3. Multi Level Instruction –Learning Experiences
	4. Co-operative Learning –Learning Experiences
	5. Dialogic Learning –Learning Experiences
	6. Communicative Approach –Learning Experiences
	7. Discovery Learning –Learning Experiences
	8. Whole Language Approach- Learning Experiences
	9. Information Processing Approach –Learning Experiences.
	10. Concept Attainment –Learning Experiences.
	11. Process Skills Development- Learning Experiences

	12. Life Skills Development – Learning Experiences
	13. Contextualisation of Learning Experiences
	14. Presentation of social issues and problems in classrooms
	15. Nurturance of Human values – Instructional Activities
	16. Nurturance of Environmental Awareness - Activities
	17. Nurturance of Creativity- Instructional Activities
	18. Home works
	19. Instructional methods for effective Reading and Writing
IV –**MANAGEMENT DOMAIN**	
MANAGEMENT DOMAIN- Sub themes	1. Year Planning
	2. Unit Planning
	3. Lesson Planning / Teaching Manual Preparation
	4.Local Resource Mapping
	5.Support services like PTA/MPTA/Class PTA
	6. Content enrichment
	7.Teaching Learning Materials/ Products – Effective Reutilisation
	8. Control of Delinquency among pupils
	9. Handling pupils with Learning Disabilities
	10. Persistence of Learning Motivation among pupils
	11. Handling of large classes
V. – **EVALUATION DOMAIN**	
EVALUATION DOMAIN- Sub themes	1. Continuous and Comprehensive Evaluation (CCE)
	2. CE – Continuous Evaluation
	3. TE – Terminal Evaluation
	4. Part II Evaluation
	5. Part III Evaluation
	6.Recording responses in Lesson Plan/ Teaching Manual
	7. Action Research

The check list was so designed that the Teachers are to record their responses by putting a '✓' mark against the theme in the checklist according to their mode of preference for inservice training. For this, three modes of preferences were given for each theme viz.,

1. Need no training
2. Need training in certain areas
3. Need comprehensive training

Example of the themes in the Checklist and the recording style of responses in the three modes are given below

Theme	Need no training	Need training in certain areas	Need comprehensive training
Projects		✓	
Assignments	✓		
Seminar			✓

3. Scoring Scheme

The mode of preference for each theme was counted to estimate as percentage of preference.

4. Finalisation of the Checklist

The final checklist thus consists of 73 inservice training themes. The final check list was got printed in the form of a booklet. Separate response sheet was also got printed.

Time required for responding of the Checklist was scheduled as 40 minutes. A copy of the Checklist is given as Appendix No.V.

(i). Validity

The Checklist on Inservice Training Needs was prepared by considering all the five Domains of Instructional Technology. By the term 'Inservice Training Needs' investigator means the preferred themes teachers wish to undergo education and training during inservice courses for improving their instructional skills leading to effective teaching and learning at schools, and the requirements and facilities regarding the conduct of such inservice courses. As the tool is in the form of checklist teachers were able to record their responses very user friendly. The investigator consulted with experts in the field of inservice teacher education and all the themes included in the checklist are reported as relevant themes related to the improvement of instructional process. The inservice teachers also reported that all the themes included in the Checklist on Inservice Training Needs are very relevant to their day-to-day instructional practices. The Checklist thus possesses face validity and content validity.

(ii). Reliability

The 'test-retest method' was adopted to find the reliability of the Checklist. An interval of two weeks was made between the test and retest. The test-retest of the Checklist was administered among fifty-four primary school teachers. The responses recorded by the teachers in the retest were found to be almost the same of prior testing.

3.2.3 QUESTIONNAIRE ON PERSONAL INFORMATION AND INSERVICE TRAINING

The present study is designed to asses the level of Instructional Technology Awareness among Primary School Teachers, and also to identify the themes for future inservice teacher training programmes. Teachers as the stakeholders/ consumers of inservice teacher training programmes, a grass-root level inquiry among teachers was felt as a need of the hour, for enhancement of the quality of teacher training programmes. Personal perceptions and reflections from the part of

Primary School Teachers will serve as Guidelines for improvement of future inservice teacher training programmes.

On basis of these to answer the minor objectives, beside the Checklist on Inservice Training Needs a Questionnaire on Personal Information and Inservice Training was also designed and prepared. The present study is also to see whether the Inservice Training needs significantly vary among different subsamples formed on the basis of Classificatory variable viz., Gender, Teaching Level, School Management, District Type, Teacher Training Qualifications and Length of Service. So the first part of the Questionnaire was devoted for collecting personal details of teachers like Gender, Age, Length of Service, Qualifications, Computer Knowledge, Patterns of Computer usage, etc. In the second part of the Questionnaire, two open-ended questions were included to elicit teacher perceptions about their felt Inservice Training Needs during live instructional situations. Teachers were also, asked to write down those perceptions as themes to be suggested for inclusion in future inservice teacher training programmes. The other open-ended question was to write down their self-evaluations and suggestions about the ongoing inservice teacher training programmes. Those suggestions were requested as these will service as guidelines for implementing better inservice teacher training programmes in future. A copy of the Questionnaire is given as Appendix No. VII.

(i) Validity

Basic to the validity of a questionnaire is asking the right questions phrased in the least ambiguous way. In this case, it was found at times of Pilot Testing and in Final Testing, the teachers answered the questions without mentioning any ambiguity in the wording of questions. Besides, all the questions posed were with regard to the conduct of Inservice Training Programmes. These suggest the validity or purpossveness of the Questionnaire.

(ii) Reliability

Reliability of the Questionnaire was inferred by comparing the responses of the Questionnaire with those of a second time administration to a small sample of twenty teachers. The responses were found to be alike in the two administrations.

3.3 SAMPLE

The population intended for the present study is Primary School Teachers of Kerala state. The sample consisting of 613 primary school teachers was drawn using stratified sampling technique.

The following categories or strata were considered in the sampling of Teachers.

1. Gender (Male/Female)
2. Teaching Level (Lower Primary/Upper Primary)
3. Type of School Management (Government/Aided)
4. Type of District of School (DPEP/non-DPEP)
5. Teacher Training Qualifications (TTC/B Ed./TTC+B Ed.)
6. Length of Service (Years up to 5, 6 to 15, 16 to 25 and 26 and above)

The rationale for considering the above strata of the population is discussed below

1. Gender

The investigator decided to consider gender as a strata in the sampling of Teachers is to know whether there exists gender difference in Instructional Technology Awareness and Inservice Training Needs

2. Teaching Level.

As the population is Primary School Teachers the investigator was curious to know whether there exists any differences in Instructional Technology Awareness and Inservice Training Needs between the teachers working in Lower Primary Schools and Upper Primary Schools. This made a need for considering the classification of sample into two categories, viz., Lower Primary School Teachers and Upper Primary School Teachers.

3. Type of School Management.

Since there are two major strata of schools based on Management in the population viz., Government Schools and Government-aided Schools, the investigator decided to have sample consisting of Government School Teachers and Government-aided School Teachers for the investigation to know whether there exists any difference in Instructional Technology Awareness and Inservice Training Needs.

4. Type of District of School

In the history of Inservice Training programmes for Primary School Teachers of Kerala State, DPEP has marked a role. There were schools of DPEP and Non-DPEP. viz., Kasargode, Malappuram, Idukki, Palakkad and Thiruvanthapuram are the five DPEP districts and Kollam, Kottayam, Ernakulam, Thrissur and Kannur are the five non DPEP districts considered in this study. Therefore investigator decided to inquire whether there exists difference in Instructional Technology Awareness and Inservice Training Needs between teachers of DPEP Districts and Non-DPEP Districts

5. Teacher's Preservice Qualifications

Competency in instruction develops through pre-service teacher training programmes like TTC and B.Ed courses. Even though the requisite teacher training qualification for entering into teaching profession in primary schools is TTC, there are teachers with B.Ed. Degree also. The investigator decided to inquire whether the Instructional technology Awareness and Inservice Training Needs vary among the teachers having qualifications TTC only, B.Ed only and having both TTC and B.Ed.

6. Length of Teaching Experience

Expertise is expected to be having positive correlation with experience. Research is a way to test hypotheses scientifically. So investigator decided to consider length of service of teachers as a variable to inquire whether there exists variations in Instructional Technology Awareness and Inservice Training Needs between teachers with varied length of service.

Though there are fourteen districts in Kerala, the investigator decided to take sample from ten districts only due to practical difficulties of collecting data from all districts. As per the reported Government Statistics 2002-2003, the total number of primary teachers in Kerala State working in Government and Government aided schools is 66000. (Total number of teachers working in Upper Primary Schools is 34661 and in Lower Primary Schools is 31339). Details on the number of teachers working in Lower Primary and Upper Primary Schools of various districts of Kerala State are given in Table No. 8.

TABLE 8

Number of Primary School Teachers in Kerala State(As per Government Statistics, 2002-03)

Sl. No.	District	Gender		Management		Level		Total
		Male	Female	Govt	Aided	L.P.	U.P.	
1	Thiruvananthapuram	1319	4473	3372	2420	3124	2668	5792
2	Kollam	1134	4269	2425	2928	2795	2608	5403
3	Kottayam	624	3206	1246	2584	2059	1771	3830
4	Idukki	774	1601	792	1583	1183	1192	2375
5	Eranakulam	7555	4126	1717	3164	2673	2208	4881
6	Thrissur	825	6215	1435	5605	3551	3489	7040
7	Palakkad	2322	5808	2287	5843	3541	4589	8130
8	Malappuram	5965	9090	5037	10018	6772	8283	15055
9	Kannur	3805	6097	1458	8444	4160	5742	9902
10	Kasargode	1786	1806	1684	1908	1481	2111	3592
	Total	19309	46691	21453	44547	31339	34661	**66000**

Based on the above statistics the investigator proposed to have an initial sample of 800 Primary School Teachers. Break-up of the initial sample strata-wise is given as Table No. 9. The school wise distribution of final sample is given as Appendix VIII.

TABLE 9

Break-up of initial sample

Sl. No.	District	Gender		Management		Level		Total
		Male	Female	Govt	Aided	L.P.	U.P.	
1	Thiruvananthapuram	16	54	40	30	38	32	70
2	Kollam	14	52	30	36	34	32	66
3	Kottayam	08	39	15	32	25	22	47
4	Idukki	09	20	10	19	14	15	29
5	Ernakulam	10	50	21	39	33	27	60
6	Thrissur	10	75	17	68	43	42	85
7	Palakkad	28	70	28	70	43	55	98
8	Malappuram	72	110	61	121	82	100	182
9	Kannur	46	74	18	102	50	70	120
10	Kasargode	21	22	20	23	18	25	43
	Total	234	566	260	540	380	420	**800**

3.4 DATA COLLECTION PROCEDURE, SCORING AND CONSOLIDATION

Details of data collection procedure, scoring and consolidation are described in detail as follows.

3.4.1 Data Collection Procedure

In order to administer the tools and to collect the data required for analysis, necessary copies of the tools and response sheets were printed. The schedule for administering the tools was prepared by contacting the heads of the institutions and the teachers concerned. During the collection of data, the investigator established enough rapport with the teachers in order to make them aware of the purpose of the study and of tools.

Accordingly, the three tools viz., Test of Awareness on Instructional Technology and Checklist on Inservice Training Needs and the Questionnaire on Personal Information and Inservice Training were administered among primary school teachers. Eventhough the directions printed on the introductory part of each tool was self-explanatory, the investigator explained in detail to the teachers about the ways and procedure to record their responses. As stated early in the description of preparation of the tools, teachers were directed to read carefully each test item and to record their answers in the form of '✓' mark in the response sheets given separately. All kinds of measures were taken to make teachers very relaxed to record their responses without fear of whether their answers are correct or not. Teachers were directed to reflect what they know and how much they are aware of the areas included in the test. The feeling of participation in a need-based study was maintained among the respondents by the investigator throughout data collection.

The response sheets collected were checked for omissions, mistakes or pattern marking. Incomplete response sheets were discarded and the valid response sheets were retained for scoring and for further analysis. After rejection of incomplete response sheets with unidentifiable pattern of marking, the final sample was reduced to 613.

Details of the Break-up of Final Sample are given in Table No.10.

TABLE 10

Break-up of Final Sample

Sl. No.	District	Gender		Management		Level		Total
		Male	Female	Govt	Aided	L.P.	U.P.	
1	Thiruvananthapuram	9	82	73	18	48	43	91
2	Kollam	15	57	36	36	36	36	72
3	Kottayam	08	61	21	48	08	61	69
4	Idukki	11	27	09	29	19	19	38
5	Ernakulam	14	59	40	33	43	30	73
6	Thrissur	12	51	21	42	22	41	63
7	Palakkad	09	45	27	27	24	30	54
8	Malappuram	22	60	33	49	58	24	82
9	Kannur	06	36	11	31	38	04	42
10	Kasargode	10	19	19	10	21	08	29
	Total	116	497	290	323	317	296	**613**

3.4.2 Scoring and Consolidation

Response sheets were scored based on the procedure of scoring of each tool. Scores were consolidated to facilitate computer analysis of the data using SPSS software.

3.5. STATISTICAL TECHNIQUES USED FOR ANALYSIS

Computer facilities using the software programme SPSS was made use of for the statistical analyses of the data collected.

Statistical techniques used for the analysis of the data are the following:

3.5.1. Two-tailed 't' Test of Significance of difference between Means for large independent samples

This technique was used for the comparison of mean scores of Instructional Technology between Awareness groups based on the Classificatory Variables.

The critical Ratio, $Z = \frac{M_1 - M_2}{\sqrt{\frac{\sigma_1^2}{N_1} + \frac{\sigma_2^2}{N_2}}}$ (Best & Khan, 1986)

Where ,

M_1 - the mean of the first group

M_2 - the mean of the second group

σ_1 - standard deviation of the first group

σ_2 - standard deviation of the second group

N_1 - size of the sample of the first group

N_2 - size of the sample of the second group

The difference between means is said to be significant depending upon whether the Z-value exceeds ±1.96 and ±2.58, at 0.05 and 0.01 levels of significance respectively

3.5.2. One-way Analysis of Variance (ANOVA)

One-way analysis of Variance was used to compare the mean scores of Instructional Technology Awareness between groups formed on the basis of Classificatory Variables viz, Teacher Training Qualifications and Length of Service. In this case the Critical Ratio is :

$F = \frac{MSS_B}{MSS_w} = \frac{SS_B/df_B}{SS_w/df_W}$ (Best & Khan 1986)

Where,

MSS_B - Mean sum of squares between groups

MSS_W - Mean sum of squares within groups

SS_B - Sum of squares between groups

SS_W - Sum of squares within groups

df_B = n-1, degrees of freedom between

df_N = N-n, degrees of freedom within

The significance of an F ratio is assessed with reference to the Table of F for (n-1, N-n) degrees of freedom for either 0.05 or 0.01 level of significance.

If, for a required level of significance the value obtained for F is higher than the table value of F, then the difference between groups means is said to be significant for the level of significance of the test.

3.5.3. Scheffe` Test of Multiple Comparison for the Mean Scores

The procedure of Scheffe's test for multiple comparison which is often used as a follow up of the ANOVA test is as follows :

Step 1 : Calculate F – ratio between the pairs of means by using the within group variance estimate.

Step 2 : Consult a table of F and obtain the value of F required for significance at 0.05 or 0.01 level for $df_1 = K-1$ and $df_2 = N-K$.

Step 3 : Calculate F^1 where

$$F^1 = (K-1)\, F$$

Step 4 : Compare the values of F and F^1

For any difference to be significant at the required level, F must be greater than or equal to F^1.

3.5.4. Percentage Analysis

Percentage Analysis was done for Inservice Training Needs Assessment for total sample and sub samples based on Classificatory Variables.

3.5.5. Chi-Square Test of Independence

The Chi-square test of Independence was used for finding out the dependence of the Inservice Training Needs with the Classificatory Variables. Critical ratio for the λ^2 test of dependence is,

$$\lambda^2 = \Sigma \frac{(fo-fe)^2}{fe}$$ (Ferguson, 1976)

Where,

fo - the observed frequency

fe - the expected frequency under the assumption of Independence of the variables.

The hypothesis of independence is rejected o accepted depending upon whether the Chi-square value obtained is greater than or less than the Table value of Chi-square (r-1) degrees of freedom and for a particular level of significance of the test, where 'r' and 'k' are the number of rows and columns respectively.

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Χηαπτερ Φουρ

ANALYSIS

- Preliminary Analysis
- Estimation of Level of Instructional Technology Awareness of Teachers
- Comparison of Mean Scores of Instructional Technology Awareness
- Inservice Training Needs Assessment
- Dependency of Needs with Classificatory Variables
- Identification of Highly Needed Themes
- Extent of Computer Literates
- Consolidation of Opinions of Teachers on Inservice Training Programme Effectiveness
- Consolidation of Suggestions and Requirements of Teachers

The major objectives of the present study are to find the level of Awareness of Primary School Teachers about different aspects of Instructional Technology that a teacher ought to have for effective instruction and to assess their Inservice Training Needs for attending future inservice training programmes.

Statistical Analysis of the data germane to this work has been done to test the tenability of the major hypotheses like, the level of Instructional Technology Awareness is moderate among Primary School Teachers of Kerala; the level of Instructional Technology Awareness is significantly different between different sub samples and Inservice Training Needs vary among different sub samples of teachers. The results of the analyses are discussed for the validation or non validation of the same under the following major headings,

4.1 Level of Instructional Technology Awareness among the total sample of teachers and among different sub samples of Teachers classified on the basis of variables like Gender, Teaching level (L.P/U.P.), Type of School Management (Government/Aided), Type of District (D.P.E.P/Non-D.P.E.P.), Teacher Training Qualifications (T.T.C., B.Ed. and both), and Length of Service (up to 5 years, 6 to 15 years, 16 to 25 years and with 25 years and above).

4.2 Comparison of the Mean Scores of Instructional Technology Awareness between different sub samples.

4.3 Inservice Training Needs Assessment among the total sample of teachers and for different sub samples based on classificatory variables.

4.4 Test of Significance of Differences in the Inservice Training Needs between groups formed on the basis classificatory variables.

4.5 Identification of the Highly Needed Themes for Inservice Training.

The minor objectives are answered under the following sections.

4.6. Extent of Computer literates among the total sample and for different sub samples.

4.7 Opinion of teachers on the effectiveness of on-going inservice training programmes.

4.8. Suggestions and requirements of Teachers regarding the conduct of inservice training programmes in future.

PRELIMINARY ANALYSIS.

Statistical Analysis is a mathematical process of organizing, analyzing and interpreting numerical data and is one of the basic phases of a research. Inferential Statistics helps the researcher to infer the population characteristics. The primary interest in studying a sample is to infer the characteristics of the population by applying inferential statistics. The investigator therefore has made use of inferential statistics for hypothesis testing and hence for arriving at answers to the questions stated. As a preliminary to the inferential statistics, the investigator computed the essential descriptive statistics like Mean, Median, Mode, Standard Deviation, Skewness, and Kurtosis of the measures of the variable 'Instructional Technology Awareness' for the whole sample (N=613) and for the different sub samples formed based on each classificatory variable.

The essential descriptive statistics of the variable Instructional Technology Awareness for the whole sample are presented in Table No.11**.**

TABLE 11
Basic Statistical
Constants of the Distribution of Instructional Technology
Awareness for the Whole Sample of Primary School Teachers (N= 613)

Sl. No.	Domains of Instructional Technology	Max	Mean	Median	Mode	Standard Deviation	Skewness	Kurtosis	Standard error of Mean
1	Design	20	11.28	11.00	12.00	3.68	-0.03	-0.59	0.15
2	Development	5	3.19	3.00	3.00	1.01	-0.29	-0.01	0.04
3	Utilisation	5	3.13	3.00	4.00	1.16	-0.59	-0.04	0.05
4	Management	5	2.01	2.00	2.00	1.25	0.20	-0.70	0.05
5	Evaluation	5	2.89	3.00	3.00	1.10	-0.09	-0.47	0.04
	Total	40	22.50	23.00	24.00	6.02	-0.21	-0.31	0.24

Discussion of Results

From the Statistical Constants given in Table 11, it can be seen that of the Variable Instructional Technology Awareness, the three measures of central tendencies viz., Mean, Median and Mode are 22.50, 23.00 and 24.00. This suggests that there is not much variation between values of the three measures of central tendencies of the total sample. The positions of Mean, Median, and Mode suggest that distribution of the variable is slightly negatively skewed. This is evident from the index of skewness which is - 0.21. The index of kurtosis for the whole sample is - 0.31. These indices suggest that the distribution of the variable Instructional Technology Awareness is slightly negatively skewed and slightly *mesokurtic*. The nature of the distributions of the sub samples are also the same. The level of awareness is appreciably moderate for all the four domains of the Instructional Technology viz., *Design, Development, Utilisation* and *Evaluation*. The level of awareness is found to be not satisfactory for the *Management Domain*. The indices further suggest that there is not much variation form normality, or the distribution is not badly skewed to apply parametric tests of significances.

4.1 LEVEL OF INSTRUCTIONAL TECHNOLOGY AWARENESS AMONG THE TOTAL SAMPLE AND FOR THE DIFFERENT SUB SAMPLES OF TEACHERS.

The number of pupils with diverse needs and diverse levels from gifted to slow learners increases day by day and hence studies on instructions revealed that teachers are to be better equipped with the theories and practices of Instructional Technology to cope with the varied demands of pupils. Accordingly, it was taken as an objective to know the level of Instructional Technology Awareness among the Primary School Teachers of Kerala. The data and results of the statistical constants like Mean, Median and Mode are used to answer for the level of Awareness in Instructional Technology.

The test of Awareness on Instructional Technology is a forty item, objective type test (multiple choice with four alternatives) and hence the maximum possible score

for the test is *40*. The mean score obtained is 22.499; median is 23.00 and mode is 24.00.

These indices suggest that the three measures of central tendencies are higher than 20, the mean of the maximum possible score. Besides, the distributions of the total sample and of sub samples of teachers are *slightly negatively skewed*. Negatively skewed distributions result when majority of the scores of the test cluster towards the higher end of the distribution than to the lower end.

All these suggest that the level of Awareness on Instructional Technology is desirably *moderate* among the total sample and among different sub samples of Primary Teachers studied. The basic statistical constants given in Table No. 11 Domain wise further reveals that the level of awareness is desirably, moderate for the domains *Design, Development, Utilisation* and for *Evaluation.* The level of awareness is not satisfactory only for the *Management* Domain. As a supplement to the above, teachers were categorised into three groups viz., Low aware group, Average aware group and High aware group based on the Mean and Standard Deviation computed for total sample and for sub samples.

The frequencies and percentages of Low aware group, Average aware group and High aware group among the total sample and different sub samples are given in Table No. 12.

TABLE 12
Number and Percentages of
Low aware, Average aware and High aware Teachers
Among the total sample and for different sub samples (Total sample = 613)

Sl. No.	Sub samples	Total N	Low aware Group		Average aware Group		High awared Group	
			N	%	N	%	N	%
1	Male Teachers	116	13	11.20	87	75.00	16	13.80
2	Female Teachers	497	63	12.70	349	70.20	85	17.10
3	Government	290	31	10.70	203	70.00	56	19.30
4	Government Aided	323	45	13.90	233	72.10	45	13.90
5	Lower Primary	317	39	12.30	217	68.50	61	19.20
6	Upper Primary	296	37	12.50	219	74.00	40	13.50
7	DPEP Districts	294	38	12.90	198	67.30	58	19.70
8	Non-DPEP Districts	319	38	11.90	238	74.60	43	13.50
9	TTC Holders	427	55	12.90	301	70.50	71	16.60
10	B.Ed Holders	159	17	10.70	118	74.20	24	15.10
11	Both TTC & B.Ed	27	4	14.80	17	63.00	6	22.20
12	Service<= 5 years	155	13	08.40	105	67.70	37	23.90
13	Service 6 to 15 years	226	34	15.00	157	69.50	35	15.50
14	Service 16 to 25 years	191	21	11.00	144	75.40	26	13.60
15	Service> 25 years	41	5	19.50	30	73.20	3	7.30
16	Total Sample	613	76	12.40	436	71.10	101	16.5

Discussion of Results

From the frequencies and percentages given in Table No.12**,** it is seen that for the total sample and for the sub samples, number of teachers in the High aware group is greater than those in the Low aware group, except in the case of teachers having service greater than 25 years. The number of teachers highly awared in Instructional Technology is greater in the case of teachers with length of service less than 5 years and least among teachers with service grater than 25 years. The number of teachers

highly awared is higher among female teachers than male teachers; Government teachers than among Aided school teachers; Lower Primary teachers than Upper Primary teachers; DPEP teachers than non DPEP teachers; teachers with qualifications B Ed. and TTC than teachers with qualifications TTC or B Ed; teachers with service less than 5 years than teachers with services grater than 5 years. In total, from the Table it is revealed that among Primary School Teachers (in the total or sub samples) more teachers are with high awareness in Instructional Technology than the number of teachers with low awareness. Graphical representation of percentages of Low-aware, Average-aware and High-aware Teachers among Total sample and for different of samples is given as Figure 2.

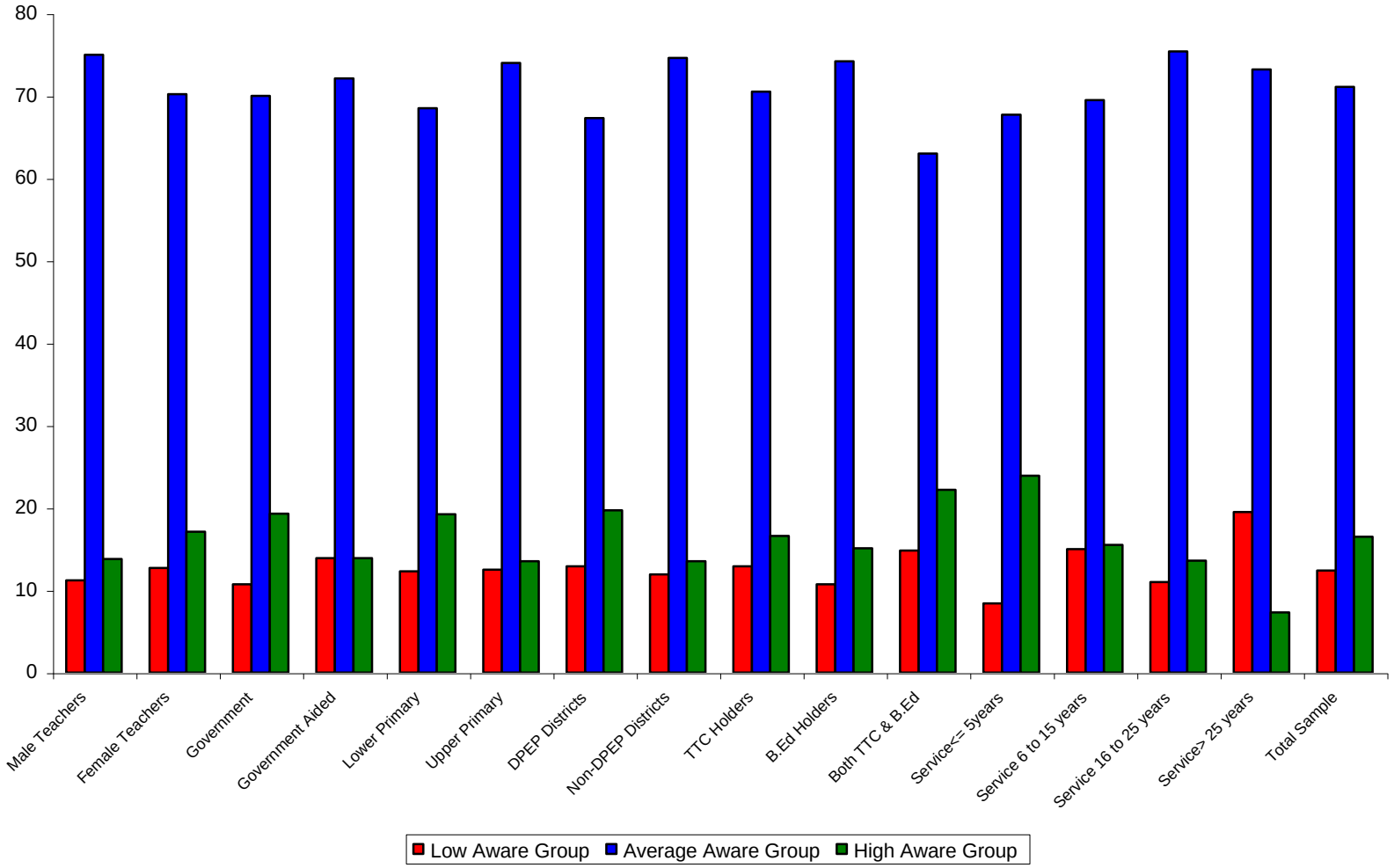

FIGURE 2. Distribution of Low-Aware-, and High Aware Teachers on Instructional Technology

4.2. COMPARISON OF MEAN SCORES OF INSTRUCTIONAL TECHNOLOGY AWARENESS BETWEEN GROUPS FORMED ON THE BASIS OF CLASSIFICATORY VARIABLES.

Mean scores of the variable Awareness on Instructional Technology were compared between groups formed on the basis of classificatory Variables like Gender, Teaching Level, Type of School Management, Type of School District, Teacher Training qualifications and Length of service. Two failed test of significance of difference between means for large independent samples, one-way ANOVA was used for the comparisons. Data and results of the comparison theme wise are given in Table 13, 1 4, 15, 16, 17 and 19. Data and Results of the Scheffe` Test of Multiple Comparison for the Mean Scores of Instructional Technology Awareness between different groups of Teachers based on Teacher Training Qualifications and length of service are given in Table 18 and 20.

Discussion of Results

4.2.1. Comparison between Male and Female Teachers.

Mean scores of the test items of Instructional Technology Awareness were compared between Male and Female Teachers by means of Two-tailed test of significance of difference between means for large independent samples. Statistical details of the comparison are given in Table No.13.

TABLE 13

**Data and Results of the
Comparison of Mean Scores of Instructional Technology
Awareness between Male and Female Teachers (Total Sample = 613)**

Item No.	Theme	Male Teachers (N=116)		Female Teachers (N=497)		't' value
		Mean	S D	Mean	S D	
1	Interview method	0.80	0.40	0.64	0.48	3.29**
2	Socratic method	0.66	0.48	0.57	0.50	1.61
3	Creativity	0.43	0.50	0.49	0.50	1.12
4	Multi level instruction	0.61	0.49	0.64	0.48	0.64
5	Spiral Approach	0.34	0.47	0.39	0.49	1.00
6	Problem solving	0.66	0.47	0.71	0.46	0.94
7	Peer Tutoring	0.58	0.50	0.54	0.50	0.79
8	Heuristics	0.48	0.50	0.48	0.50	0.00
9	Cooperative Learning	0.37	0.49	0.46	0.50	1.76
10	Cognitive Constructivism	0.55	0.50	0.53	0.50	0.40
11	Seminars	0.74	0.44	0.80	0.40	1.47
12	Universal Grammar	0.48	0.50	0.42	0.49	1.18
13	Projects	0.74	0.44	0.73	0.44	0.24
14	Assignments	0.41	0.50	0.45	0.50	0.76
15	Emotional Quotient	0.42	0.50	0.43	0.50	0.12
16	Gifted Pupils	0.66	0.47	0.67	0.47	0.17
17	Instructional Objectives	0.70	0.46	0.73	0.45	0.65
18	Instructional Analysis	0.54	0.50	0.57	0.50	0.55
19	Social Constructivism	0.50	0.50	0.46	0.50	0.72
20	Media Selection	0.48	0.50	0.57	0.50	1.77
	DESIGN DOMAIN - Total	**11.17**	**3.71**	**11.30**	**3.68**	**0.34**

Item No.	Theme	Male Teachers (N=116)		Female Teachers (N=497)		't' value
		Mean	S D	Mean	S D	
21	Cartoons	0.93	0.25	0.92	0.28	0.55
22	Projected/ non projected Aids	0.81	0.39	0.79	0.41	0.42
23	Mass Media	0.70	0.46	0.73	0.44	0.79
24	Flow Charting	0.34	0.48	0.48	0.50	2.58**
25	Presentation softwares	0.22	0.41	0.32	0.47	2.14*
	DEVELOPMENT-Total	**3.00**	**0.89**	**3.24**	**1.04**	**2.26***
26	News Paper contents	0.65	0.48	0.68	0.47	0.69
27	Websites	0.84	0.36	0.81	0.39	0.90
28	Computers	0.25	0.44	0.24	0.43	0.33
29	Television Channels	0.80	0.40	0.84	0.37	1.02
30	Classroom Communication	0.62	0.49	0.56	0.50	1.20
	UTILISATION - Total	**3.16**	**1.19**	**3.12**	**1.16**	**0.33**
31	Models of Teaching	0.50	0.50	0.47	0.50	0.64
32	Keller Plan	0.18	0.39	0.27	0.44	1.98*
33	Micro Teaching	0.50	0.50	0.60	0.49	1.92
34	Teaching Skills	0.23	0.42	0.25	0.44	0.46
35	EDUSAT Services	0.46	0.50	0.46	0.50	0.00
	MANAGEMENT -Total	**1.87**	**1.27**	**2.04**	**1.25**	**1.35**
36	CCE	0.88	0.33	0.89	0.31	0.44
37	Reflective Practices	0.43	0.50	0.49	0.50	1.08
38	Assessment	0.32	0.47	0.20	0.40	2.75**
39	Instructional Objectives	0.67	0.47	0.63	0.48	0.78
40	Action Research	0.75	0.44	0.63	0.48	2.38*
	EVALUATION – Total	**3.05**	**1.15**	**2.85**	**1.08**	**1.79**
Total Instructional Technology Awareness		**22.26**	**5.68**	**22.56**	**6.10**	**-0.839**

*** Significant at 0.05 level** **** Significant at 0.05 and 0.01 levels**

Results in Table 13 reveal that significant gender difference exists in the mean scores of six themes (out of the 40 themes) and in one domain (out of the 5 domains) only as the critical ratios of the two-tailed 't' test is greater than 1.96, the 't' value required for significance at the 0.05 level. This further suggests that the level of awareness of male and female teachers is different on these six themes only. In the case of the remaining 33 themes, significant gender difference does not exist. On the whole, it can be said that gender difference do not exist in the awareness on Instructional Technology.

4.2.2. COMPARISON BETWEEN LOWER PRIMARY AND UPPER PRIMARY SCHOOL TEACHERS.

Mean scores of the test of Awareness on Instructional Technology and of its Themes were compared between Lower Primary School Teachers and Upper Primary School Teachers by means of Two-tailed test of significance of difference between means for large independent samples. Statistical details of the comparison are given in Table 14.

TABLE 14

Data and Results of the Comparison of Mean Scores of Instructional Technology Awareness between Lower Primary and Upper Primary Teachers (Total Sample = 613)

Item No.	Theme	L.P. Teachers (N (N = 317)		U.P. Teachers (N = 296)		't' value
		Mean	S D	Mean	S D	
1	Interview method	0.70	0.46	0.64	0.48	1.63
2	Socratic method	0.66	0.49	0.56	0.50	1.37
3	Creativity	0.53	0.50	0.43	0.50	2.51*
4	Multi level instruction	0.69	0.46	0.58	0.49	2.84**
5	Spiral Approach	0.46	0.50	0.29	0.45	4.59**
6	Problem solving	0.72	0.45	0.68	0.47	1.08
7	Peer Tutoring	0.55	0.50	0.54	0.50	0.21
8	Heuristics	0.52	0.50	0.45	0.50	1.77
9	Cooperative Learning	0.43	0.50	0.46	0.50	1.59
10	Cognitive Constructivism	0.56	0.50	0.51	0.50	1.20
11	Seminars	0.76	0.43	0.83	0.38	2.15*
12	Universal Grammar	0.44	0.50	0.43	0.50	0.40
13	Projects	0.72	0.45	0.74	0.44	0.58
14	Assignments	0.46	0.50	0.43	0.50	0.62
15	Emotional Quotient	0.41	0.49	0.45	0.50	1.06
16	Gifted Pupils	0.69	0.46	0.65	0.48	0.94
17	Instructional Objectives	0.78	0.42	0.66	0.47	3.26**
18	Instructional Analysis	0.63	0.48	0.50	0.50	3.21**
19	Social Constructivism	0.50	0.50	0.43	0.50	1.79
20	Media Selection	0.58	0.49	0.53	0.50	1.25
	DESIGN DOMAIN - Total	**11.74**	**3.75**	**10.78**	**3.56**	**3.23****

Item No.	Theme	L.P. Teachers (N (N = 317)		U.P. Teachers (N = 296)		't' value
		Mean	S D	Mean	S D	
22	Projected/ non projected Aids	0.80	0.40	0.80	0.40	0.07
23	Mass Media	0.74	0.44	0.72	0.45	0.61
24	Flow Charting	0.41	0.49	0.50	0.50	2.32*
25	Presentation softwares	0.28	0.45	0.31	0.47	0.90
	DEVELOPMENT-Total	**3.13**	**1.04**	**3.25**	**0.99**	**1.48**
26	News Paper contents	0.68	0.47	0.67	0.47	0.42
27	Websites	0.77	0.42	0.86	0.34	3.05**
28	Computers	0.25	0.43	0.23	0.42	0.47
29	Television Channels	0.83	0.37	0.83	0.37	0.05
30	Classroom Communication	0.56	0.50	0.58	0.49	0.49
	UTILISATION - Total	**3.09**	**1.15**	**3.18**	**1.17**	**0.90**
31	Models of Teaching	0.45	0.50	0.49	0.50	0.97
32	Keller Plan	0.23	0.42	0.28	0.45	1.52
33	Micro Teaching	0.61	0.49	0.55	0.50	1.38
34	Teaching Skills	0.29	0.45	0.21	0.41	2.22*
35	EDUSAT Services	0.44	0.50	0.48	0.50	1.10
	MANAGEMENT -Total	**2.01**	**1.26**	**2.01**	**1.25**	**0.04**
36	CCE	0.92	0.27	0.85	0.35	2.77**
37	Reflective Practices	0.49	0.50	0.46	0.50	0.81
38	Assessment	0.21	0.41	0.23	0.42	0.55
39	Instructional Objectives	0.66	0.47	0.62	0.49	1.14
40	Action Research	0.72	0.45	0.59	0.49	3.45**
	EVALUATION – Total	**3.01**	**1.07**	**2.75**	**1.11**	**2.94****
Total Instructional Technology Awareness		**22.99**	**6.08**	**21.99**	**5.92**	**2.07***

* Significant at 0.05 level ** Significant at 0.05 and 0.01 levels

The Critical Ratio obtained for the test items on Creativity, Multi Level Instruction, Spiral Approach, Seminars, Instructional Objectives, Instructional analysis (Design Domain), Flow charting (Development Domain), Websites (Utilisation Domain), Teaching Skills (Management Domain), Continuous and Comprehensive Evaluation, Action Research (Evaluation Domain) and the total of Design Domain Evaluation Domain and of the whole test of Instructional Technology Awareness are greater than 1.96 indicating significant differences in the mean scores at 0.05 level. It is thus noNotable that nine test items, two domains and the total test show significant difference in the mean scores, so as to suggest that Lower Primary and Upper Primary School Teachers significantly vary in the awareness on Instructional Technology.

The analysis further revealed that in total Teaching Level difference exists in the Instructional Technology Awareness between Lower Primary and Upper Primary Teachers with advantage to Lower Primary Teachers than Upper Primary School Teachers.

4.2.3. COMPARISON BETWEEN GOVERNMENT AND AIDED SCHOOL TEACHERS

Mean scores of the test items of Awareness on Instructional Technology were compared between Teachers of Government Schools and Government Aided Schools by means of Two-tailed test of significance of difference between means for large independent samples. Statistical details of the comparison and the results are given in Table No. 15.

TABLE 15

Data and Results of the Comparison of Mean Scores of Instructional Technology Awareness between Government and Aided School Teachers(Total Sample = 613)

Item No.	Theme	Govt. Teachers (N=290)		Aided Teachers (N=323)		't' value
		Mean	S D	Mean	S D	
1	Interview method	0.70	0.46	0.65	0.48	1.49
2	Socratic method	0.62	0.49	0.56	0.50	1.52
3	Creativity	0.49	0.50	0.47	0.50	0.55
4	Multi level instruction	0.64	0.48	0.64	0.48	0.00
5	Spiral Approach	0.39	0.49	0.37	0.48	0.62
6	Problem solving	0.69	0.47	0.71	0.45	0.70
7	Peer Tutoring	0.59	0.49	0.51	0.50	1.94
8	Heuristics	0.51	0.50	0.46	0.50	1.45
9	Cooperative Learning	0.46	0.50	0.43	0.50	0.87
10	Cognitive Constructivism	0.53	0.50	0.54	0.50	0.19
11	Seminars	0.84	0.37	0.75	0.43	2.71**
12	Universal Grammar	0.49	0.50	0.39	0.49	2.48*
13	Projects	0.71	0.46	0.76	0.43	1.35
14	Assignments	0.49	0.50	0.41	0.49	2.10*
15	Emotional Quotient	0.44	0.50	0.41	0.49	0.66
16	Gifted Pupils	0.70	0.46	0.65	0.48	1.30
17	Instructional Objectives	0.74	0.44	0.71	0.46	0.80
18	Instructional Analysis	0.60	0.49	0.53	0.50	1.77
19	Social Constructivism	0.45	0.50	0.49	0.50	0.85
20	Media Selection	0.61	0.49	0.50	0.50	2.73**
	DESIGN DOMAIN - Total	**11.69**	**3.79**	**10.91**	**3.55**	**2.62****
21	Cartoons	0.92	0.27	0.91	0.28	0.49
22	Projected/ non projected Aids	0.79	0.41	0.81	0.40	0.57
23	Mass Media	0.76	0.43	0.70	0.46	1.45
24	Flow Charting	0.42	0.50	0.48	0.50	1.47
25	Presentation softwares	0.33	0.47	0.27	0.44	1.58
	DEVELOPMENT-Total	**3.21**	**0.98**	**3.17**	**1.04**	**0.53**

Item No.	Theme	Govt. Teachers (N=290)		Aided Teachers (N=323)		't' value
		Mean	S D	Mean	S D	
	DEVELOPMENT-Total	**3.21**	**0.98**	**3.17**	**1.04**	**0.53**
26	News Paper contents	0.69	0.46	0.66	0.48	0.97
27	Websites	0.82	0.39	0.81	0.39	0.10
28	Computers	0.24	0.43	0.24	0.43	0.18
29	Television Channels	0.83	0.38	0.84	0.37	0.38
30	Classroom Communication	0.62	0.49	0.52	0.50	2.53*
	UTILISATION - Total	**3.20**	**1.11**	**3.07**	**1.20**	**1.44**
31	Models of Teaching	0.49	0.50	0.46	0.50	0.62
32	Keller Plan	0.25	0.44	0.25	0.44	0.06
33	Micro Teaching	0.58	0.50	0.58	0.49	0.15
34	Teaching Skills	0.27	0.44	0.24	0.43	0.86
35	EDUSAT Services	0.49	0.50	0.43	0.50	1.39
	MANAGEMENT -Total	**2.07**	**1.26**	**1.96**	**1.24**	**1.01**
36	CCE	0.90	0.30	0.88	0.33	0.96
37	Reflective Practices	0.48	0.50	0.47	0.50	0.30
38	Assessment	0.24	0.43	0.21	0.41	1.01
39	Instructional Objectives	0.62	0.49	0.66	0.48	1.00
40	Action Research	0.70	0.46	0.62	0.49	2.02*
	EVALUATION – Total	**2.94**	**1.15**	**2.84**	**1.05**	**1.23**
Total Instructional Technology Awareness		**23.11**	**6.10**	**21.95**	**5.90**	**2.40***

* Significant at 0.05 level ** Significant at 0.05 and 0.01 levels

The Critical Ratio obtained for the test items on Seminars, Universal Grammar, Assignments, Media Selection (Design Domain), Classroom Communication (Utilisation Domain), and Action Research (Evaluation Domain) and of the Design Domain are greater than 1.96 indicating significant differences in the mean scores at 0.05 level. Thus, it is noNotable that only six test items and one domain showed significant difference in the level of Awareness.

But it was found that significant mean difference due to Type of School Management exists in the total mean scores of Instructional Technology Awareness. That is, Instructional Technology Awareness of Government School teachers and Aided School Teachers differ significantly. A comparison of the mean scores again suggests that mean scores of Government School Teachers are higher than that of Aided School Teachers. Thus it can be concluded that significant difference in the mean scores of Instructional Technology Awareness exists between Government and Aided school Teachers and that the Government School Teachers are in an advantaged position.

4.2.4. COMPARISON BETWEEN D.P.E.P AND NON D.P.E.P DISTRICT SCHOOL TEACHERS.

Mean scores of the Test of Awareness on Instructional Technology were compared between D.P.E.P. District teachers and Non- D.P.E.P. District teachers by means of Two-tailed test of significance of difference between means for large independent samples. Statistical details of the comparison are given in Table 16.

TABLE 16

Data and Results of the Comparison of Mean Scores of Instructional Technology Awareness between D.P.E.P district and Non-D.P.E.P. District Teachers(Total Sample = 613)

Item No.	Theme	DPEP District Teachers (N = 294)		Non DPEP District Teachers (N = 319)		't' value
		Mean	S D	Mean	SD	
1	Interview method	0.68	0.47	0.67	0.47	0.16
2	Socratic method	0.61	0.49	0.57	0.50	0.80
3	Creativity	0.47	0.50	0.48	0.50	0.25
4	Multi level instruction	0.66	0.48	0.62	0.49	1.09
5	Spiral Approach	0.39	0.49	0.36	0.48	0.87
6	Problem solving	0.71	0.45	0.69	0.47	0.75
7	Peer Tutoring	0.53	0.50	0.55	0.50	0.52
8	Heuristics	0.52	0.50	0.45	0.50	1.94
9	Cooperative Learning	0.41	0.49	0.47	0.50	1.54
10	Cognitive Constructivism	0.57	0.50	0.50	0.50	1.57
11	Seminars	0.80	0.40	0.78	0.41	0.47
12	Universal Grammar	0.45	0.50	0.42	0.49	0.88
13	Projects	0.72	0.45	0.75	0.44	0.79
14	Assignments	0.48	0.50	0.41	0.49	1.80
15	Emotional Quotient	0.44	0.50	0.41	0.49	0.71
16	Gifted Pupils	0.67	0.47	0.67	0.47	0.02
17	Instructional Objectives	0.71	0.45	0.73	0.44	0.44
18	Instructional Analysis	0.56	0.50	0.57	0.50	0.39
19	Social Constructivism	0.51	0.50	0.43	0.50	2.09*
20	Media Selection	0.56	0.50	0.55	0.50	0.40
	DESIGN DOMAIN - Total	**11.48**	**3.72**	**11.09**	**3.64**	**1.28**

Item No.	Theme	DPEP District Teachers (N = 294)		Non DPEP District Teachers (N = 319)		't' value
		Mean	S D	Mean	SD	
22	Projected/ non projected Aids	0.80	0.40	0.79	0.41	0.19
23	Mass Media	0.74	0.44	0.71	0.45	0.92
24	Flow Charting	0.40	0.49	0.50	0.50	2.26*
25	Presentation softwares	0.32	0.47	0.27	0.45	1.36
	DEVELOPMENT-Total	**3.17**	**1.05**	**3.21**	**0.98**	**0.49**
26	News Paper contents	0.69	0.46	0.66	0.47	0.68
27	Websites	0.82	0.38	0.81	0.39	0.36
28	Computers	0.26	0.44	0.22	0.42	1.13
29	Television Channels	0.87	0.33	0.80	0.40	2.60**
30	Classroom Communication	0.56	0.50	0.58	0.49	0.63
	UTILISATION - Total	**3.20**	**1.12**	**3.07**	**1.20**	**1.40**
31	Models of Teaching	0.50	0.50	0.45	0.50	1.12
32	Keller Plan	0.24	0.43	0.26	0.44	0.43
33	Micro Teaching	0.61	0.49	0.55	0.50	1.60
34	Teaching Skills	0.24	0.43	0.26	0.44	0.44
35	EDUSAT Services	0.47	0.50	0.45	0.50	0.44
	MANAGEMENT -Total	**2.06**	**1.25**	**1.97**	**1.25**	**1.94**
36	CCE	0.88	0.32	0.90	0.30	0.74
37	Reflective Practices	0.48	0.50	0.47	0.50	0.32
38	Assessment	0.26	0.44	0.19	0.39	2.00*
39	Instructional Objectives	0.61	0.49	0.67	0.47	1.77
40	Action Research	0.66	0.47	0.65	0.48	0.37
	EVALUATION – Total	**2.89**	**1.15**	**2.88**	**1.05**	**0.08**
Total Instructional Technology Awareness		**22.80**	**6.25**	**22.223**	**5.80**	**-1.08**

* Significant at 0.05 level ** Significant at 0.05 and 0.01 levels

The Critical Ratios obtained for the test items on Social Constructivism (Design Domain), Flow Charting (Development Domain), Television channels (Utilisation Domain), and Assessment (Evaluation Domain) are greater than 1.96 indicating significant differences in the mean scores at 0.05 level. It is notable that only four test items showed significant difference. No Domain or total test showed significant difference on Instructional Technology Awareness between D.P.E.P. District Teachers and Non-D.P.E.P. District Teachers. These suggest that D.P.E.P. District Teachers and Non-D.P.E.P. District Teachers are almost alike in the awareness on Instructional Technology.

4.2.5. COMPARISON OF INSTRUCTIONAL TECHNOLOGY AWARENESS BETWEEN TEACHERS QUALIFIED TTC, B ED AND WITH BOTH TTC AND B.ED.

Based on Teacher Training Qualifications the total sample of teachers was classified into three groups viz., *Group 1*- teachers qualified TTC only, *Group 2*- teachers qualified B.Ed only and *Group 3*- teachers qualified with both. TTC and B.Ed. The mean scores of Awareness of selected themes of Instructional Technology obtained for these three groups were compared using One-way ANOVA.

Data and results of the comparison by One-way Analysis of Variance are presented in Table 17.

TABLE 17

**Results of Analysis of Variance for
The effect of Teacher Training Qualifications On Instructional
Technology Awareness among Primary School Teachers (N = 613 & df =2,612)**

Item No.	Theme	Between Groups		Within Groups		'F' Value
		Sum of Squares	Mean Squares	Sum of Squares	Mean Squares	
1	Interview method	1.62	0.81	133.13	0.22	3.70*
2	Socratic method	1.03	0.52	147.37	0.24	2.14
3	Creativity	0.37	0.18	152.58	0.25	0.74
4	Multi level instruction	1.15	0.58	140.45	0.23	2.51
5	Spiral Approach	0.54	0.27	143.41	0.24	1.14
6	Problem solving	0.80	0.40	127.97	0.21	1.91
7	Peer Tutoring	1.13	0.56	150.89	0.25	2.27
8	Heuristics	1.88	0.94	151.19	0.25	3.80*
9	Cooperative Learning	1.02	0.51	150.29	0.25	2.07
10	Cognitive Constructivism	1.78	0.89	150.71	0.25	3.61*
11	Seminars	0.04	0.02	101.23	0.17	0.13
12	Universal Grammar	0.04	0.02	150.53	0.25	0.28
13	Projects	0.42	0.21	119.70	0.20	1.07
14	Assignments	0.15	0.08	151.27	0.25	0.30
15	Emotional Quotient	0.33	0.17	149.69	0.25	0.68
16	Gifted Pupils	0.18	0.09	135.26	0.22	0.40
17	Instructional Objectives	0.98	0.49	121.88	0.20	2.44
18	Instructional Analysis	0.01	0.01	150.56	0.25	0.03
19	Social Constructivism	0.02	0.01	152.67	0.25	0.04
20	Media Selection	0.70	0.35	150.61	0.25	1.41
	DESIGN DOMAIN - Total	**55.60**	**27.80**	**8249.26**	**13.52**	**2.06**

Item No.	Theme	Between Groups		Within Groups		'F' Value
		Sum of Squares	Mean Squares	Sum of Squares	Mean Squares	
21	Cartoons	0.01	0.00	45.91	0.08	0.07
22	Projected/ non projected Aids	0.52	0.26	98.99	0.16	1.62
23	Mass Media	0.10	0.05	121.40	0.20	0.26
24	Flow Charting	0.58	0.29	151.25	0.25	1.18
25	Presentation softwares	0.16	0.08	127.80	0.21	0.39
	DEVELOPMENT-Total	**0.65**	**0.33**	**626.02**	**1.03**	**0.32**
26	News Paper contents	0.75	0.37	134.00	0.22	1.70
27	Websites	1.08	0.54	91.09	0.15	3.60*
28	Computers	0.87	0.43	110.36	0.18	2.40
29	Television Channels	0.25	0.12	84.78	0.14	0.90
30	Classroom Communication	0.04	0.02	150.13	0.25	0.08
	UTILISATION - Total	**2.00**	**1.00**	**822.29**	**1.35**	**0.74**
31	Models of Teaching	0.41	0.20	152.40	0.25	0.81
32	Keller Plan	1.19	0.59	114.62	0.19	3.16*
33	Micro Teaching	0.82	0.41	148.59	0.24	1.69
34	Teaching Skills	0.66	0.33	114.15	0.19	1.76
35	EDUSAT Services	0.87	0.43	151.24	0.25	1.75
	MANAGEMENT -Total	**5.69**	**2.84**	**951.23**	**1.56**	**1.82**
36	CCE	0.29	0.15	59.39	0.10	1.50
37	Reflective Practices	0.91	0.46	152.00	0.25	1.83
38	Assessment	0.17	0.09	106.21	0.17	0.49
39	Instructional Objectives	1.25	0.62	139.80	0.23	2.72
40	Action Research	2.55	1.28	135.82	0.22	5.74**
	EVALUATION – Total	**4.21**	**2.11**	**733.02**	**1.20**	**1.75**
Total Instructional Technology Awareness		**59.99**	**29.99**	**22103.26**	**36.24**	**0.83**

* Significant at 0.05 level ** Significant at 0.05 and 0.01 levels

The F-value for mean score comparison of six items only viz., Interviews, Heuristics, Cognitive Constructivism, Web sites, Keller Plan, and Action research are found to be greater than the value (3.00) required for significance at 0.05 level of significance of the test for (3, 612) degrees of freedom. That is, Only six test items out of forty show significant difference in mean between groups of teachers based on their teacher training qualifications. Further, no mean scores for any Domain Total has shown significant difference in the comparison, revealing that teacher-training qualifications held by the Primary School Teachers have no significant effect on Instructional Technology awareness.

4.2.5.1. Multiple comparisons for mean scores of instructional awareness on six items between the three groups of teachers based on teacher training qualifications

As it was found that the mean scores of six test items on Interviews, Heuristics, Cognitive Constructivism, Web sites, Keller Plan and Action research are significantly different between groups of teachers based on training qualifications the investigator tested for pair wise group differences of those six test items on Instructional Technology by means of Scheffe`s test of multiple comparison of means for large independent samples.

Necessary statistics of, these tests and the obtained F`s are given in the Table 18

TABLE 18

Data and Results of the Scheffe` Test of Multiple Comparison for the Mean Scores of Instructional Technology Awareness Between three groups of Teachers based on Teacher Training Qualifications

Sl. No.	Theme of Instructional Technology	Awareness Mean Scores			Mean Squares Within Groups	Scheffe``s F values obtained for Group Comparison		
		Group 1	Group 2	Group 3		Group 1 & 2	Group 1 & 3	Group 2 & 3
1	Interview Strategy	0.71	0.59	0.63	0.22	7.16*	0.70	0.16
2	Heuristics Approach	0.47	0.47	0.74	0.25	0.03	7.34*	7.06*
3	Cognitive Constructivism	0.52	0.55	0.78	0.25	0.48	7.09*	4.97
4	Keller Plan	0.23	0.27	0.44	0.19	0.81	5.97*	3.72
5	Internet websites	0.81	0.87	0.67	0.15	3.01	3.28	6.26*
6	Action Research	0.70	0.55	0.67	0.22	11.46**	0.10	1.48

Group 1- TTC Holders
Group 2- B.Ed Degree Holders
Group 3- TTC + B.Ed Degree Holders

***** Significant at 0.05 level
****** Significant at both 0.05 and 0.01 levels

From the data and results of Scheffe' Test of Multiple comparison for the mean scores of Instructional Technology Awareness between different groups of teachers based on teacher training qualifications, it is found that Group 1 and Group 2 significantly vary in the test items on Interviews and Action Research. The Groups 1 and 3 vary significantly in the test items mean scores of heuristic Approach, Cognitive constructivism and Keller Plan. Group 2 and Group 3 were found to be varying in the case of test items on Heuristic Approach and Websites. The comparisons of mean scores of awareness thus indicate that teacher training qualification with TTC and B.Ed makes a change in the Awareness on the items Heuristics Approach, Cognitive Constructivism, Keller Plan, and or Internet Websites.

4.2.6. COMPARISON OF INSTRUCTIONAL TECHNOLOGY AWARENESS BETWEEN TEACHERS WITH SERVICE UP TO 5 YEARS, 6 TO 15 YEARS, 16 TO 25 YEARS AND ABOVE 25 YEARS.

The Total sample of teachers was classified into four groups viz., *Group 1* -Teachers having service up to five years, *Group 2*- Teachers having service between six and fifteen years, *Group 3*- Teachers having service between sixteen and twenty five years, and *Group 4* – Teachers having service above twenty five years. The mean scores of Awareness on the forty themes of Instructional Technology obtained for the four groups were compared using One-way ANOVA.

Data and results of the comparison by One-way Analysis of Variance are presented in Table 19

TABLE 19
Results of Analysis of Variance for the effect of Length of Service on Instructional Technology Awareness among Primary School Teachers (N = 613 & df =3,612)

Sl. No	Theme	Between Groups		Within Groups		'F' Value
		Sum of Squares	Mean Squares	Sum of Squares	Mean Squares	
1	Interview method	0.48	0.16	134.27	0.22	0.73
2	Socratic method	3.13	1.04	145.28	0.24	4.37**
3	Creativity	1.23	0.41	151.72	0.25	1.65
4	Multi level instruction	0.87	0.29	140.74	0.23	1.25
5	Spiral Approach	0.81	0.27	143.15	0.24	1.14
6	Problem solving	1.48	0.49	127.29	0.21	2.35
7	Peer Tutoring	0.22	0.07	151.79	0.25	0.30
8	Heuristics	3.71	1.24	149.36	0.25	5.04**
9	Cooperative Learning	1.10	0.37	150.21	0.25	1.48
10	Cognitive Constructivism	0.47	0.16	152.03	0.25	0.62
11	Seminars	0.37	0.12	100.91	0.17	0.74
12	Universal Grammar	1.11	0.37	149.47	0.25	1.51
13	Projects	0.24	0.08	119.88	0.20	0.41
14	Assignments	1.57	0.52	149.84	0.25	2.13
15	Emotional Quotient	0.89	0.30	149.13	0.24	1.23
16	Gifted Pupils	0.68	0.23	134.76	0.22	1.02

Sl. No	Theme	Between Groups		Within Groups		'F' Value
		Sum of Squares	Mean Squares	Sum of Squares	Mean Squares	
17	Instructional Objectives	1.79	0.60	121.07	0.20	3.00*
18	Instructional Analysis	0.92	0.31	149.65	0.25	1.25
19	Social Constructivism	0.39	0.13	152.30	0.25	0.52
20	Media Selection	1.63	0.54	149.68	0.25	2.21
	DESIGN DOMAIN - Total	**131.00**	**43.67**	**8173.85**	**13.42**	**3.35***
21	Cartoons	0.42	0.14	45.50	0.07	1.87
22	Projected/ non projected Aids	1.34	0.45	98.17	0.16	2.77*
23	Mass Media	0.95	0.32	120.56	0.20	1.60
24	Flow Charting	0.26	0.09	151.57	0.25	0.35
25	Presentation softwares	2.64	0.88	125.33	0.21	4.27**
	DEVELOPMENT-Total	**12.05**	**4.02**	**614.62**	**1.01**	**3.98****
26	News Paper contents	0.47	0.16	134.28	0.22	0.71
27	Websites	0.43	0.14	91.74	0.15	0.96
28	Computers	0.14	0.05	111.09	0.18	0.26
29	Television Channels	1.56	0.52	83.47	0.14	3.78*
30	Classroom Communication	1.39	0.46	148.78	0.24	1.89
	UTILISATION - Total	**14.11**	**4.70**	**810.19**	**1.33**	**3.53***
31	Models of Teaching	0.93	0.31	151.87	0.25	1.24
32	Keller Plan	0.92	0.31	114.88	0.19	1.63
33	Micro Teaching	3.98	1.33	145.43	0.24	5.56**
34	Teaching Skills	0.81	0.27	114.00	0.19	1.44
35	EDUSAT Services	0.92	0.31	151.18	0.25	1.24
	MANAGEMENT -Total	**17.69**	**5.90**	**939.23**	**1.54**	**3.82****
36	CCE	0.08	0.03	59.60	0.10	0.27
37	Reflective Practices	0.99	0.33	151.92	0.25	1.32
38	Assessment	0.03	0.01	106.35	0.17	0.05
39	Instructional Objectives	0.16	0.05	140.89	0.23	0.23
40	Action Research	2.93	0.98	135.45	0.22	4.39**
	EVALUATION – Total	**6.09**	**2.03**	**731.15**	**1.20**	**1.69**
Total Instructional Technology Awareness		**450.02**	**150.01**	**21713.23**	**35.65**	**4.21****

** Significant at 0.05 level* *** Significant at 0.05 and 0.01 levels*

The F-values for mean score comparison of test items on Socratic Method, Heuristics, Instructional Objectives (Design Domain), Projected Aids, Presentation softwares (Development Domain), Television channels (Utilisation Domain), Micro Teaching (Management Domain), Action Research (Evaluation Domain), Design Domain Total, Development Domain Total, Utilisation Domain Total, Management Domain Total and of the whole test were found to be greater than 2.62, the value required for significance at 0.05 level of significance of the test for (df = 3,612) degrees of freedom. Eight test items, four domains and the total test showed significant difference between groups of teachers formed on the basis of Length of Service. These indicate that Length of Service is a major factor having significant effect on the Instructional Technology Awareness.

4.2.6.1. Multiple comparisons for the mean scores of instructional awareness between groups of teachers based on length of service.

As it was found that Instructional Technology Awareness is significantly different between groups of teachers based on length of service, the investigator tested for pair wise group differences of each teat item and domain by means of Scheffe`s test of multiple comparison of means for large independent samples.

Necessary statistics of, these tests and the obtained F's are given in the Table 20

TABLE 20

Data and Results of the Scheffe` Test of Multiple Comparison for the Mean Scores of Instructional Technology Awareness between different groups of Teachers based on length of service

Sl. No.	Theme/ Domain	Mean Scores of Awareness				Mean Squares within groups	Scheff's F values obtained for Group Comparison					
		Group 1	Group 2	Group 3	Group 4		Group 1 &2	Group 1 & 3	Group 1 & 4	Group 2 & 3	Group 2 & 4	Group 3 & 4
1	Socratic Method	0.69	0.60	0.51	0.51	0.24	3.02	11.94 **	4.31	3.83	1.17	0.00
2	Projection Aids	0.86	0.78	0.78	0.68	0.16	3.77	3.78	7.83*	0.01	2.17	1.98
3	Heuristics Methods	0.59	0.50	0.40	0.37	0.25	3.59	12.65 **	6.85	3.61	2.38	0.19
4	Micro Teaching	0.71	0.57	0.50	0.51	0.24	7.91*	15.37 **	5.30	1.76	0.43	0.01
5	Instructional Objectives	0.79	0.74	0.67	0.61	0.20	0.90	5.89	5.11	2.77	3.09	0.61
6	Presentation softwares	0.25	0.27	0.39	0.22	0.21	0.18	9.05*	0.10	8.14*	0.36	4.92
7	Television Channels	0.87	0.85	0.82	0.66	0.14	0.31	1.50	10.68*****	0.58	9.24*	6.58
8	Action Research	0.77	0.61	0.62	0.61	0.22	11.06*****	8.80*	3.94	0.07	0.03	0.03
9	Design	11.83	11.28	11.13	9.88	13.42	2.06	3.08	9.17*****	0.17	5.07	3.95
10	Development	3.24	3.08	3.35	2.88	1.01	2.30	1.06	4.19	7.53	1.40	7.48
11	Utilisation	3.25	3.10	3.18	2.61	1.33	1.55	0.30	10.04*****	0.52	6.31	8.34*****
12	Management	2.30	1.88	1.96	1.90	1.54	10.55*****	6.17	3.27	0.51	0.02	0.08

Group 1–Teachers with service upto 5 years
Group 2–Teachers with service from 6 and 15 years
Group 3–Teachers with service from 16 and 25 years
Group 4–Teachers with service more than 25 years

* Significant 0.05 level
** Significant at 0.05 and 0.01 levels

From the data and results of Scheffe' Test of Multiple comparison for the mean scores of Instructional Technology Awareness between different groups of teachers based on length of service, it is found that *Group 1* and *Group 2* significantly vary in the case of test items in Micro teaching, Action Research and Domain of

Management. It is also found that *Group 1* and *Group 3* of teachers have significant difference in the case of test items of Socratic method, Heuristics, Microteaching, Presentation softwares, and Action Research. The group 1 and group 4 vary in the case of test items Projected/Non-projected aids, Television channels, and the Domains Design and Utilisation. Comparison of the *Groups 2* and *Group 3*, it is found that there exists significant difference in the scores of test item on presentation softwares. *Group 2* and *Group 4* vary only in the scores of test item on television channels. It is also found that *Group 3* and *Group 4* vary only in the total scores of the domain Utilisation.

More difference was found in the comparison of scores of *Group 1* with other groups of teachers based on service. The mean scores of Awareness is also found greater for the *Group 1*. A decline of index in the instructional Technology is also revealed from the multiple comparisons for the mean scores of instructional Technology among groups of teachers based on length of service.

In total, these suggest that length of service has significant effect on Instructional Technology Awareness of Primary School Teachers.

4.3. INSERVICE TRAINING NEEDS ASSESSMENT FOR THE TOTAL SAMPLE OF TEACHERS AND FOR THE SUBSAMPLES OF TEACHERS ON THE BASIS OF CLASSIFICATORY VARIABLES.

Inservice Training Need assessment among Primary School Teachers is another major objective of the present study. This was identified for the total sample of teachers as well as for the sub samples of teachers classified on the basis of each classificatory variable. For this investigator made use of the responses obtained for the Checklist on Inservice Training Needs.

The given checklist contained totally 73 inservice training needs (under 5 Domains of Instructional Technology) for attending inservice courses. Each of these themes was assessed to the extent of 'Need" by estimating the percentage of preferences, based on the responses given by the teachers to the checklist. The checklist was with three modes of responses viz., 'Need no training', 'Need training in certain areas',

and ‘Need comprehensive training’. The investigator counted the responses under each of these for each theme of the checklist and estimated as percentages and these were labeled as percentage of preference to each Theme/Need. These percentages of preferences for the 73 themes are worked out for the total sample and for the different sub samples. Discussion on the extent of each theme as a need of inservice course is attempted below.

Discussion of Results

1. *Projects*

Percentages of preferences of Primary School Teachers for Inservice Training on Projects for the Total Sample and for different sub samples are estimated and presented in Table 21.

TABLE 21

Percentages of Need Assessment on Projects

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	14	12.07	63	54.31	39	33.62	116
2	Female	83	16.70	250	50.30	164	33.00	497
3	Lower Primary School	49	15.46	155	48.90	113	35.65	317
4	Upper Primary School	48	16.22	158	53.38	90	30.41	296
5	Government School	41	14.14	139	47.93	110	37.93	290
6	Government Aided School	56	17.34	174	53.87	93	28.79	323
7	DPEP Districts School	43	14.63	135	45.92	116	39.46	294
8	Non- DPEP Districts School	54	16.93	178	55.80	87	27.27	319
9	Qualified TTC only	65	15.22	218	51.05	144	33.72	427
10	Qualified B.Ed only	29	18.24	81	50.94	49	30.82	159
11	Qualified both TTC and B.Ed.	3	11.11	14	51.85	10	37.04	27
12	Experience upto 5 years	21	13.55	77	49.68	57	36.77	155
13	Experience from 6 to 15 years	37	16.37	118	52.21	71	31.42	226
14	Experience from 16 to 25 years	36	18.85	97	50.79	58	30.37	191
15	Experience more than 25 years	3	7.32	21	51.22	17	41.46	41
16	Total sample	97	15.82	313	51.06	203	33.12	613

Figures given in Table 21 suggests that, in the Total sample of 613 Primary School Teachers, 33.12 percent need comprehensive training, 51.06 per cent need training in certain areas and 15.82 per cent need no training on Projects. The Table also suggests that more number of teachers is with the preference viz., need training in certain areas of the theme, than the other two modes of preferences. The Table also reveals that there is not much variation in the order of preferences for training on the theme between the different subsamples studied.

The results thus reveal that there exists need for training in certain areas on the theme viz., 'Projects'.

2. *Assignments*

Percentages of preferences of Primary School Teachers for Inservice Training on Assignments for the Total Sample and for different sub samples are estimated and presented in Table 22

TABLE 22

Percentages of Need Assessment on Assignments

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	31	26.72	61	52.59	24	20.69	116
2	Female	145	29.18	234	47.08	118	23.74	497
3	Lower Primary School	81	25.55	157	49.53	79	24.92	317
4	Upper Primary School	95	32.09	138	46.62	63	21.28	296
5	Government School	63	21.72	147	50.69	80	27.59	290
6	Government Aided School	113	34.98	148	45.82	62	19.20	323
7	DPEP Districts School	80	27.21	137	46.60	77	26.19	294
8	Non- DPEP Districts School	96	30.09	158	49.53	65	20.38	319
9	Qualified TTC only	117	27.40	211	49.41	99	23.19	427
10	Qualified B.Ed only	53	33.33	67	42.14	39	24.53	159
11	Qualified both TTC and B.Ed.	6	22.22	17	62.96	4	14.81	27
12	Experience upto 5 years	47	30.32	65	41.94	43	27.74	155
13	Experience from 6 to 15 years	60	26.55	122	53.98	44	19.47	226
14	Experience from 16 to 25 years	63	32.98	83	43.46	45	23.56	191
15	Experience more than 25 years	6	14.63	25	60.98	10	24.39	41
16	Total sample	176	28.71	295	48.12	142	23.16	613

Figures given in Table 22 suggests that, in the Total sample of 613 Primary School Teachers, 23.16 percent need comprehensive training, 48.12 per cent need training in certain areas and 28.71 per cent need no training on Assignments. The figures suggest that more number of Primary School Teachers is with preference viz., need training in certain areas of the theme than the other two modes of preferences. The Table also reveals the trend of results is the same in the case of subsamples also. From the results, it can be concluded that majority of Teachers need training in this area.

3. *Seminars*

Percentages of preferences of Primary School Teachers for Inservice Training on the theme viz., Seminars for the Total Sample and for different sub samples are estimated and presented in Table 23

TABLE 23

Percentages of Need Assessment on Seminars

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	29	25.00	52	44.83	35	30.17	116
2	Female	98	19.72	218	43.86	181	36.42	497
3	Lower Primary School	58	18.30	126	39.75	133	41.96	317
4	Upper Primary School	69	23.31	144	48.65	83	28.04	296
5	Government School	51	17.59	120	41.38	119	41.03	290
6	Government Aided School	76	23.53	150	46.44	97	30.03	323
7	DPEP Districts School	50	17.01	122	41.50	122	41.50	294
8	Non- DPEP Districts School	77	24.14	148	46.39	94	29.47	319
9	Qualified TTC only	84	19.67	190	44.50	153	35.83	427
10	Qualified B.Ed only	39	24.53	65	40.88	55	34.59	159
11	Qualified both TTC and B.Ed.	4	14.81	15	55.56	8	29.63	27
12	Experience upto 5 years	34	21.94	69	44.52	52	33.55	155
13	Experience from 6 to 15 years	44	19.47	106	46.90	76	33.63	226
14	Experience from 16 to 25 years	43	22.51	81	42.41	67	35.08	191
15	Experience more than 25 years	6	14.63	14	34.15	21	51.22	41
16	Total sample	127	20.72	270	44.05	216	35.24	613

Figures given in Table 23 suggests that, in the Total sample of 613 Primary School Teachers, 35.24 percent need comprehensive training, 44.05 per cent need training in certain areas and 20.72 per cent need no training on Seminars. The figures reveal that more number of teachers is with the preference of need training in certain areas of the theme. The results reveals that there is no variation in the trend of results for the different subsamples also.

The figures reveal that there exists need for Inservice training on Seminars in certain areas.

4. Collections/Records

Percentages of preferences of Primary School Teachers for Inservice Training on Collections/Records for the Total Sample and for different sub samples are estimated and presented in Table 24

TABLE 24

Percentages of Need Assessment on Collections/Records

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	51	43.97	49	42.24	16	13.79	116
2	Female	219	44.06	208	41.85	70	14.08	497
3	Lower Primary School	132	41.64	136	42.90	49	15.46	317
4	Upper Primary School	138	46.62	121	40.88	37	12.50	296
5	Government School	115	39.66	126	43.45	49	16.90	290
6	Government Aided School	155	47.99	131	40.56	37	11.46	323
7	DPEP Districts School	132	44.90	118	40.14	44	14.97	294
8	Non- DPEP Districts School	138	43.26	139	43.57	42	13.17	319
9	Qualified TTC only	185	43.33	179	41.92	63	14.75	427
10	Qualified B.Ed only	74	46.54	65	40.88	20	12.58	159
11	Qualified both TTC and B.Ed.	11	40.74	13	48.15	3	11.11	27
12	Experience upto 5 years	61	39.35	70	45.16	24	15.48	155
13	Experience from 6 to 15 years	99	43.81	95	42.04	32	14.16	226
14	Experience from 16 to 25 years	98	51.31	68	35.60	25	13.09	191
15	Experience more than 25 years	12	29.27	24	58.54	5	12.20	41
16	Total sample	270	44.05	257	41.92	86	14.03	613

Figures given in Table 14 suggests that, in the Total sample of 613 Primary School Teachers, 14.03 percent need comprehensive training, 41.92 per cent need training in certain areas and 44.05 per cent need no training on collections/records. The Table suggests that more number of teachers are with the two preferences viz., Need no training and Need training in certain areas. Among the total sample and different sub samples the maximum for preference, need comprehensive training is less than 17 per cent. The Table also reveals that there is no much variation in the order of preferences for training on the theme .

The figures of percentages reveal that there exists need for training in certain areas on planning and execution of collections/records.

5. *Experiments*

Percentages of preferences of Primary School Teachers for Inservice Training on Experiments for the Total Sample and for different sub samples are estimated and presented in Table 25

TABLE 25

Percentages of Need Assessment on Experiments

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	17	14.66	68	58.62	31	26.72	116
2	Female	86	17.30	262	52.72	149	29.98	497
3	Lower Primary School	51	16.09	173	54.57	93	29.34	317
4	Upper Primary School	52	17.57	157	53.04	87	29.39	296
5	Government School	39	13.45	157	54.14	94	32.41	290
6	Government Aided School	64	19.81	173	53.56	86	26.63	323
7	DPEP Districts School	43	14.63	152	51.70	99	33.67	294
8	Non- DPEP Districts School	60	18.81	178	55.80	81	25.39	319
9	Qualified TTC only	66	15.46	230	53.86	131	30.68	427
10	Qualified B.Ed only	34	21.38	86	54.09	39	24.53	159
11	Qualified both TTC and B.Ed.	3	11.11	14	51.85	10	37.04	27
12	Experience upto 5 years	27	17.42	82	52.90	46	29.68	155
13	Experience from 6 to 15 years	34	15.04	124	54.87	68	30.09	226
14	Experience from 16 to 25 years	39	20.42	97	50.79	55	28.80	191
15	Experience more than 25 years	3	7.32	27	65.85	11	26.83	41
16	Total sample	103	16.80	330	53.83	180	29.36	613

Figures given in Table 25 suggests that, in the Total sample of 613 Primary School Teachers, 29.36 percent need comprehensive training, 53.83 per cent need training in certain areas and 16.80 per cent need no training on Experiments. The figures thus suggest that more number of teachers is with preference viz., need training in certain areas, than the other two modes of preferences. The least is for the preference, training not needed. The Table also reveals that there is no variation in the order of preferences indicated by the different subsamples.

The figures of percentages this reveal that there exists need for inservice training on Experiments.

6. *Field Trips*

Percentages of preferences of Primary School Teachers for Inservice Training on Field Trips for the Total Sample and for different sub samples are estimated and presented in Table 26

TABLE 26

Percentages of Need Assessment on Field Trips

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	55	47.41	51	43.97	10	8.62	116
2	Female	209	42.05	216	43.46	72	14.49	497
3	Lower Primary School	141	44.48	130	41.01	46	14.51	317
4	Upper Primary School	123	41.55	137	46.28	36	12.16	296
5	Government School	116	40.00	132	45.52	42	14.48	290
6	Government Aided School	148	45.82	135	41.80	40	12.38	323
7	DPEP Districts School	123	41.84	131	44.56	40	13.61	294
8	Non- DPEP Districts School	141	44.20	136	42.63	42	13.17	319
9	Qualified TTC only	183	42.86	186	43.56	58	13.58	427
10	Qualified B.Ed only	68	42.77	71	44.65	20	12.58	159
11	Qualified both TTC and B.Ed.	13	48.15	10	37.04	4	14.81	27
12	Experience upto 5 years	64	41.29	71	45.81	20	12.90	155
13	Experience from 6 to 15 years	97	42.92	97	42.92	32	14.16	226
14	Experience from 16 to 25 years	91	47.64	76	39.79	24	12.57	191
15	Experience more than 25 years	12	29.27	23	56.10	6	14.63	41
16	Total sample	264	43.07	267	43.56	82	13.38	613

Figures given in Table 26 suggest that, in the Total sample of 613 Primary School Teachers, 13.38 percent need comprehensive training, 43.56 per cent need training in certain areas and 43.07 per cent need no inservice training on Field Trips. The Table also suggests that more number of teachers is with preferences viz., need no training and need training in certain areas of the theme. Only less than 15 percent of the teachers are with preference for comprehensive training in this theme. The Table also reveals that there is not much variation in the order of preferences for training on the theme .

The results thus reveals that majority do not want a comprehensive training on the theme, Field Trips.

7. *Debates*

Percentages of preferences of Primary School Teachers for Inservice Training on Debates for the Total Sample and for different sub samples are estimated and presented in Table 27

TABLE 27

Percentages of Need Assessment on Debates

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	49	42.24	43	37.07	24	20.69	116
2	Female	116	23.34	237	47.69	144	28.97	497
3	Lower Primary School	79	24.92	136	42.90	102	32.18	317
4	Upper Primary School	86	29.05	144	48.65	66	22.30	296
5	Government School	73	25.17	126	43.45	91	31.38	290
6	Government Aided School	92	28.48	154	47.68	77	23.84	323
7	DPEP Districts School	69	23.47	136	46.26	89	30.27	294
8	Non- DPEP Districts School	96	30.09	144	45.14	79	24.76	319
9	Qualified TTC only	116	27.17	192	44.96	119	27.87	427
10	Qualified B.Ed only	42	26.42	75	47.17	42	26.42	159
11	Qualified both TTC and B.Ed.	7	25.93	13	48.15	7	25.93	27
12	Experience upto 5 years	43	27.74	66	42.58	46	29.68	155
13	Experience from 6 to 15 years	63	27.88	99	43.81	64	28.32	226
14	Experience from 16 to 25 years	50	26.18	93	48.69	48	25.13	191
15	Experience more than 25 years	9	21.95	22	53.66	10	24.39	41
16	Total sample	165	26.92	280	45.68	168	27.41	613

Figures given in Table 27 suggests that, in the Total sample of 613 Primary School Teachers, 27.41 percent need comprehensive training, 45.68 per cent need training in certain areas and 26.92 per cent need no training on Debates. The Table also reveals that more number of teachers is with preference for need training in certain areas of the theme. The Table also reveals that there is no variation in the order of preferences for training on the theme between the different subsamples.

The figures of percentages reveal that there exists need for training in certain areas of Debates.

8. *Discussions*

Percentages of preferences of Primary School Teachers for Inservice Training on Discussions for the Total Sample and for different sub samples are estimated and presented in Table 28

TABLE 28

Percentages of Need Assessment on Discussions

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	43	37.07	56	48.28	17	14.66	116
2	Female	155	31.19	242	48.69	100	20.12	497
3	Lower Primary School	95	29.97	158	49.84	64	20.19	317
4	Upper Primary School	103	34.80	140	47.30	53	17.91	296
5	Government School	87	30.00	145	50.00	58	20.00	290
6	Government Aided School	111	34.37	153	47.37	59	18.27	323
7	DPEP Districts School	95	32.31	141	47.96	58	19.73	294
8	Non- DPEP Districts School	103	32.29	157	49.22	59	18.50	319
9	Qualified TTC only	135	31.62	212	49.65	80	18.74	427
10	Qualified B.Ed only	53	33.33	73	45.91	33	20.75	159
11	Qualified both TTC and B.Ed.	10	37.04	13	48.15	4	14.81	27
12	Experience upto 5 years	48	30.97	71	45.81	36	23.23	155
13	Experience from 6 to 15 years	71	31.42	115	50.88	40	17.70	226
14	Experience from 16 to 25 years	67	35.08	91	47.64	33	17.28	191
15	Experience more than 25 years	12	29.27	21	51.22	8	19.51	41
16	Total sample	198	32.30	298	48.61	117	19.09	613

Figures given in Table 28 suggests that, in the Total sample of 613 Primary School Teachers, 19.09 percent need comprehensive training, 48.61 per cent need training in certain areas and 32.30 per cent need no training on Discussions. The figures suggest that more number of teachers is with preference of need training in certain areas on this theme, than the other two modes of preferences. The Table also reveals that there is no variation in the order of preferences for training on the theme.

The Table reveals that there exists need for inservice training in certain areas of Discussions than for comprehensive training.

9. Symposiums

Percentages of preferences of Primary School Teachers for Inservice Training on Symposiums for the Total Sample and for different sub samples are estimated and presented in Table 29

TABLE 29

Percentages of Need Assessment on Symposiums

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	19	16.38	62	53.45	35	30.17	116
2	Female	70	14.08	206	41.45	221	44.47	497
3	Lower Primary School	53	16.72	120	37.85	144	45.43	317
4	Upper Primary School	36	12.16	148	50.00	112	37.84	296
5	Government School	41	14.14	123	42.41	126	43.45	290
6	Government Aided School	48	14.86	145	44.89	130	40.25	323
7	DPEP Districts School	34	11.56	126	42.86	134	45.58	294
8	Non- DPEP Districts School	55	17.24	142	44.51	122	38.24	319
9	Qualified TTC only	66	15.46	187	43.79	174	40.75	427
10	Qualified B.Ed only	20	12.58	69	43.40	70	44.03	159
11	Qualified both TTC and B.Ed.	3	11.11	12	44.44	12	44.44	27
12	Experience upto 5 years	21	13.55	65	41.94	69	44.52	155
13	Experience from 6 to 15 years	34	15.04	102	45.13	90	39.82	226
14	Experience from 16 to 25 years	28	14.66	82	42.93	81	42.41	191
15	Experience more than 25 years	6	14.63	19	46.34	16	39.02	41
16	Total sample	89	14.52	268	43.72	256	41.76	613

Figures given in Table 29 suggests that, in the Total sample of 613 Primary School Teachers, 41.76 percent need comprehensive training, 43.72 per cent need training in certain areas and 14.52 per cent need no training on Symposiums. The figures reveal that more number of teachers is with the two modes of preferences for training viz., need comprehensive training and need training in certain areas. The Table also reveals that there is not much variation in the order of preferences for training on the theme for the different subsamples. The figures of percentages reveal that there exists need for comprehensive training on Symposiums.

10. *Workshops*

Percentages of preferences of Primary School Teachers for Inservice Training on Workshops for the Total Sample and for different sub samples are estimated and presented in Table 30

TABLE 30

Percentages of Need Assessment on Workshops

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	11	9.48	60	51.72	45	38.79	116
2	Female	65	13.08	190	38.23	242	48.69	497
3	Lower Primary School	43	13.56	116	36.59	158	49.84	317
4	Upper Primary School	33	11.15	134	45.27	129	43.58	296
5	Government School	30	10.34	111	38.28	149	51.38	290
6	Government Aided School	46	14.24	139	43.03	138	42.72	323
7	DPEP Districts School	22	7.48	130	44.22	142	48.30	294
8	Non- DPEP Districts School	54	16.93	120	37.62	145	45.45	319
9	Qualified TTC only	52	12.18	174	40.75	201	47.07	427
10	Qualified B.Ed only	20	12.58	65	40.88	74	46.54	159
11	Qualified both TTC and B.Ed.	4	14.81	11	40.74	12	44.44	27
12	Experience upto 5 years	16	10.32	59	38.06	80	51.61	155
13	Experience from 6 to 15 years	33	14.60	95	42.04	98	43.36	226
14	Experience from 16 to 25 years	21	10.99	80	41.88	90	47.12	191
15	Experience more than 25 years	6	14.63	16	39.02	19	46.34	41
16	Total sample	76	12.40	250	40.78	287	46.82	613

Figures given in Table 30 suggests that, in the Total sample of 613 Primary School Teachers, 46.82 percent need comprehensive training, 40.78 per cent need training in certain areas and 12.40 per cent need no training on Workshops. The figures also reveal that more number of teachers is with the two modes of preferences for training viz., need comprehensive training and need training in certain areas. The Table also reveals that there is no much variation in the order of preferences for training on the theme. The figures of percentages reveal that there exists more need for comprehensive training on Workshops.

11. *Interviews/Surveys*

Percentages of preferences of Primary School Teachers for Inservice Training on Interviews/Surveys for the Total Sample and for different sub samples are estimated and presented in Table 31

TABLE 31

Percentages of Need Assessment on Interviews/Surveys

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	29	25.00	64	55.17	23	19.83	116
2	Female	135	27.16	246	49.50	116	23.34	497
3	Lower Primary School	84	26.50	152	47.95	81	25.55	317
4	Upper Primary School	80	27.03	158	53.38	58	19.59	296
5	Government School	84	28.97	138	47.59	68	23.45	290
6	Government Aided School	80	24.77	172	53.25	71	21.98	323
7	DPEP Districts School	73	24.83	155	52.72	66	22.45	294
8	Non- DPEP Districts School	91	28.53	155	48.59	73	22.88	319
9	Qualified TTC only	117	27.40	214	50.12	96	22.48	427
10	Qualified B.Ed only	38	23.90	85	53.46	36	22.64	159
11	Qualified both TTC and B.Ed.	9	33.33	11	40.74	7	25.93	27
12	Experience upto 5 years	39	25.16	72	46.45	44	28.39	155
13	Experience from 6 to 15 years	58	25.66	125	55.31	43	19.03	226
14	Experience from 16 to 25 years	57	29.84	94	49.21	40	20.94	191
15	Experience more than 25 years	10	24.39	19	46.34	12	29.27	41
16	Total sample	164	26.75	310	50.57	139	22.68	613

Figures given in Table 31 suggests that, in the Total sample of 613 Primary School Teachers, 22.68 percent need comprehensive training, 50.57 per cent need training in certain areas and 26.75 per cent need no training on Interviews/Surveys. The percentages reveal that more number of teachers is with the preference viz., need training in certain areas than the other two modes of preferences. The Table also reveals that there is no much variation in the order of preferences for training on the theme . The Table reveals that there exists need for inservice training in certain areas on Interviews/Surveys.

12. *Camps*

Percentages of preferences of Primary School Teachers for Inservice Training on Camps for the Total Sample and for different sub samples are estimated and presented in Table 32

TABLE 32

Percentages of Need Assessment on Camps

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	16	13.79	54	46.55	46	39.66	116
2	Female	103	20.72	221	44.47	173	34.81	497
3	Lower Primary School	65	20.50	125	39.43	127	40.06	317
4	Upper Primary School	54	18.24	150	50.68	92	31.08	296
5	Government School	48	16.55	124	42.76	118	40.69	290
6	Government Aided School	71	21.98	151	46.75	101	31.27	323
7	DPEP Districts School	52	17.69	145	49.32	97	32.99	294
8	Non- DPEP Districts School	67	21.00	130	40.75	122	38.24	319
9	Qualified TTC only	85	19.91	191	44.73	151	35.36	427
10	Qualified B.Ed only	28	17.61	76	47.80	55	34.59	159
11	Qualified both TTC and B.Ed.	6	22.22	8	29.63	13	48.15	27
12	Experience upto 5 years	26	16.77	65	41.94	64	41.29	155
13	Experience from 6 to 15 years	48	21.24	107	47.35	71	31.42	226
14	Experience from 16 to 25 years	40	20.94	86	45.03	65	34.03	191
15	Experience more than 25 years	5	12.20	17	41.46	19	46.34	41
16	Total sample	119	19.41	275	44.86	219	35.73	613

Figures given in Table 23 suggests that, in the Total sample of 613 Primary School Teachers, 35.73 percent need comprehensive training, 44.86 per cent need training in certain areas and 19.41 per cent need no training on Camps. The figures reveal that more number of teachers is with the two modes of preferences for training viz., need comprehensive training and need training in certain areas of the theme. The Table also reveals that there is no much variation in the order of preferences for training on the theme . The figures of percentages reveal that there exists need for comprehensive training on planning and execution of Camps.

13. *Club Activities*

Percentages of preferences of Primary School Teachers for Inservice Training on Club activities for the Total Sample and for different sub samples are estimated and presented in Table33

TABLE 33

Percentages of Need Assessment on Club Activities

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	21	18.10	60	51.72	35	30.17	116
2	Female	96	19.32	238	47.89	163	32.80	497
3	Lower Primary School	55	17.35	147	46.37	115	36.28	317
4	Upper Primary School	62	20.95	151	51.01	83	28.04	296
5	Government School	50	17.24	134	46.21	106	36.55	290
6	Government Aided School	67	20.74	164	50.77	92	28.48	323
7	DPEP Districts School	52	17.69	144	48.98	98	33.33	294
8	Non- DPEP Districts School	65	20.38	154	48.28	100	31.35	319
9	Qualified TTC only	83	19.44	203	47.54	141	33.02	427
10	Qualified B.Ed only	28	17.61	84	52.83	47	29.56	159
11	Qualified both TTC and B.Ed.	6	22.22	11	40.74	10	37.04	27
12	Experience upto 5 years	24	15.48	73	47.10	58	37.42	155
13	Experience from 6 to 15 years	45	19.91	115	50.88	66	29.20	226
14	Experience from 16 to 25 years	42	21.99	91	47.64	58	30.37	191
15	Experience more than 25 years	6	14.63	19	46.34	16	39.02	41
16	Total sample	117	19.09	298	48.61	198	32.30	613

Figures given in Table 33 suggests that, in the Total sample of 613 Primary School Teachers, 32.30 percent need comprehensive training, 48.61 per cent need training in certain areas and 19.09 per cent need no training on Club Activities. The figures suggests that more number of teachers are with the two modes of preferences viz., need comprehensive training and need training in certain areas of the theme. The Table also reveals that there is no much variation among the preference of training for the theme among different sub samples. The figures of percentages reveal that there exists need for comprehensive training on Club Activities.

14. Library Activities

Percentages of preferences of Primary School Teachers for Inservice Training on Library Activities for the Total Sample and for different sub samples are estimated and presented in Table 34

TABLE34

Percentages of Need Assessment on Library Activities

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	28	24.14	45	38.79	43	37.07	116
2	Female	125	25.15	204	41.05	168	33.80	497
3	Lower Primary School	70	22.08	132	41.64	115	36.28	317
4	Upper Primary School	83	28.04	117	39.53	96	32.43	296
5	Government School	67	23.10	126	43.45	97	33.45	290
6	Government Aided School	86	26.63	123	38.08	114	35.29	323
7	DPEP Districts School	64	21.77	128	43.54	102	34.69	294
8	Non- DPEP Districts School	89	27.90	121	37.93	109	34.17	319
9	Qualified TTC only	106	24.82	173	40.52	148	34.66	427
10	Qualified B.Ed only	41	25.79	61	38.36	57	35.85	159
11	Qualified both TTC and B.Ed.	6	22.22	15	55.56	6	22.22	27
12	Experience upto 5 years	42	27.10	54	34.84	59	38.06	155
13	Experience from 6 to 15 years	46	20.35	102	45.13	78	34.51	226
14	Experience from 16 to 25 years	57	29.84	75	39.27	59	30.89	191
15	Experience more than 25 years	8	19.51	18	43.90	15	36.59	41
16	Total sample	153	24.96	249	40.62	211	34.42	613

Figures given in Table 34 suggests that, in the Total sample of 613 Primary School Teachers, 34.42 percent need comprehensive training, 40.62 per cent need training in certain areas and 24.96 per cent need no training on Library Activities. The figures suggest that more number of teachers is with the two modes of preferences viz., need comprehensive training and need training in certain areas of the theme. The Table also reveals that there is no much variation among that order of preference for training on the theme . The figures of percentages reveal that there exists need for comprehensive training on Library Activities.

15. ***Learning Corners***

Percentages of preferences of Primary School Teachers for Inservice Training on Learning Corners for the Total Sample and for different sub samples are estimated and presented in Table 35

TABLE 35

Percentages of Need Assessment on Learning Corners

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	30	25.86	62	53.45	24	20.69	116
2	Female	140	28.17	247	49.70	110	22.13	497
3	Lower Primary School	90	28.39	149	47.00	78	24.61	317
4	Upper Primary School	80	27.03	160	54.05	56	18.92	296
5	Government School	83	28.62	143	49.31	64	22.07	290
6	Government Aided School	87	26.93	166	51.39	70	21.67	323
7	DPEP Districts School	79	26.87	156	53.06	59	20.07	294
8	Non- DPEP Districts School	91	28.53	153	47.96	75	23.51	319
9	Qualified TTC only	118	27.63	211	49.41	98	22.95	427
10	Qualified B.Ed only	44	27.67	84	52.83	31	19.50	159
11	Qualified both TTC and B.Ed.	8	29.63	14	51.85	5	18.52	27
12	Experience upto 5 years	52	33.55	58	37.42	45	29.03	155
13	Experience from 6 to 15 years	54	23.89	123	54.42	49	21.68	226
14	Experience from 16 to 25 years	57	29.84	106	55.50	28	14.66	191
15	Experience more than 25 years	7	17.07	22	53.66	12	29.27	41
16	Total sample	170	27.73	309	50.41	134	21.86	613

Figures given in Table 37 suggests that, in the Total sample of 613 Primary School Teachers, 21.86percent need comprehensive training, 50.41 per cent need training in certain areas and 27.73 per cent need no training on Learning Corners. The Table suggests that more number of teachers are with preference viz., need training in certain areas of the theme than the other two modes of preferences The Table also reveals that there is no much variation among that order of preferences for training on the theme . The figures of percentages reveal that there exists need for training in certain areas on Learning Corners.

16. *Play-way Activities*

Percentages of preferences of Primary School Teachers for Inservice Training on different Play-way Activities for the Total Sample and for different sub samples are estimated and presented in Table 36

TABLE 36

Percentages of Need Assessment on Play-way Activities

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	8	6.90	71	61.21	37	31.90	116
2	Female	74	14.89	270	54.33	153	30.78	497
3	Lower Primary School	47	14.83	173	54.57	97	30.60	317
4	Upper Primary School	35	11.82	168	56.76	93	31.42	296
5	Government School	34	11.72	165	56.90	91	31.38	290
6	Government Aided School	48	14.86	176	54.49	99	30.65	323
7	DPEP Districts School	46	15.65	162	55.10	86	29.25	294
8	Non- DPEP Districts School	36	11.29	179	56.11	104	32.60	319
9	Qualified TTC only	54	12.65	239	55.97	134	31.38	427
10	Qualified B.Ed only	27	16.98	85	53.46	47	29.56	159
11	Qualified both TTC and B.Ed.	1	3.70	17	62.96	9	33.33	27
12	Experience upto 5 years	24	15.48	72	46.45	59	38.06	155
13	Experience from 6 to 15 years	35	15.49	133	58.85	58	25.66	226
14	Experience from 16 to 25 years	21	10.99	110	57.59	60	31.41	191
15	Experience more than 25 years	2	4.88	26	63.41	13	31.71	41
16	Total sample	82	13.38	341	55.63	190	31.00	613

Figures given in Table 36 suggests that, in the Total sample of 613 Primary School Teachers, 31.00 percent need comprehensive training, 55.63 per cent need training in certain areas and 13.38 per cent need no training on different Play-way Activities. The figures reveal that more number of teachers is with two modes of preference viz., need comprehensive training and need training in certain areas of the theme. The Table also reveals that there is no much variation for that order of preferences for training on the theme . The figures of percentages reveal that there exists need for comprehensive training on different Play-way Activities.

17. *Observations*

Percentages of preferences of Primary School Teachers for Inservice Training on Observations for the Total Sample and for different sub samples are estimated and presented in Table 37

TABLE 37

Percentages of Need Assessment on Observations

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	13	11.21	81	69.83	22	18.97	116
2	Female	104	20.93	250	50.30	143	28.77	497
3	Lower Primary School	57	17.98	175	55.21	85	26.81	317
4	Upper Primary School	60	20.27	156	52.70	80	27.03	296
5	Government School	47	16.21	158	54.48	85	29.31	290
6	Government Aided School	70	21.67	173	53.56	80	24.77	323
7	DPEP Districts School	52	17.69	162	55.10	80	27.21	294
8	Non- DPEP Districts School	65	20.38	169	52.98	85	26.65	319
9	Qualified TTC only	75	17.56	237	55.50	115	26.93	427
10	Qualified B.Ed only	38	23.90	78	49.06	43	27.04	159
11	Qualified both TTC and B.Ed.	4	14.81	16	59.26	7	25.93	27
12	Experience upto 5 years	31	20.00	75	48.39	49	31.61	155
13	Experience from 6 to 15 years	44	19.47	124	54.87	58	25.66	226
14	Experience from 16 to 25 years	37	19.37	111	58.12	43	22.51	191
15	Experience more than 25 years	5	12.20	21	51.22	15	36.59	41
16	Total sample	117	19.09	331	54.00	165	26.92	613

Figures given in Table 37 suggests that, in the Total sample of 613 Primary School Teachers, 26.92 percent need comprehensive training, 54.00 per cent need training in certain areas and 19.09 per cent need no training on Observations. The Table reveals that more number of teachers is with the two modes of preferences viz., need training in certain areas and need comprehensive training. The figures also show that preference for need no training is less than 24 per cent. The Table also reveals that there is no much variation among that order of preferences for training on the theme. The figures of percentages reveal that there exists need for comprehensive training on Observations.

18. ***Note Making***

Percentages of preferences of Primary School Teachers for Inservice Training on Note Making for the Total Sample and for different sub samples are estimated and presented in Table 38

TABLE 38

Percentages of Need Assessment on Note Making

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	29	25.00	69	59.48	18	15.52	116
2	Female	133	26.76	276	55.53	88	17.71	497
3	Lower Primary School	81	25.55	184	58.04	52	16.40	317
4	Upper Primary School	81	27.36	161	54.39	54	18.24	296
5	Government School	66	22.76	168	57.93	56	19.31	290
6	Government Aided School	96	29.72	177	54.80	50	15.48	323
7	DPEP Districts School	76	25.85	164	55.78	54	18.37	294
8	Non- DPEP Districts School	86	26.96	181	56.74	52	16.30	319
9	Qualified TTC only	106	24.82	248	58.08	73	17.10	427
10	Qualified B.Ed only	49	30.82	83	52.20	27	16.98	159
11	Qualified both TTC and B.Ed.	7	25.93	14	51.85	6	22.22	27
12	Experience upto 5 years	46	29.68	78	50.32	31	20.00	155
13	Experience from 6 to 15 years	57	25.22	130	57.52	39	17.26	226
14	Experience from 16 to 25 years	50	26.18	111	58.12	30	15.71	191
15	Experience more than 25 years	9	21.95	26	63.41	6	14.63	41
16	Total sample	162	26.43	345	56.28	106	17.29	613

Figures given in Table 38 suggests that, in the Total sample of 613 Primary School Teachers, 17.29 percent need comprehensive training, 56.28 per cent need training in certain areas and 26.43 per cent need no training on Note making. The Table reveals that more number of teachers is with preference need training in certain areas than the other two modes of preferences. The Table also reveals that there is no much variation in that order of preferences for training on the theme. The figures of percentages reveal that there exists need for training in certain areas on Note making.

19. ***Psychological Bases of Instruction***

Percentages of preferences of Primary School Teachers for Inservice Training on the Psychological Bases of Instruction for the Total Sample and for different sub samples are estimated and presented in Table 39

TABLE 39

Percentages of Need Assessment on Psychological Bases of Instruction

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	8	6.90	49	42.24	59	50.86	116
2	Female	49	9.86	223	44.87	225	45.27	497
3	Lower Primary School	29	9.15	141	44.48	147	46.37	317
4	Upper Primary School	28	9.46	131	44.26	137	46.28	296
5	Government School	24	8.28	126	43.45	140	48.28	290
6	Government Aided School	33	10.22	146	45.20	144	44.58	323
7	DPEP Districts School	29	9.86	126	42.86	139	47.28	294
8	Non- DPEP Districts School	28	8.78	146	45.77	145	45.45	319
9	Qualified TTC only	34	7.96	186	43.56	207	48.48	427
10	Qualified B.Ed only	17	10.69	76	47.80	66	41.51	159
11	Qualified both TTC and B.Ed.	6	22.22	10	37.04	11	40.74	27
12	Experience upto 5 years	14	9.03	67	43.23	74	47.74	155
13	Experience from 6 to 15 years	23	10.18	106	46.90	97	42.92	226
14	Experience from 16 to 25 years	18	9.42	80	41.88	93	48.69	191
15	Experience more than 25 years	2	4.88	19	46.34	20	48.78	41
16	Total sample	57	9.30	272	44.37	284	46.33	613

Figures given in Table 39 suggests that, in the Total sample of 613 Primary School Teachers, 46.33 percent need comprehensive training, 44.37 per cent need training in certain areas and 9.30 per cent need no training on the theme, Psychological Bases of Instruction. The Table reveals that more number of teachers are with the two modes of preferences, need comprehensive training and need training in certain areas. The Table also reveals that there is no much variation in the order of preferences for training on the theme. The figures of percentages reveal that there exists strong need for comprehensive training on the theme, Psychological Bases of Instruction.

20. *Philosophical Bases of Instruction*

Percentages of preferences of Primary School Teachers for Inservice Training on Philosophical Bases of Instruction for the Total Sample and for different sub samples are estimated and presented in Table 40

TABLE 40

Percentages of Need Assessment on Philosophical Bases of Instruction

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	11	9.48	47	40.52	58	50.00	116
2	Female	65	13.08	222	44.67	210	42.25	497
3	Lower Primary School	41	12.93	131	41.32	145	45.74	317
4	Upper Primary School	35	11.82	138	46.62	123	41.55	296
5	Government School	31	10.69	118	40.69	141	48.62	290
6	Government Aided School	45	13.93	151	46.75	127	39.32	323
7	DPEP Districts School	33	11.22	125	42.52	136	46.26	294
8	Non- DPEP Districts School	43	13.48	144	45.14	132	41.38	319
9	Qualified TTC only	46	10.77	185	43.33	196	45.90	427
10	Qualified B.Ed only	24	15.09	72	45.28	63	39.62	159
11	Qualified both TTC and B.Ed.	6	22.22	12	44.44	9	33.33	27
12	Experience upto 5 years	16	10.32	66	42.58	73	47.10	155
13	Experience from 6 to 15 years	34	15.04	105	46.46	87	38.50	226
14	Experience from 16 to 25 years	22	11.52	80	41.88	89	46.60	191
15	Experience more than 25 years	4	9.76	18	43.90	19	46.34	41
16	Total sample	76	12.40	269	43.88	268	43.72	613

Figures given in Table 40 suggests that, in the Total sample of 613 Primary School Teachers, 43.72 percent need comprehensive training, 43.88 per cent need training in certain areas and 12.40 per cent need no training on Philosophical Bases of Instruction. The figures reveal that more number of teachers are with the two modes of preferences, need comprehensive training and need training in certain areas of the theme. The Table also reveals that there is no much variation in that order of preferences for training on the theme. The figures of percentages reveal that there exists high need for comprehensive training on Philosophical Bases of Instruction.

21. Sociological Bases of Instruction

Percentages of preferences of Primary School Teachers for Inservice Training on the Sociological Bases of Instruction for the Total Sample and for different sub samples are estimated and presented in Table 41

TABLE 41

Percentages of Need Assessment on Sociological Bases of Instruction

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	12	10.34	58	50.00	46	39.66	116
2	Female	69	13.88	266	53.52	162	32.60	497
3	Lower Primary School	39	12.30	168	53.00	110	34.70	317
4	Upper Primary School	42	14.19	156	52.70	98	33.11	296
5	Government School	31	10.69	154	53.10	105	36.21	290
6	Government Aided School	50	15.48	170	52.63	103	31.89	323
7	DPEP Districts School	36	12.24	150	51.02	108	36.73	294
8	Non- DPEP Districts School	45	14.11	174	54.55	100	31.35	319
9	Qualified TTC only	54	12.65	228	53.40	145	33.96	427
10	Qualified B.Ed only	20	12.58	83	52.20	56	35.22	159
11	Qualified both TTC and B.Ed.	7	25.93	13	48.15	7	25.93	27
12	Experience upto 5 years	19	12.26	85	54.84	51	32.90	155
13	Experience from 6 to 15 years	36	15.93	109	48.23	81	35.84	226
14	Experience from 16 to 25 years	24	12.57	103	53.93	64	33.51	191
15	Experience more than 25 years	2	4.88	27	65.85	12	29.27	41
16	Total sample	81	13.21	324	52.85	208	33.93	613

Figures given in Table 41 suggests that, in the Total sample of 613 Primary School Teachers, 33.93 percent need comprehensive training, 52.85 per cent need inservice training in certain areas and 13.21 per cent need no training on the theme, Sociological Bases of Instruction. The figures reveal that more number of teachers is with two modes of preferences, need training in certain areas and need comprehensive training. The Table also reveals that there is no much variation in that order of preferences for training on the theme. The figures of percentages reveal that there exists high need for comprehensive training on Sociological Bases of Instruction.

22. *Activity based Curriculum*

Percentages of preferences of Primary School Teachers for Inservice Training on Theoretical Bases of Activity based Curriculum for the Total Sample and for different sub samples are estimated and presented in Table 42

TABLE 42

Percentages of Need Assessment on Activity based Curriculum

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	17	14.66	54	46.55	45	38.79	116
2	Female	88	17.71	226	45.47	183	36.82	497
3	Lower Primary School	56	17.67	151	47.63	110	34.70	317
4	Upper Primary School	49	16.55	129	43.58	118	39.86	296
5	Government School	40	13.79	140	48.28	110	37.93	290
6	Government Aided School	65	20.12	140	43.34	118	36.53	323
7	DPEP Districts School	50	17.01	132	44.90	112	38.10	294
8	Non- DPEP Districts School	55	17.24	148	46.39	116	36.36	319
9	Qualified TTC only	75	17.56	199	46.60	153	35.83	427
10	Qualified B.Ed only	28	17.61	61	38.36	70	44.03	159
11	Qualified both TTC and B.Ed.	2	7.41	20	74.07	5	18.52	27
12	Experience upto 5 years	21	13.55	74	47.74	60	38.71	155
13	Experience from 6 to 15 years	34	15.04	110	48.67	82	36.28	226
14	Experience from 16 to 25 years	43	22.51	79	41.36	69	36.13	191
15	Experience more than 25 years	7	17.07	17	41.46	17	41.46	41
16	Total sample	105	17.13	280	45.68	228	37.19	613

Figures given in Table 42 suggests that, in the Total sample of 613 Primary School Teachers, 37.19 percent need comprehensive training, 45.68 per cent need training in certain areas and 17.13 per cent need no training on Activity based Curriculum. The Table reveals that more number of teachers is with the two modes of preferences need training in certain areas and need comprehensive training. The Table also reveals that there is no much variation in the order of those preferences for training on the theme . The figures of percentages reveal that there exists high need for comprehensive training on Activity based Curriculum

23. *Child centered Curriculum*

Percentages of preferences of Primary School Teachers for Inservice Training on Child centered Curriculum are estimated and presented in Table 43

TABLE 43

Percentages of Need Assessment on Child centered Curriculum

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	28	24.14	48	41.38	40	34.48	116
2	Female	119	23.94	207	41.65	171	34.41	497
3	Lower Primary School	77	24.29	135	42.59	105	33.12	317
4	Upper Primary School	70	23.65	120	40.54	106	35.81	296
5	Government School	58	20.00	127	43.79	105	36.21	290
6	Government Aided School	89	27.55	128	39.63	106	32.82	323
7	DPEP Districts School	68	23.13	125	42.52	101	34.35	294
8	Non- DPEP Districts School	79	24.76	130	40.75	110	34.48	319
9	Qualified TTC only	108	25.29	183	42.86	136	31.85	427
10	Qualified B.Ed only	34	21.38	58	36.48	67	42.14	159
11	Qualified both TTC and B.Ed.	5	18.52	14	51.85	8	29.63	27
12	Experience upto 5 years	31	20.00	68	43.87	56	36.13	155
13	Experience from 6 to 15 years	52	23.01	96	42.48	78	34.51	226
14	Experience from 16 to 25 years	56	29.32	74	38.74	61	31.94	191
15	Experience more than 25 years	8	19.51	17	41.46	16	39.02	41
16	Total sample	147	23.98	255	41.60	211	34.42	613

Figures given in Table 43 suggests that, in the Total sample of 613 Primary School Teachers, 34.42 percent need comprehensive training, 41.60 per cent need training in certain areas and 23.98 per cent need no training on Child centered Curriculum. The figures reveal that more number of teachers is with two modes of preferences need training in certain areas and need comprehensive training. The Table also reveals that there is no much variation in that order of preferences for training on the theme. The figures of percentages reveal that there exists need for comprehensive training on Child centered Curriculum.

24. *Competency based Curriculum*

Percentages of preferences of Primary School Teachers for Inservice Training on the Competency based Curriculum are estimated and presented in Table 44

TABLE 44

Percentages of Need Assessment on Competency based Curriculum

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	22	18.97	50	43.10	44	37.93	116
2	Female	93	18.71	216	43.46	188	37.83	497
3	Lower Primary School	69	21.77	126	39.75	122	38.49	317
4	Upper Primary School	46	15.54	140	47.30	110	37.16	296
5	Government School	44	15.17	126	43.45	120	41.38	290
6	Government Aided School	71	21.98	140	43.34	112	34.67	323
7	DPEP Districts School	53	18.03	137	46.60	104	35.37	294
8	Non- DPEP Districts School	62	19.44	129	40.44	128	40.13	319
9	Qualified TTC only	89	20.84	179	41.92	159	37.24	427
10	Qualified B.Ed only	23	14.47	74	46.54	62	38.99	159
11	Qualified both TTC and B.Ed.	3	11.11	13	48.15	11	40.74	27
12	Experience upto 5 years	25	16.13	62	40.00	68	43.87	155
13	Experience from 6 to 15 years	40	17.70	102	45.13	84	37.17	226
14	Experience from 16 to 25 years	45	23.56	84	43.98	62	32.46	191
15	Experience more than 25 years	5	12.20	18	43.90	18	43.90	41
16	Total sample	115	18.76	266	43.39	232	37.85	613

Figures given in Table 44 suggests that, in the Total sample of 613 Primary School Teachers, 37.85 percent need comprehensive training, 43.39 per cent need training in certain areas and 18.76 per cent need no training on Competency based Curriculum. The figures reveal that more number of teachers is with the two modes of preferences, need training in certain areas and need comprehensive training. The Table also reveals that there is no much variation in that order of preferences for training on the theme. The figures of percentages reveal that there exists need for comprehensive training on Competency based Curriculum.

25. Constructivism-Learning Experiences

Percentages of preferences of Primary School Teachers for Inservice Training on Constructivism-Learning Experiences are estimated and presented in Table 45.

TABLE 45

Percentages of Need Assessment on Constructivism-Learning Experiences

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	9	7.76	52	44.83	55	47.41	116
2	Female	64	12.88	209	42.05	224	45.07	497
3	Lower Primary School	43	13.56	133	41.96	141	44.48	317
4	Upper Primary School	30	10.14	128	43.24	138	46.62	296
5	Government School	29	10.00	122	42.07	139	47.93	290
6	Government Aided School	44	13.62	139	43.03	140	43.34	323
7	DPEP Districts School	24	8.16	126	42.86	144	48.98	294
8	Non- DPEP Districts School	49	15.36	135	42.32	135	42.32	319
9	Qualified TTC only	52	12.18	179	41.92	196	45.90	427
10	Qualified B.Ed only	18	11.32	69	43.40	72	45.28	159
11	Qualified both TTC and B.Ed.	3	11.11	13	48.15	11	40.74	27
12	Experience upto 5 years	18	11.61	60	38.71	77	49.68	155
13	Experience from 6 to 15 years	24	10.62	111	49.12	91	40.27	226
14	Experience from 16 to 25 years	27	14.14	73	38.22	91	47.64	191
15	Experience more than 25 years	4	9.76	17	41.46	20	48.78	41
16	Total sample	73	11.91	261	42.58	279	45.51	613

Figures given in Table 45 suggests that, in the Total sample of 613 Primary School Teachers, 45.51 percent need comprehensive training, 42.58 per cent need training in certain areas and 11.91 per cent need no training on Constructivism-Learning Experiences. The figures reveal that more number of teachers is with the two modes of preferences, need comprehensive training and need training in certain areas. The Table also reveals that there is no much variation in that order of preferences for training on the theme. The figures of percentages reveal that there exists need for comprehensive training on Constructivism-Learning Experiences.

26. Multiple Intelligence-Learning Experiences

Percentages of preferences of Primary School Teachers for Inservice Training on Multiple Intelligence Learning Experiences are estimated and presented in Table 46.

TABLE 46

Percentages of Need Assessment on Multiple Intelligence-Learning Experiences

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	10	8.62	49	42.24	57	49.14	116
2	Female	50	10.06	192	38.63	255	51.31	497
3	Lower Primary School	37	11.67	119	37.54	161	50.79	317
4	Upper Primary School	23	7.77	122	41.22	151	51.01	296
5	Government School	30	10.34	104	35.86	156	53.79	290
6	Government Aided School	30	9.29	137	42.41	156	48.30	323
7	DPEP Districts School	25	8.50	110	37.41	159	54.08	294
8	Non- DPEP Districts School	35	10.97	131	41.07	153	47.96	319
9	Qualified TTC only	46	10.77	164	38.41	217	50.82	427
10	Qualified B.Ed only	13	8.18	65	40.88	81	50.94	159
11	Qualified both TTC and B.Ed.	1	3.70	12	44.44	14	51.85	27
12	Experience upto 5 years	14	9.03	64	41.29	77	49.68	155
13	Experience from 6 to 15 years	22	9.73	89	39.38	115	50.88	226
14	Experience from 16 to 25 years	20	10.47	73	38.22	98	51.31	191
15	Experience more than 25 years	4	9.76	15	36.59	22	53.66	41
16	Total sample	60	9.79	241	39.31	312	50.90	613

Figures given in Table 46 suggests that, in the Total sample of 613 Primary School Teachers, 50.90 percent need comprehensive training, 39.31 per cent need training in certain areas and 9.79 per cent need no training on Multiple Intelligence Learning Experiences. The Table reveals that more number of teachers is with the two modes of preferences need comprehensive training and need training in certain areas. The Table also reveals that there is no much variation in that order of the preferences for training on the theme. The figures of percentages reveal that there exists need for comprehensive training on Multiple Intelligence Learning Experiences.

27. Preparation of Improvised Instructional Materials

Percentages of preferences of Primary School Teachers for Inservice Training on the theme Preparation of Improvised Instructional Materials are estimated and presented in Table 47

TABLE 47

Percentages of Need Assessment on Improvised Instructional Materials

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	10	8.62	53	45.69	53	45.69	116
2	Female	29	5.84	284	57.14	184	37.02	497
3	Lower Primary School	16	5.05	172	54.26	129	40.69	317
4	Upper Primary School	23	7.77	165	55.74	108	36.49	296
5	Government School	12	4.14	157	54.14	121	41.72	290
6	Government Aided School	27	8.36	180	55.73	116	35.91	323
7	DPEP Districts School	17	5.78	170	57.82	107	36.39	294
8	Non- DPEP Districts School	22	6.90	167	52.35	130	40.75	319
9	Qualified TTC only	29	6.79	236	55.27	162	37.94	427
10	Qualified B.Ed only	8	5.03	87	54.72	64	40.25	159
11	Qualified both TTC and B.Ed.	2	7.41	14	51.85	11	40.74	27
12	Experience upto 5 years	11	7.10	80	51.61	64	41.29	155
13	Experience from 6 to 15 years	11	4.87	135	59.73	80	35.40	226
14	Experience from 16 to 25 years	13	6.81	101	52.88	77	40.31	191
15	Experience more than 25 years	4	9.76	21	51.22	16	39.02	41
16	Total sample	39	6.36	337	54.98	237	38.66	613

Figures given in Table 47 suggests that for the Total sample of 613 Primary School Teachers, 38.66 percent need comprehensive training, 54.88 percent need training in certain areas and 6.36 per cent need no training on Preparation of Improvised Instructional Materials. This suggests that a higher preference is for 'Need training in certain areas' of the theme. The Table also reveals that the results are the same in the case of the sub samples also. It is also noNotable that the Percentage of preferences for 'Need comprehensive training' to this theme is less than the preference for 'Need training in certain areas'. In total, the figures suggest that there exists need for inservice training for Primary School Teachers on the theme Preparation of Improvised Instructional Materials.

28. New trends in Teaching-Learning Materials

Percentages of preferences of Primary School Teachers for Inservice Training on New Trends in Teaching-Learning Materials are estimated and presented in Table 48

TABLE 48

Percentages of Need Assessment on New trends in Teaching-Learning Materials

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	2	1.72	46	39.66	68	58.62	116
2	Female	18	3.62	193	38.83	286	57.55	497
3	Lower Primary School	9	2.84	120	37.85	188	59.31	317
4	Upper Primary School	11	3.72	119	40.20	166	56.08	296
5	Government School	13	4.48	93	32.07	184	63.45	290
6	Government Aided School	7	2.17	146	45.20	170	52.63	323
7	DPEP Districts School	10	3.40	94	31.97	190	64.63	294
8	Non- DPEP Districts School	10	3.13	145	45.45	164	51.41	319
9	Qualified TTC only	16	3.75	167	39.11	244	57.14	427
10	Qualified B.Ed only	4	2.52	58	36.48	97	61.01	159
11	Qualified both TTC and B.Ed.	0	0.00	14	51.85	13	48.15	27
12	Experience upto 5 years	5	3.23	52	33.55	98	63.23	155
13	Experience from 6 to 15 years	8	3.54	93	41.15	125	55.31	226
14	Experience from 16 to 25 years	7	3.66	71	37.17	113	59.16	191
15	Experience more than 25 years	0	0.00	23	56.10	18	43.90	41
16	Total sample	20	3.26	239	38.99	354	57.75	613

Figures given in Table 48 suggests that, in the Total sample of 613 Primary School Teachers, 57.75 percent need comprehensive training, 38.99 per cent need training in certain areas and 3.26 per cent need no training on New Trends in Teaching Learning Materials. This also suggests that more preference is for comprehensive training on this theme. The Table also reveals that there is no much variation in the order of preferences for training on the theme . Among the total sample and different sub samples it is also notable that less than 5 per cent of teachers only are with preference that there is no need of training in this area. The figures of percentages reveal that there exists need for training in certain areas of New Trends in Teaching Learning Materials.

29. Instructional Uses of Computers

Percentages of preferences of Primary School Teachers for Inservice Training on Instructional Uses of Computers are estimated and presented in Table 49

TABLE 49

Percentages of Need Assessment on Instructional Uses of Computers

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	3	2.59	16	13.79	97	83.62	116
2	Female	10	2.01	72	14.49	415	83.50	497
3	Lower Primary School	6	1.89	41	12.93	270	85.17	317
4	Upper Primary School	7	2.36	47	15.88	242	81.76	296
5	Government School	4	1.38	31	10.69	255	87.93	290
6	Government Aided School	9	2.79	57	17.65	257	79.57	323
7	DPEP Districts School	7	2.38	41	13.95	246	83.67	294
8	Non- DPEP Districts School	6	1.88	47	14.73	266	83.39	319
9	Qualified TTC only	9	2.11	66	15.46	352	82.44	427
10	Qualified B.Ed only	4	2.52	20	12.58	135	84.91	159
11	Qualified both TTC and B.Ed.	0	0.00	2	7.41	25	92.59	27
12	Experience upto 5 years	3	1.94	28	18.06	124	80.00	155
13	Experience from 6 to 15 years	4	1.77	28	12.39	194	85.84	226
14	Experience from 16 to 25 years	5	2.62	25	13.09	161	84.29	191
15	Experience more than 25 years	1	2.44	7	17.07	33	80.49	41
16	Total sample	13	2.12	88	14.36	512	83.52	613

Figures given in Table 49 suggests that, in the Total sample of 613 Primary School Teachers, 83.52 percent need comprehensive training, 14.36 per cent need training in certain areas and 2.12 per cent need no training on Instructional Uses of Computers. The Table suggests that a good majority of teachers is with the preference viz., Need comprehensive training on Computer Aided Instruction. The Table also reveals that there is not much variation in the order of preferences for training on the theme for the different subsamples. It is also notable that less than 3 per cent of teachers only are with preference that there is no need of training in this area. It is also notable there the Percentages of preferences for comprehensive training in this theme is very higher than preferences for training in certain areas on this theme. The figures of percentages reveal that there exists very high need for comprehensive training on Instructional Uses of Computers

30. Instructional perspectives of Newspapers, Magazines, Journals, Weeklies

Percentages of preferences of Primary School Teachers for Inservice Training on Instructional perspectives of Newspapers, Magazines, Journals, Weeklies are estimated and presented in Table 50

TABLE 50

Percentages of Need Assessment on
Instructional perspectives of Newspapers, Magazines, Journals, Weeklies

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	42	36.21	53	45.69	21	18.10	116
2	Female	200	40.24	233	46.88	64	12.88	497
3	Lower Primary School	118	37.22	162	51.10	37	11.67	317
4	Upper Primary School	124	41.89	124	41.89	48	16.22	296
5	Government School	101	34.83	143	49.31	46	15.86	290
6	Government Aided School	141	43.65	143	44.27	39	12.07	323
7	DPEP Districts School	117	39.80	142	48.30	35	11.90	294
8	Non- DPEP Districts School	125	39.18	144	45.14	50	15.67	319
9	Qualified TTC only	154	36.07	213	49.88	60	14.05	427
10	Qualified B.Ed only	72	45.28	62	38.99	25	15.72	159
11	Qualified both TTC and B.Ed.	16	59.26	11	40.74	0	0.00	27
12	Experience upto 5 years	60	38.71	75	48.39	20	12.90	155
13	Experience from 6 to 15 years	86	38.05	107	47.35	33	14.60	226
14	Experience from 16 to 25 years	85	44.04	85	44.04	23	11.92	191
15	Experience more than 25 years	11	26.83	21	51.22	9	21.95	41
16	Total sample	242	39.48	286	46.66	85	13.87	613

Figures given in Table 50 suggests that, in the Total sample of 613 Primary School Teachers, 13.87 percent need comprehensive training, 46.66 per cent need training in certain areas and 39.48 per cent need no training on Instructional perspectives of Newspaper, Magazines, Journals, Weeklies. The figures suggest that more number of teachers are with the two preferences viz., need no training and need training in certain areas, on the theme. The Table also suggests that the preference for comprehensive training on the theme is found to low, when it is compared with the other two modes of preferences. The Table also reveals that there is no much variation in the order of preferences for training on the theme. The Table reveals that there exists need for training in certain areas on Instructional perspectives of Newspapers, Magazines, Journals, and Weeklies.

31. Instructional perspectives of Charts, Pictures, Flash Cards etc.

Percentages of preferences of Primary School Teachers for Inservice Training on Instructional perspectives of Charts, Pictures, Flash Cards etc. are estimated and presented in Table 51.

TABLE 51

Percentages of Need Assessment on Instructional perspectives of Charts, Pictures, Flash Cards etc.

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	45	38.79	50	43.10	21	18.10	116
2	Female	191	38.43	224	45.07	82	16.50	497
3	Lower Primary School	121	38.17	149	47.00	47	14.83	317
4	Upper Primary School	115	38.85	125	42.23	56	18.92	296
5	Government School	112	38.62	131	45.17	47	16.21	290
6	Government Aided School	124	38.39	143	44.27	56	17.34	323
7	DPEP Districts School	119	40.48	128	43.54	47	15.99	294
8	Non- DPEP Districts School	117	36.68	146	45.77	56	17.55	319
9	Qualified TTC only	168	39.34	193	45.20	66	15.46	427
10	Qualified B.Ed only	55	34.59	69	43.40	35	22.01	159
11	Qualified both TTC and B.Ed.	13	48.15	12	44.44	2	7.41	27
12	Experience upto 5 years	57	36.77	67	43.23	31	20.00	155
13	Experience from 6 to 15 years	86	38.05	106	46.90	34	15.04	226
14	Experience from 16 to 25 years	80	41.88	80	41.88	31	16.23	191
15	Experience more than 25 years	13	31.71	21	51.22	7	17.07	41
16	Total sample	236	38.50	274	44.70	103	16.80	613

Figures given in Table 51 suggests that, in the Total sample of 613 Primary School Teachers, 16.80 percent need comprehensive training, 44.70 per cent need training in certain areas and 38.50 per cent need no training on Instructional perspectives of Charts, Pictures, and Flash Cards. The figures suggest that more number of teachers is with preference viz., need training in certain areas on the theme, than the other two modes of preferences. The Table also reveals that there is not much variation in the order of preferences for training on the theme between the different subsamples. The Table reveals that there exists need for training in certain areas on the theme, Instructional perspectives of Charts, Pictures, and Flash Cards.

32. Usage of OHP/Film Projectors/Slide Projectors

Percentages of preferences of Primary School Teachers for Inservice Training on usage of OHP/Film Projectors/Slide Projectors are estimated and presented in Table 52

TABLE 52
Percentages of Need Assessment on
Usage of OHP/Film Projectors/Slide Projectors

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	7	6.03	31	26.72	78	67.24	116
2	Female	33	6.64	140	28.17	324	65.19	497
3	Lower Primary School	22	6.94	83	26.18	212	66.88	317
4	Upper Primary School	18	6.08	88	29.73	190	64.19	296
5	Government School	16	5.52	71	24.48	203	70.00	290
6	Government Aided School	24	7.43	100	30.96	199	61.61	323
7	DPEP Districts School	17	5.78	87	29.59	190	64.63	294
8	Non- DPEP Districts School	23	7.21	84	26.33	212	66.46	319
9	Qualified TTC only	30	7.03	121	28.34	276	64.64	427
10	Qualified B.Ed only	9	5.66	45	28.30	105	66.04	159
11	Qualified both TTC and B.Ed.	1	3.70	5	18.52	21	77.78	27
12	Experience upto 5 years	9	5.81	34	21.94	112	72.26	155
13	Experience from 6 to 15 years	14	6.19	65	28.76	147	65.04	226
14	Experience from 16 to 25 years	13	6.81	59	30.89	119	62.30	191
15	Experience more than 25 years	4	9.76	13	31.71	24	58.54	41
16	Total sample	40	6.53	171	27.90	402	65.58	613

Figures given in Table 52 suggests that, in the Total sample of 613 Primary School Teachers, 65.68 percent need comprehensive training, 27.90 per cent need training in certain areas and 6.53 per cent need no training on the theme, Usage of OHP/Film Projectors/Slide Projectors. The figures suggest that more than 60 percent of Primary School Teachers are with preference Need comprehensive training in this theme. The Table also suggests that less than 8 per cent of the Primary School Teachers only have the preference viz., need no training in this theme. More number of teachers is with preference viz., need comprehensive training on the theme, than the other two mode of preferences. The Table also reveals that there is no much variation in the order of preferences for training on the theme . The Table suggests that there exists high need for comprehensive training on Usage of OHP/Film Projectors/Slide Projectors.

33. Audio Visual Media Equipments

Percentages of preferences of Primary School Teachers for Inservice Training on Audio Visual Media Equipments are estimated and presented in Table 53

TABLE 53

Percentages of Need Assessment on Audio Visual Media Equipments

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	12	10.34	50	43.10	54	46.55	116
2	Female	58	11.67	199	40.04	240	48.29	497
3	Lower Primary School	36	11.36	129	40.69	152	47.95	317
4	Upper Primary School	34	11.49	120	40.54	142	47.97	296
5	Government School	24	8.28	109	37.59	157	54.14	290
6	Government Aided School	46	14.24	140	43.34	137	42.41	323
7	DPEP Districts School	29	9.86	128	43.54	137	46.60	294
8	Non- DPEP Districts School	41	12.85	121	37.93	157	49.22	319
9	Qualified TTC only	47	11.01	183	42.86	197	46.14	427
10	Qualified B.Ed only	20	12.58	61	38.36	78	49.06	159
11	Qualified both TTC and B.Ed.	3	11.11	5	18.52	19	70.37	27
12	Experience upto 5 years	19	12.26	62	40.00	74	47.74	155
13	Experience from 6 to 15 years	23	10.18	100	44.25	103	45.58	226
14	Experience from 16 to 25 years	25	13.09	73	38.22	93	48.69	191
15	Experience more than 25 years	3	7.32	14	34.15	24	58.54	41
16	Total sample	70	11.42	249	40.62	294	47.96	613

Figures given in Table 53 suggests that, in the Total sample of 613 Primary School Teachers, 47.96 percent need comprehensive training, 40.62 per cent need training in certain areas and 11.42 per cent need no training on Audio Visual Media Equipments. The figures suggest that more number of Primary School Teachers is with preference viz., need comprehensive training on theme, than the other two mode of preferences. The Table also reveals that there is no much variation in the order of preferences for training on the theme .The figures suggest that there is a high need of comprehensive training on Audio Visual Media Equipments.

34. Posters, Collage etc

Percentages of preferences of Primary School Teachers for Inservice Training Posters, Collage etc are estimated and presented in Table 54

TABLE 54
Percentages of Need Assessment on Posters, Collage etc., Among Total sample (N=613) and for different sub samples

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	20	17.24	68	58.62	28	24.14	116
2	Female	84	16.90	269	54.12	144	28.97	497
3	Lower Primary School	50	15.77	179	56.47	88	27.76	317
4	Upper Primary School	54	18.24	158	53.38	84	28.38	296
5	Government School	43	14.83	150	51.72	97	33.45	290
6	Government Aided School	61	18.89	187	57.89	75	23.22	323
7	DPEP Districts School	49	16.67	163	55.44	82	27.89	294
8	Non- DPEP Districts School	55	17.24	174	54.55	90	28.21	319
9	Qualified TTC only	72	16.86	239	55.97	116	27.17	427
10	Qualified B.Ed only	28	17.61	81	50.94	50	31.45	159
11	Qualified both TTC and B.Ed.	4	14.81	17	62.96	6	22.22	27
12	Experience upto 5 years	23	14.84	84	54.19	48	30.97	155
13	Experience from 6 to 15 years	42	18.58	128	56.64	56	24.78	226
14	Experience from 16 to 25 years	34	17.80	102	53.40	55	28.80	191
15	Experience more than 25 years	5	12.20	23	56.10	13	31.71	41
16	Total sample	104	16.97	337	54.98	172	28.06	613

Figures given in Table 54 suggests that, in the Total sample of 613 Primary School Teachers, 28.06 percent need comprehensive training, 54.98 per cent need training in certain areas and 16.97 per cent need no training on Posters, Collage etc. The figures suggest that more number of teachers (more than 50.00 percent) is with the preference, Need training in certain areas on this theme. The Table also reveals that there is no much variation in the order of preferences for training on the theme . The figures of percentages reveal that there exists need for training in certain areas of preparation of Posters, Collage, etc.

35. Preparation of Newsletters, Magazines, Special Issues, Broachers etc

Percentages of preferences of Primary School Teachers for Inservice Training on Preparation of Newsletters, Magazines, Special Issues, Broachers etc are estimated and presented in Table 55.

TABLE 55

Percentages of Need Assessment on Preparation of Newsletters, Magazines, Special Issues, Broachers etc

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	37	31.90	58	50.00	21	18.10	116
2	Female	141	28.37	242	48.69	114	22.94	497
3	Lower Primary School	86	27.13	156	49.21	75	23.66	317
4	Upper Primary School	92	31.08	144	48.65	60	20.27	296
5	Government School	73	25.17	144	49.66	73	25.17	290
6	Government Aided School	105	32.51	156	48.30	62	19.20	323
7	DPEP Districts School	83	28.23	141	47.96	70	23.81	294
8	Non- DPEP Districts School	95	29.78	159	49.84	65	20.38	319
9	Qualified TTC only	121	28.34	211	49.41	95	22.25	427
10	Qualified B.Ed only	51	32.08	73	45.91	35	22.01	159
11	Qualified both TTC and B.Ed.	6	22.22	16	59.26	5	18.52	27
12	Experience upto 5 years	36	23.23	73	47.10	46	29.68	155
13	Experience from 6 to 15 years	68	30.09	116	51.33	42	18.58	226
14	Experience from 16 to 25 years	65	34.03	87	45.55	39	20.42	191
15	Experience more than 25 years	9	21.95	24	58.54	8	19.51	41
16	Total sample	178	29.04	300	48.94	135	22.02	613

Figures given in Table 55 suggests that, in the Total sample of 613 Primary School Teachers, 22.02 percent need comprehensive training, 48.94 per cent need training in certain areas and 29.04 per cent need no training on Preparation of Newsletters, Magazines, Special Issues, Broachers etc. The Table reveals that more number of teachers is with preference viz., need training in certain areas of the theme, than the other two modes of preferences. The Table also reveals that there is no much variation in the order of preferences for training on the theme . The figures of percentages reveal that there exists need for Inservice Training in certain areas on Preparation of Newsletters, Magazines, Special Issues, Broachers etc

36. Preparation of Local Texts

Percentages of preferences of Primary School Teachers for Inservice Training on Preparation of Local Texts are estimated and presented in Table 56

TABLE 56

Percentages of Need Assessment on Preparation of Local Texts

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	19	16.38	54	46.55	43	37.07	116
2	Female	91	18.31	247	49.70	159	31.99	497
3	Lower Primary School	69	21.77	152	47.95	96	30.28	317
4	Upper Primary School	41	13.85	149	50.34	106	35.81	296
5	Government School	46	15.86	137	47.24	107	36.90	290
6	Government Aided School	64	19.81	164	50.77	95	29.41	323
7	DPEP Districts School	55	18.71	148	50.34	91	30.95	294
8	Non- DPEP Districts School	55	17.24	153	47.96	111	34.80	319
9	Qualified TTC only	78	18.27	216	50.59	133	31.15	427
10	Qualified B.Ed only	30	18.87	70	44.03	59	37.11	159
11	Qualified both TTC and B.Ed.	2	7.41	15	55.56	10	37.04	27
12	Experience upto 5 years	23	14.84	70	45.16	62	40.00	155
13	Experience from 6 to 15 years	44	19.47	113	50.00	69	30.53	226
14	Experience from 16 to 25 years	37	19.37	97	50.79	57	29.84	191
15	Experience more than 25 years	6	14.63	21	51.22	14	34.15	41
16	Total sample	110	17.94	301	49.10	202	32.95	613

Figures given in Table 56 suggests that, in the Total sample of 613 Primary School Teachers, 32.95 percent need comprehensive training, 49.10 per cent need training in certain areas and 17.94 per cent need no training on preparation of Local Texts. The Table reveals that more number of teachers is with preference need training in certain areas than the other two modes of preferences for training. The Table also reveals that there is no much variation for that order of preferences for training on the theme among different sub samples. The figures of percentages reveal that there exists need for training in certain areas on preparation of Local Texts.

37. Integrated Approach-Learning Experiences

Percentages of preferences of Primary School Teachers for Inservice Training on Integrated Approach-Learning Experiences are estimated and presented in Table 57.

TABLE 57
Percentages of Need Assessment on Integrated Approach-Learning Experiences

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	23	19.83	47	40.52	46	39.66	116
2	Female	92	18.51	218	43.86	187	37.63	497
3	Lower Primary School	73	23.03	137	43.22	107	33.75	317
4	Upper Primary School	42	14.19	128	43.24	126	42.57	296
5	Government School	54	18.62	126	43.45	110	37.93	290
6	Government Aided School	61	18.89	139	43.03	123	38.08	323
7	DPEP Districts School	53	18.03	132	44.90	109	37.07	294
8	Non- DPEP Districts School	62	19.44	133	41.69	124	38.87	319
9	Qualified TTC only	91	21.31	189	44.26	147	34.43	427
10	Qualified B.Ed only	20	12.58	64	40.25	75	47.17	159
11	Qualified both TTC and B.Ed.	4	14.81	12	44.44	11	40.74	27
12	Experience upto 5 years	28	18.06	58	37.42	69	44.52	155
13	Experience from 6 to 15 years	41	18.14	98	43.36	87	38.50	226
14	Experience from 16 to 25 years	40	20.94	91	47.64	60	31.41	191
15	Experience more than 25 years	6	14.63	18	43.90	17	41.46	41
16	Total sample	115	18.76	265	43.23	233	38.01	613

Figures given in Table 57 suggests that, in the Total sample of 613 Primary School Teachers, 38.01 percent need comprehensive training, 43.23 per cent need training in certain areas and 18.76 per cent need no training on Integrated Approach-Learning Experiences. The Table reveals that more number of teachers is with the two modes of preferences need comprehensive training and need training in certain areas. The Table also reveals that there is not much variation in the order of the preferences for training on the theme. The figures of percentages reveal that there exists high need for comprehensive training on Integrated Approach-Learning Experiences.

38. Spiral Approach-Learning Experiences

Percentages of preferences of Primary School Teachers for Inservice Training on Spiral Approach-Learning Experiences are estimated and presented in Table 58

TABLE 58

Percentages of Need Assessment on Spiral Approach-Learning Experiences

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	13	11.21	54	46.55	49	42.24	116
2	Female	74	14.89	220	44.27	203	40.85	497
3	Lower Primary School	54	17.03	151	47.63	112	35.33	317
4	Upper Primary School	33	11.15	123	41.55	140	47.30	296
5	Government School	40	13.79	134	46.21	116	40.00	290
6	Government Aided School	47	14.55	140	43.34	136	42.11	323
7	DPEP Districts School	41	13.95	128	43.54	125	42.52	294
8	Non- DPEP Districts School	46	14.42	146	45.77	127	39.81	319
9	Qualified TTC only	69	16.16	196	45.90	162	37.94	427
10	Qualified B.Ed only	16	10.06	63	39.62	80	50.31	159
11	Qualified both TTC and B.Ed.	2	7.41	15	55.56	10	37.04	27
12	Experience upto 5 years	22	14.19	58	37.42	75	48.39	155
13	Experience from 6 to 15 years	30	13.27	102	45.13	94	41.59	226
14	Experience from 16 to 25 years	32	16.75	93	48.69	66	34.55	191
15	Experience more than 25 years	3	7.32	21	51.22	17	41.46	41
16	Total sample	87	14.19	274	44.70	252	41.11	613

Figures given in Table 58 suggests that, in the Total sample of 613 Primary School Teachers, 41.11 percent need comprehensive training, 44.70 per cent need training in certain areas and 14.19 per cent need no training on Spiral approach-Learning Experiences. The Table reveals that more number of teachers is with the two modes of preferences for training on the theme need training in certain areas and need comprehensive training. The Table also reveals that there is no much variation in the order of the preferences for training on the theme. The figures of percentages reveal that there exists need for comprehensive training on Spiral Approach-Learning Experiences.

39. Multi Level Instruction- Learning Experiences

Percentages of preferences of Primary School Teachers for Inservice Training on Multi level Instruction - Learning Experiences are estimated and presented in Table 59

TABLE 59
Percentages of Need Assessment on
Multi Level Instruction -Learning Experiences

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	14	12.07	49	42.24	53	45.69	116
2	Female	67	13.48	213	42.86	217	43.66	497
3	Lower Primary School	47	14.83	134	42.27	136	42.90	317
4	Upper Primary School	34	11.49	128	43.24	134	45.27	296
5	Government School	28	9.66	126	43.45	136	46.90	290
6	Government Aided School	53	16.41	136	42.11	134	41.49	323
7	DPEP Districts School	37	12.59	133	45.24	124	42.18	294
8	Non- DPEP Districts School	44	13.79	129	40.44	146	45.77	319
9	Qualified TTC only	58	13.58	187	43.79	182	42.62	427
10	Qualified B.Ed only	22	13.84	61	38.36	76	47.80	159
11	Qualified both TTC and B.Ed.	1	3.70	14	51.85	12	44.44	27
12	Experience upto 5 years	18	11.61	61	39.35	76	49.03	155
13	Experience from 6 to 15 years	30	13.27	94	41.59	102	45.13	226
14	Experience from 16 to 25 years	30	15.71	89	46.60	72	37.70	191
15	Experience more than 25 years	3	7.32	18	43.90	20	48.78	41
16	Total sample	81	13.21	262	42.74	270	44.05	613

Figures given in Table 59 suggests that, in the Total sample of 613 Primary School Teachers, 44.05 percent need comprehensive training, 42.74 per cent need training in certain areas and 13.21 per cent need no training on the theme, Multi Level Instruction -Learning Experiences. The Table reveals that more number of teachers is with the two modes of preferences for training on the theme, need training in certain areas and need comprehensive training. The Table also reveals that there is no much variation in the order of the preferences for training on the theme . The figures of percentages reveal that there exists need for comprehensive training on the theme Multi Level Instruction - Learning Experiences

40. Co-operative Learning Activities

Percentages of preferences of Primary School Teachers for Inservice Training on the Co-operative Learning Activities are estimated and presented in Table 60

TABLE 60

Percentages of Need Assessment on Co-operative Learning Activities

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	20	17.24	63	54.31	33	28.45	116
2	Female	90	18.11	271	54.53	136	27.36	497
3	Lower Primary School	59	18.61	168	53.00	90	28.39	317
4	Upper Primary School	51	17.23	166	56.08	79	26.69	296
5	Government School	36	12.41	166	57.24	88	30.34	290
6	Government Aided School	74	22.91	168	52.01	81	25.08	323
7	DPEP Districts School	52	17.69	158	53.74	84	28.57	294
8	Non- DPEP Districts School	58	18.18	176	55.17	85	26.65	319
9	Qualified TTC only	75	17.56	230	53.86	122	28.57	427
10	Qualified B.Ed only	32	20.13	87	54.72	40	25.16	159
11	Qualified both TTC and B.Ed.	3	11.11	17	62.96	7	25.93	27
12	Experience upto 5 years	28	18.06	74	47.74	53	34.19	155
13	Experience from 6 to 15 years	47	20.80	122	53.98	57	25.22	226
14	Experience from 16 to 25 years	31	16.23	112	58.64	48	25.13	191
15	Experience more than 25 years	4	9.76	26	63.41	11	26.83	41
16	Total sample	110	17.94	334	54.49	169	27.57	613

Figures given in Table 60 suggests that, in the Total sample of 613 Primary School Teachers, 27.57 percent need comprehensive training, 54.49 per cent need training in certain areas and 17.94 per cent need no training on the theme, Co-operative Learning activities. The Table reveals that more number of teachers is with the two modes of preferences for training on the theme need training in certain areas and need comprehensive training. The Table also reveals that there is not much variation in the order of the preferences for training on the theme. The figures of percentages reveal that there exists high need comprehensive training in certain areas of the theme Co-operative learning activities.

41. Dialogic -learning Activities

Percentages of preferences of Primary School Teachers for Inservice Training on the theme Dialogic-learning activities are estimated and presented in Table 61.

TABLE 61

Percentages of Need Assessment on Dialogic -Learning Activities

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	14	12.07	67	57.76	35	30.17	116
2	Female	83	16.70	241	48.49	173	34.81	497
3	Lower Primary School	42	13.25	161	50.79	114	35.96	317
4	Upper Primary School	55	18.58	147	49.66	94	31.76	296
5	Government School	36	12.41	138	47.59	116	40.00	290
6	Government Aided School	61	18.89	170	52.63	92	28.48	323
7	DPEP Districts School	34	11.56	152	51.70	108	36.73	294
8	Non- DPEP Districts School	63	19.75	156	48.90	100	31.35	319
9	Qualified TTC only	64	14.99	223	52.22	140	32.79	427
10	Qualified B.Ed only	25	15.72	77	48.43	57	35.85	159
11	Qualified both TTC and B.Ed.	8	29.63	8	29.63	11	40.74	27
12	Experience upto 5 years	24	15.48	68	43.87	63	40.65	155
13	Experience from 6 to 15 years	40	17.70	119	52.65	67	29.65	226
14	Experience from 16 to 25 years	28	14.66	99	51.83	64	33.51	191
15	Experience more than 25 years	5	12.20	22	53.66	14	34.15	41
16	Total sample	97	15.82	308	50.24	208	33.93	613

Figures given in Table 61 suggests that, in the Total sample of 613 Primary School Teachers, 33.93 percent need comprehensive training, 50.24 per cent need training in certain areas and 15.82 per cent need no training on the theme, Dialogic-learning activities. The Table reveals that more number of teachers is with the two modes of preferences for training on the theme, viz., need training in certain areas and need comprehensive training. The Table also reveals that there is not much variation in the order of the preferences for training on the theme. The figures of percentages reveal that there exists need for comprehensive training on the theme Dialogic-learning Activities.

42. Communicative Approach - Learning Activities

Percentages of preferences of Primary School Teachers for Inservice Training on the theme Communicative Approach Learning activities are estimated and presented in Table 62.

TABLE 62

Percentages of Need Assessment on Communicative Approach - Learning Activities

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	21	18.10	57	49.14	38	32.76	116
2	Female	89	17.91	247	49.70	161	32.39	497
3	Lower Primary School	56	17.67	156	49.21	105	33.12	317
4	Upper Primary School	54	18.24	148	50.00	94	31.76	296
5	Government School	45	15.52	135	46.55	110	37.93	290
6	Government Aided School	65	20.12	169	52.32	89	27.55	323
7	DPEP Districts School	50	17.01	153	52.04	91	30.95	294
8	Non- DPEP Districts School	60	18.81	151	47.34	108	33.86	319
9	Qualified TTC only	75	17.56	211	49.41	141	33.02	427
10	Qualified B.Ed only	27	16.98	85	53.46	47	29.56	159
11	Qualified both TTC and B.Ed.	8	29.63	8	29.63	11	40.74	27
12	Experience upto 5 years	30	19.35	61	39.35	64	41.29	155
13	Experience from 6 to 15 years	42	18.58	115	50.88	69	30.53	226
14	Experience from 16 to 25 years	32	16.75	105	54.97	54	28.27	191
15	Experience more than 25 years	6	14.63	23	56.10	12	29.27	41
16	Total sample	110	17.94	304	49.59	199	32.46	613

Figures given in Table 62 suggests that, in the Total sample of 613 Primary School Teachers, 32.46 percent need comprehensive training, 49.59 per cent need training in certain areas and 17.94 per cent need no training on the theme, viz., Communicative Approach learning activities. The Table reveals that more number of teachers is with the two modes of preferences for training on the theme need training in certain areas and need comprehensive training. The Table also reveals that there is no variation in the order of the preferences for training on the theme.

The figures of percentages reveal that there exists need for comprehensive training on the theme, Communicative Approach Learning Activities.

43. Discovery Learning Activities

Percentages of preferences of Primary School Teachers for Inservice Training on the theme Discovery Learning activities are estimated and presented in Table 63

TABLE 63

Percentages of Need Assessment on Discovery Learning Activities

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	18	15.52	55	47.41	43	37.07	116
2	Female	61	12.27	257	51.71	179	36.02	497
3	Lower Primary School	42	13.25	162	51.10	113	35.65	317
4	Upper Primary School	37	12.50	150	50.68	109	36.82	296
5	Government School	27	9.31	143	49.31	120	41.38	290
6	Government Aided School	52	16.10	169	52.32	102	31.58	323
7	DPEP Districts School	30	10.20	158	53.74	106	36.05	294
8	Non- DPEP Districts School	49	15.36	154	48.28	116	36.36	319
9	Qualified TTC only	50	11.71	225	52.69	152	35.60	427
10	Qualified B.Ed only	25	15.72	76	47.80	58	36.48	159
11	Qualified both TTC and B.Ed.	4	14.81	11	40.74	12	44.44	27
12	Experience upto 5 years	22	14.19	69	44.52	64	41.29	155
13	Experience from 6 to 15 years	27	11.95	119	52.65	80	35.40	226
14	Experience from 16 to 25 years	27	14.14	98	51.31	66	34.55	191
15	Experience more than 25 years	3	7.32	26	63.41	12	29.27	41
16	Total sample	79	12.89	312	50.90	222	36.22	613

Figures given in Table 63 suggests that, in the Total sample of 613 Primary School Teachers, 36.22 percent need comprehensive training, 50.90 per cent need training in certain areas and 12.89 per cent need no training on the theme, Discovery Learning activities. The Table reveals that more number of teachers is with the two modes of preferences for training on the theme need training in certain areas and need comprehensive training. The Table also reveals that there is no much variation in that order of the preferences for training on the theme . It is also notable that less than 17 per cent of teachers only are with preference that there is no need of training in this area. The figures of percentages reveal that there exists need for comprehensive training on Discovery Learning Activities.

44. Whole Language Approach – Learning Experiences

Percentages of preferences of Primary School Teachers for Inservice Training on the theme Whole Language Approach are estimated and presented in Table 64

TABLE 64

Percentages of Need Assessment on Whole Language Approach – Learning Experiences

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	13	11.21	49	42.24	54	46.55	116
2	Female	58	11.67	223	44.87	216	43.46	497
3	Lower Primary School	43	13.56	142	44.79	132	41.64	317
4	Upper Primary School	28	9.46	130	43.92	138	46.62	296
5	Government School	32	11.03	124	42.76	134	46.21	290
6	Government Aided School	39	12.07	148	45.82	136	42.11	323
7	DPEP Districts School	36	12.24	123	41.84	135	45.92	294
8	Non- DPEP Districts School	35	10.97	149	46.71	135	42.32	319
9	Qualified TTC only	51	11.94	191	44.73	185	43.33	427
10	Qualified B.Ed only	16	10.06	70	44.03	73	45.91	159
11	Qualified both TTC and B.Ed.	4	14.81	11	40.74	12	44.44	27
12	Experience upto 5 years	16	10.32	59	38.06	80	51.61	155
13	Experience from 6 to 15 years	23	10.18	109	48.23	94	41.59	226
14	Experience from 16 to 25 years	27	14.14	86	45.03	78	40.84	191
15	Experience more than 25 years	5	12.20	18	43.90	18	43.90	41
16	Total sample	71	11.58	272	44.37	270	44.05	613

Figures given in Table 64 suggests that, in the Total sample of 613 Primary School Teachers, 44.05 percent need comprehensive training, 44.37 per cent need training in certain areas and 11.58 per cent need no training on the theme, Whole Language Approach. The figures reveal that more number of teachers are with the two modes of preferences, viz., need comprehensive training and need training in certain areas of the theme. The Table also reveals that there is no much variation among that order of preference of training for the theme among different sub samples. It is also noTable that less than 15 per cent of teachers only are with preference that there is no need of training in this area. The percentages reveal that there exists need for comprehensive training on the theme, Whole Language Approach and learning activities based on it

45. Information Processing Approach – Learning Experiences

Percentages of preferences of Primary School Teachers for Inservice Training on the theme Information Processing Approach are estimated and presented in Table 65

TABLE 65

Percentages of Need Assessment on Information Processing Approach - Learning Experiences

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	6	5.17	53	45.69	57	49.14	116
2	Female	51	10.26	215	43.26	231	46.48	497
3	Lower Primary School	29	9.15	134	42.27	154	48.58	317
4	Upper Primary School	28	9.46	134	45.27	134	45.27	296
5	Government School	20	6.90	112	38.62	158	54.48	290
6	Government Aided School	37	11.46	156	48.30	130	40.25	323
7	DPEP Districts School	23	7.82	117	39.80	154	52.38	294
8	Non- DPEP Districts School	34	10.66	151	47.34	134	42.01	319
9	Qualified TTC only	39	9.13	183	42.86	205	48.01	427
10	Qualified B.Ed only	15	9.43	76	47.80	68	42.77	159
11	Qualified both TTC and B.Ed.	3	11.11	9	33.33	15	55.56	27
12	Experience upto 5 years	15	9.68	63	40.65	77	49.68	155
13	Experience from 6 to 15 years	17	7.52	107	47.35	102	45.13	226
14	Experience from 16 to 25 years	22	11.52	77	40.31	92	48.17	191
15	Experience more than 25 years	3	7.32	21	51.22	17	41.46	41
16	Total sample	57	9.30	268	43.72	288	46.98	613

Figures given in Table 65 suggests that, in the Total sample of 613 Primary School Teachers, 46.98 percent need comprehensive training, 43.72 per cent need training in certain areas and 9.30 per cent need no training on the theme, Information Processing Approach. The Table reveals that more number of teachers is with the two modes of preferences, need comprehensive training and need training in certain areas of the theme. The Table also reveals that there is no much variation among that order of preference for training on the theme among different sub samples. It is also notable that less than 12 per cent of teachers only are with preference that there is no need of training in this area. The figures of percentages reveal that there exists need for comprehensive training on the theme, Information Processing Approach and learning activities based on it.

46. Concept Attainment – Learning Experiences

Percentages of preferences of Primary School Teachers for Inservice Training on the theme Concept Attainment are estimated and presented in Table 66.

TABLE 66

Percentages of Need Assessment on Concept Attainment

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	14	12.07	54	46.55	48	41.38	116
2	Female	62	12.47	225	45.27	210	42.25	497
3	Lower Primary School	38	11.99	124	39.12	155	48.90	317
4	Upper Primary School	38	12.84	155	52.36	103	34.80	296
5	Government School	33	11.38	128	44.14	129	44.48	290
6	Government Aided School	43	13.31	151	46.75	129	39.94	323
7	DPEP Districts School	35	11.90	131	44.56	128	43.54	294
8	Non- DPEP Districts School	41	12.85	148	46.39	130	40.75	319
9	Qualified TTC only	50	11.71	193	45.20	184	43.09	427
10	Qualified B.Ed only	20	12.58	75	47.17	64	40.25	159
11	Qualified both TTC and B.Ed.	6	22.22	11	40.74	10	37.04	27
12	Experience upto 5 years	16	10.32	73	47.10	66	42.58	155
13	Experience from 6 to 15 years	24	10.62	105	46.46	97	42.92	226
14	Experience from 16 to 25 years	33	17.28	81	42.41	77	40.31	191
15	Experience more than 25 years	3	7.32	20	48.78	18	43.90	41
16	Total sample	76	12.40	279	45.51	258	42.09	613

Figures given in Table 66 suggests that, in the Total sample of 613 Primary School Teachers, 42.09 percent need comprehensive training, 45.51 per cent need training in certain areas and 12.40 per cent need no training on the theme, Concept Attainment. The figures reveal that more number of teachers is with the two modes of preferences viz., need comprehensive training and need training in certain areas of the theme. The Table also reveals that there is no much variation for that order of preferences for training on the theme among different sub samples. The figures of percentages reveal that there exists high need for comprehensive training on Concept Attainment and learning activities based on it.

47. Process Skills– Learning Experiences

Percentages of preferences of Primary School Teachers for Inservice Training on the theme Process Skills are estimated and presented in Table 67.

TABLE 67

Percentages of Need Assessment on Process Skills

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	18	15.52	54	46.55	44	37.93	116
2	Female	73	14.69	216	43.46	208	41.85	497
3	Lower Primary School	46	14.51	131	41.32	140	44.16	317
4	Upper Primary School	45	15.20	139	46.96	112	37.84	296
5	Government School	34	11.72	134	46.21	122	42.07	290
6	Government Aided School	57	17.65	136	42.11	130	40.25	323
7	DPEP Districts School	41	13.95	133	45.24	120	40.82	294
8	Non- DPEP Districts School	50	15.67	137	42.95	132	41.38	319
9	Qualified TTC only	66	15.46	183	42.86	178	41.69	427
10	Qualified B.Ed only	22	13.84	76	47.80	61	38.36	159
11	Qualified both TTC and B.Ed.	3	11.11	11	40.74	13	48.15	27
12	Experience upto 5 years	20	12.90	68	43.87	67	43.23	155
13	Experience from 6 to 15 years	30	13.27	97	42.92	99	43.81	226
14	Experience from 16 to 25 years	37	19.37	83	43.46	71	37.17	191
15	Experience more than 25 years	4	9.76	22	53.66	15	36.59	41
16	Total sample	91	14.85	270	44.05	252	41.11	613

Figures given in Table 67 suggests that, in the Total sample of 613 Primary School Teachers, 41.11 percent need comprehensive training, 44.05 per cent need training in certain areas and 14.85 per cent need no training on the theme, preparation of improvised learning materials and their instructional perspectives. The figures reveal that more number of teachers is with the two modes of preferences viz., need comprehensive training and need training in certain areas of the theme. The Table also reveals that there is no much variation among that order of preference for training on the theme among different sub samples. It is also noNotable that less than 20 per cent of teachers only are with preference that there is no need of training in this area. The figures of percentages reveal that there exists high need for comprehensive training on Process Skills and learning activities based on it

48. Life Skills – Learning Experiences

Percentages of preferences of Primary School Teachers for Inservice Training on the theme Life Skills are estimated and presented in Table 68.

TABLE 68

Percentages of Need Assessment on Life Skills

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	16	13.79	43	37.07	57	49.14	116
2	Female	69	13.88	220	44.27	208	41.85	497
3	Lower Primary School	45	14.20	123	38.80	149	47.00	317
4	Upper Primary School	40	13.51	140	47.30	116	39.19	296
5	Government School	26	8.97	126	43.45	138	47.59	290
6	Government Aided School	59	18.27	137	42.41	127	39.32	323
7	DPEP Districts School	30	10.20	132	44.90	132	44.90	294
8	Non- DPEP Districts School	55	17.24	131	41.07	133	41.69	319
9	Qualified TTC only	60	14.05	177	41.45	190	44.50	427
10	Qualified B.Ed only	22	13.84	74	46.54	63	39.62	159
11	Qualified both TTC and B.Ed.	3	11.11	12	44.44	12	44.44	27
12	Experience upto 5 years	27	17.42	62	40.00	66	42.58	155
13	Experience from 6 to 15 years	27	11.95	97	42.92	102	45.13	226
14	Experience from 16 to 25 years	26	13.61	86	45.03	79	41.36	191
15	Experience more than 25 years	5	12.20	18	43.90	18	43.90	41
16	Total sample	85	13.87	263	42.90	265	43.23	613

Figures given in Table 68 suggests that, in the Total sample of 613 Primary School Teachers, 43.23 percent need comprehensive training, 42.90 per cent need training in certain areas and 13.87 per cent need no training on the theme, Life Skills. The Table suggests that more number of teachers is with the two modes of preferences viz., need comprehensive training and need training in certain areas of the theme. The Table also reveals that there is no much variation among that order preference for training on the theme among different sub samples. It is also notable that less than 19 per cent of teachers only are with preference that there is no need of training in this area. The figures of percentages reveal that there exists high need for comprehensive training on Life Skills and learning activities based on it.

49. Contextualisation of Learning Activities

Percentages of preferences of Primary School Teachers for Inservice Training on the theme Contextualisation of Learning Activities are estimated and presented in Table 69.

TABLE 69
Percentages of Need Assessment on Contextualisation of Learning Activities

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	34	29.31	63	54.31	19	16.38	116
2	Female	134	26.96	249	50.10	114	22.94	497
3	Lower Primary School	100	31.55	157	49.53	60	18.93	317
4	Upper Primary School	68	22.97	155	52.36	73	24.66	296
5	Government School	71	24.48	151	52.07	68	23.45	290
6	Government Aided School	97	30.03	161	49.85	65	20.12	323
7	DPEP Districts School	74	25.17	160	54.42	60	20.41	294
8	Non- DPEP Districts School	94	29.47	152	47.65	73	22.88	319
9	Qualified TTC only	123	28.81	216	50.59	88	20.61	427
10	Qualified B.Ed only	36	22.64	84	52.83	39	24.53	159
11	Qualified both TTC and B.Ed.	9	33.33	12	44.44	6	22.22	27
12	Experience upto 5 years	38	24.52	71	45.81	46	29.68	155
13	Experience from 6 to 15 years	65	28.76	120	53.10	41	18.14	226
14	Experience from 16 to 25 years	56	29.32	101	52.88	34	17.80	191
15	Experience more than 25 years	9	21.95	20	48.78	12	29.27	41
16	Total sample	168	27.41	312	50.90	133	21.70	613

Figures given in Table 69 suggests that, in the Total sample of 613 Primary School Teachers, 21.70 percent need comprehensive training, 50.90 per cent need training in certain areas and 27.41 per cent need no training on the theme, Contextualisation of Learning Activities. The Table also reveals that more number of teachers is with preference for training in certain areas, than the other two modes of preferences for training. The Table also reveals that there is no much variation in that order of preference for training on the theme among different sub samples. The figures of percentages reveal that there exists need for training in certain areas on Contextualisation of Learning Activities.

50. Presentation of social issues and problems in classrooms

Percentages of preferences of Primary School Teachers for Inservice Training on the theme presentation of real life/social problems in classrooms are estimated and presented in Table 70

TABLE 70

Percentages of Need Assessment on Presentation of social issues and problems in classrooms

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	33	28.45	50	43.10	33	28.45	116
2	Female	100	20.12	266	53.52	131	26.36	497
3	Lower Primary School	72	22.71	164	51.74	81	25.55	317
4	Upper Primary School	61	20.61	152	51.35	83	28.04	296
5	Government School	47	16.21	151	52.07	92	31.72	290
6	Government Aided School	86	26.63	165	51.08	72	22.29	323
7	DPEP Districts School	57	19.39	151	51.36	86	29.25	294
8	Non- DPEP Districts School	76	23.82	165	51.72	78	24.45	319
9	Qualified TTC only	98	22.95	215	50.35	114	26.70	427
10	Qualified B.Ed only	30	18.87	83	52.20	46	28.93	159
11	Qualified both TTC and B.Ed.	5	18.52	18	66.67	4	14.81	27
12	Experience upto 5 years	37	23.87	73	47.10	45	29.03	155
13	Experience from 6 to 15 years	44	19.47	124	54.87	58	25.66	226
14	Experience from 16 to 25 years	46	24.08	95	49.74	50	26.18	191
15	Experience more than 25 years	6	14.63	24	58.54	11	26.83	41
16	Total sample	133	21.70	316	51.55	164	26.75	613

Figures given in Table 70 suggests that, in the Total sample of 613 Primary School Teachers, 26.75 percent need comprehensive training, 51.55 per cent need training in certain areas and 21.70 per cent need no training on the theme presentation of real life/social problems in classrooms. The Table reveals that more number of teachers is with preference for training in certain areas of the theme, than the other two modes of preferences. The Table also reveals that there is no much variation in that order of preferences for training on the theme among different sub samples. The figures of percentages reveal that there exists high need for training in certain areas of presentation of real life/social problems in classrooms.

51. Instructional Activities for Nurturance of Human Values among pupils

Percentages of preferences of Primary School Teachers for Inservice Training on Instructional Activities for Nurturance of Human Values among pupils are estimated and presented in Table 71

TABLE 71

Percentages of Need Assessment on Instructional Activities for Nurturance of Human Values among pupils

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	12	10.34	57	49.14	47	40.52	116
2	Female	71	14.29	241	48.49	185	37.22	497
3	Lower Primary School	36	11.36	153	48.26	128	40.38	317
4	Upper Primary School	47	15.88	145	48.99	104	35.14	296
5	Government School	36	12.41	134	46.21	120	41.38	290
6	Government Aided School	47	14.55	164	50.77	112	34.67	323
7	DPEP Districts School	35	11.90	145	49.32	114	38.78	294
8	Non- DPEP Districts School	48	15.05	153	47.96	118	36.99	319
9	Qualified TTC only	54	12.65	210	49.18	163	38.17	427
10	Qualified B.Ed only	27	16.98	71	44.65	61	38.36	159
11	Qualified both TTC and B.Ed.	2	7.41	17	62.96	8	29.63	27
12	Experience upto 5 years	17	10.97	77	49.68	61	39.35	155
13	Experience from 6 to 15 years	29	12.83	112	49.56	85	37.61	226
14	Experience from 16 to 25 years	31	16.23	90	47.12	70	36.65	191
15	Experience more than 25 years	6	14.63	19	46.34	16	39.02	41
16	Total sample	83	13.54	298	48.61	232	37.85	613

Figures given in Table 71 suggests that, in the Total sample of 613 Primary School Teachers, 37.85 percent need comprehensive training, 48.61 per cent need training in certain areas and 13.54 per cent need no training on Instructional Activities for Nurturance of Human Values among pupils. The Table reveals that more number of teachers is with preference need training in certain areas of the theme, than the other two modes of preferences for training. The Table also reveals that there is no much variation for that order of preference for training on the theme among different sub samples. It is also notable that less than 17 per cent of teachers only are with preference that there is no need of training in this area. The figures of percentages reveal that there exists need for training in certain areas of Instructional Activities for Nurturance of Human Values among pupils.

52. Instructional Activities for Nurturance of Environmental Awareness among pupils

Percentages of preferences of Primary School Teachers for Inservice Training on Instructional Activities for Nurturance of Environmental Awareness among pupils are estimated and presented in Table 72

TABLE 72

Percentages of Need Assessment on Instructional Activities for Nurturance of Environmental Awareness among Pupils

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	32	27.59	54	46.55	30	25.86	116
2	Female	114	22.94	251	50.50	132	26.56	497
3	Lower Primary School	73	23.03	153	48.26	91	28.71	317
4	Upper Primary School	73	24.66	152	51.35	71	23.99	296
5	Government School	67	23.10	139	47.93	84	28.97	290
6	Government Aided School	79	24.46	166	51.39	78	24.15	323
7	DPEP Districts School	71	24.15	151	51.36	72	24.49	294
8	Non- DPEP Districts School	75	23.51	154	48.28	90	28.21	319
9	Qualified TTC only	95	22.25	226	52.93	106	24.82	427
10	Qualified B.Ed only	44	27.67	69	43.40	46	28.93	159
11	Qualified both TTC and B.Ed.	7	25.93	10	37.04	10	37.04	27
12	Experience upto 5 years	38	24.52	72	46.45	45	29.03	155
13	Experience from 6 to 15 years	50	22.12	113	50.00	63	27.88	226
14	Experience from 16 to 25 years	52	27.23	96	50.26	43	22.51	191
15	Experience more than 25 years	6	14.63	24	58.54	11	26.83	41
16	Total sample	146	23.82	305	49.76	162	26.43	613

Figures given in Table 72 suggests that, in the Total sample of 613 Primary School Teachers, 26.43 percent need comprehensive training, 49.76 per cent need training in certain areas and 23.82 per cent need no training on Instructional Activities for Nurturance of Environmental Awareness among pupils. The Table reveals that more number of teachers is with preference need training in certain areas of the theme than the other two modes of preferences for training. The Table also reveals that there is no much variation in that order of preferences for training on the theme among different sub samples. The figures of percentages reveal that there exists high need for training in certain areas of Instructional Activities for Nurturance of Environmental Awareness among pupils.

53. Instructional Activities for Nurturance of Creativity among pupils

Percentages of preferences of Primary School Teachers for Inservice Training on Instructional Activities for Nurturance of Creativity among pupils are estimated and presented in Table 73.

TABLE 73.
Percentages of Need Assessment on
Instructional activities for Nurturance of Creativity among pupils

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	24	20.69	56	48.28	36	31.03	116
2	Female	100	20.12	225	45.27	172	34.61	497
3	Lower Primary School	66	20.82	144	45.43	107	33.75	317
4	Upper Primary School	58	19.59	137	46.28	101	34.12	296
5	Government School	51	17.59	130	44.83	109	37.59	290
6	Government Aided School	73	22.60	151	46.75	99	30.65	323
7	DPEP Districts School	58	19.73	148	50.34	88	29.93	294
8	Non- DPEP Districts School	66	20.69	133	41.69	120	37.62	319
9	Qualified TTC only	85	19.91	196	45.90	146	34.19	427
10	Qualified B.Ed only	34	21.38	73	45.91	52	32.70	159
11	Qualified both TTC and B.Ed.	5	18.52	12	44.44	10	37.04	27
12	Experience upto 5 years	29	18.71	73	47.10	53	34.19	155
13	Experience from 6 to 15 years	47	20.80	111	49.12	68	30.09	226
14	Experience from 16 to 25 years	43	22.51	79	41.36	69	36.13	191
15	Experience more than 25 years	5	12.20	18	43.90	18	43.90	41
16	Total sample	124	20.23	281	45.84	208	33.93	613

Figures given in Table 73 suggests that, in the Total sample of 613 Primary School Teachers, 33.93 percent need comprehensive training, 45.84 per cent need training in certain areas and 20.23 per cent need no training on Instructional Activities for Nurturance of Creativity among pupils. The Table reveals that more number of teachers is with the preference need training in certain areas of the theme, than the other two modes of preferences for training. The Table also reveals that there is not much variation in the order of preference for training on the theme among different sub samples. The figures of percentages reveal that there exists high need for training in certain areas of Instructional activities for nurturance of Creativity among pupils.

54. Effective Utilisation of Home Works

Percentages of preferences of Primary School Teachers for Inservice Training on Effective Utilisation of Home Works are estimated and presented in Table 74

TABLE 74

Percentages of Need Assessment on Home Works

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	44	37.93	47	40.52	25	21.55	116
2	Female	170	34.21	238	47.89	89	17.91	497
3	Lower Primary School	118	37.22	138	43.53	61	19.24	317
4	Upper Primary School	96	32.43	147	49.66	53	17.91	296
5	Government School	93	32.07	134	46.21	63	21.72	290
6	Government Aided School	121	37.46	151	46.75	51	15.79	323
7	DPEP Districts School	99	33.67	139	47.28	56	19.05	294
8	Non- DPEP Districts School	115	36.05	146	45.77	58	18.18	319
9	Qualified TTC only	151	35.36	194	45.43	82	19.20	427
10	Qualified B.Ed only	54	33.96	78	49.06	27	16.98	159
11	Qualified both TTC and B.Ed.	9	33.33	13	48.15	5	18.52	27
12	Experience upto 5 years	48	30.97	77	49.68	30	19.35	155
13	Experience from 6 to 15 years	80	35.40	102	45.13	44	19.47	226
14	Experience from 16 to 25 years	73	38.22	87	45.55	31	16.23	191
15	Experience more than 25 years	13	31.71	19	46.34	9	21.95	41
16	Total sample	214	34.91	285	46.49	114	18.60	613

Figures given in Table 74 suggests that, in the Total sample of 613 Primary School Teachers, 18.60 percent need comprehensive training, 46.49 per cent need training in certain areas and 34.91 per cent need no training on Home Works. The Table reveals that more number of teachers is with preference of need training in certain areas of the theme, than the other two modes of preferences for training. The Table also reveals that there is no much variation in that order of preferences for training on the theme among different sub samples. It is also notable there the Percentages of preferences for comprehensive training in this theme is less than preferences for training not needed on this theme. The figures of percentages reveal that there exists need for training in certain areas of Home Works.

55. Effective Instructional Methods for Reading and Writing

Percentages of preferences of Primary School Teachers for Inservice Training on the theme effective Instructional Methods for Reading and Writing are estimated and presented in Table 75

TABLE 75
Percentages of Need Assessment on
Effective Instructional Methods for Reading and Writing

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	21	18.10	54	46.55	41	35.34	116
2	Female	102	20.52	236	47.48	159	31.99	497
3	Lower Primary School	65	20.50	143	45.11	109	34.38	317
4	Upper Primary School	58	19.59	147	49.66	91	30.74	296
5	Government School	54	18.62	128	44.14	108	37.24	290
6	Government Aided School	69	21.36	162	50.15	92	28.48	323
7	DPEP Districts School	49	16.67	143	48.64	102	34.69	294
8	Non- DPEP Districts School	74	23.20	147	46.08	98	30.72	319
9	Qualified TTC only	84	19.67	198	46.37	145	33.96	427
10	Qualified B.Ed only	34	21.38	76	47.80	49	30.82	159
11	Qualified both TTC and B.Ed.	5	18.52	16	59.26	6	22.22	27
12	Experience upto 5 years	23	14.84	84	54.19	48	30.97	155
13	Experience from 6 to 15 years	46	20.35	102	45.13	78	34.51	226
14	Experience from 16 to 25 years	44	23.04	88	46.07	59	30.89	191
15	Experience more than 25 years	10	24.39	16	39.02	15	36.59	41
16	Total sample	123	20.07	290	47.31	200	32.63	613

Figures given in Table 75 suggests that, in the Total sample of 613 Primary School Teachers, 32.63 percent need comprehensive training, 47.31 per cent need training in certain areas and 20.07 per cent need no training on the theme, effective Instructional Methods for reading and writing. The Table reveals that more number of teachers is with preference need training in certain areas of the theme, than the other two modes of preferences for training. The Table also reveals that there is not much variation for that order of preferences for training on the theme among different sub samples. The figures of percentages reveal that there exists need for training in certain areas on effective Instructional Methods for reading and writing.

56. Year Planning

Percentages of preferences of Primary School Teachers for Inservice Training on the theme Year Plan Preparation are estimated and presented in Table 76.

TABLE 76

Percentages of Need Assessment on Year Planning

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	33	28.45	57	49.14	26	22.41	116
2	Female	149	29.98	182	36.62	166	33.40	497
3	Lower Primary School	86	27.13	126	39.75	105	33.12	317
4	Upper Primary School	96	32.43	113	38.18	87	29.39	296
5	Government School	81	27.93	116	40.00	93	32.07	290
6	Government Aided School	101	31.27	123	38.08	99	30.65	323
7	DPEP Districts School	70	23.81	124	42.18	100	34.01	294
8	Non- DPEP Districts School	112	35.11	115	36.05	92	28.84	319
9	Qualified TTC only	128	29.98	164	38.41	135	31.62	427
10	Qualified B.Ed only	43	27.04	67	42.14	49	30.82	159
11	Qualified both TTC and B.Ed.	11	40.74	8	29.63	8	29.63	27
12	Experience upto 5 years	35	22.58	64	41.29	56	36.13	155
13	Experience from 6 to 15 years	70	30.97	87	38.50	69	30.53	226
14	Experience from 16 to 25 years	65	34.03	68	35.60	58	30.37	191
15	Experience more than 25 years	12	29.27	20	48.78	9	21.95	41
16	Total sample	182	29.69	239	38.99	192	31.32	613

Figures given in Table 76 suggests that, in the Total sample of 613 Primary School Teachers, 31.32 percent need comprehensive training, 38.99 per cent need training in certain areas and 29.69 per cent need no training on the theme, Year Plan Preparation. The Table reveals that more number of teachers is with the preference viz., need training in certain areas than the other two modes of preference for training. It is notable the Percentages of preferences for training not needed is less than the other two modes of preferences. It is also notable that there is not much variation among that order of preference of training for the theme among different sub samples, except in the case of sub sample of teachers who had qualified both TTC and B.Ed. Among the sub sample of teachers who had qualified both TTC and B.Ed, more number of teachers (40.74 per cent) are with preference that training is not needed in Year Plan preparation, and the other two modes of preferences shared 29.63 per cent each. The figures of percentages reveal that there exists need for comprehensive training on Year Plan preparation.

57. Unit Planning

Percentages of preferences of Primary School Teachers for Inservice Training on the theme Unit Plan Preparation are estimated and presented in Table 77

TABLE 77

Percentages of Need Assessment on Unit Planning

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	44	37.93	54	46.55	18	15.52	116
2	Female	178	35.81	200	40.24	119	23.94	497
3	Lower Primary School	113	35.65	136	42.90	68	21.45	317
4	Upper Primary School	109	36.82	118	39.86	69	23.31	296
5	Government School	103	35.52	116	40.00	71	24.48	290
6	Government Aided School	119	36.84	138	42.72	66	20.43	323
7	DPEP Districts School	89	30.27	129	43.88	76	25.85	294
8	Non- DPEP Districts School	133	41.69	125	39.18	61	19.12	319
9	Qualified TTC only	158	37.00	171	40.05	98	22.95	427
10	Qualified B.Ed only	53	33.33	71	44.65	35	22.01	159
11	Qualified both TTC and B.Ed.	11	40.74	12	44.44	4	14.81	27
12	Experience upto 5 years	52	30.95	60	35.71	56	33.33	155
13	Experience from 6 to 15 years	86	38.05	93	41.15	47	20.80	226
14	Experience from 16 to 25 years	74	38.74	79	41.36	38	19.90	191
15	Experience more than 25 years	10	24.39	22	53.66	9	21.95	41
16	Total sample	222	36.22	254	41.44	137	22.35	613

Figures given in Table 77 suggests that, in the Total sample of 613 Primary School Teachers, 22.35 percent need comprehensive training, 41.44 per cent need training in certain areas and 36.22 per cent need no training on the theme, Unit Plan Preparation. The Table suggests that more number of teachers is with the preference for need training in certain areas of the theme. It is notable the Percentages of preferences for comprehensive training is less than the other two modes of preferences. The Table also reveals that there is no much variation for that order of preference for training on the theme among different sub samples, except sub sample of non-DPEP Districts' schoolteachers. Among the sub sample of non-DPEP Districts' school teachers 19.12 percent need comprehensive training, 39.18 per cent need training in certain areas and 41.69 per cent need no training on the theme. The figures of percentages reveal that there exists need for training in certain areas on Unit Plan preparation.

58. Lesson Planning /Teaching Manual preparation

Percentages of preferences of Primary School Teachers for Inservice Training on the theme Teaching Manual preparation are estimated and presented in Table 78..

TABLE 78

Percentages of Need Assessment on Lesson Planning /Teaching Manual preparation

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	54	46.55	47	40.52	15	12.93	116
2	Female	232	46.68	173	34.81	92	18.51	497
3	Lower Primary School	152	47.95	116	36.59	49	15.46	317
4	Upper Primary School	134	45.27	104	35.14	58	19.59	296
5	Government School	129	44.48	108	37.24	53	18.28	290
6	Government Aided School	157	48.61	112	34.67	54	16.72	323
7	DPEP Districts School	123	41.84	115	39.12	56	19.05	294
8	Non- DPEP Districts School	163	51.10	105	32.92	51	15.99	319
9	Qualified TTC only	201	47.07	153	35.83	73	17.10	427
10	Qualified B.Ed only	73	45.91	58	36.48	28	17.61	159
11	Qualified both TTC and B.Ed.	12	44.44	9	33.33	6	22.22	27
12	Experience upto 5 years	70	45.16	51	32.90	34	21.94	155
13	Experience from 6 to 15 years	102	45.13	80	35.40	44	19.47	226
14	Experience from 16 to 25 years	99	51.83	68	35.60	24	12.57	191
15	Experience more than 25 years	15	36.59	21	51.22	5	12.20	41
16	Total sample	286	46.66	220	35.89	107	17.46	613

Figures given in Table 78 suggests that, in the Total sample of 613 Primary School Teachers, 17.46 percent need comprehensive training, 35.89 per cent need training in certain areas and 46.66 per cent need no training on the theme, Teaching Manual preparation. The Table reveals that more number of teachers is with the two modes of preferences, viz., need training in certain areas and need no training. The teachers with preference need comprehensive training are less than those with the other two modes of preferences. The Table also reveals that there is no much variation among that order of preference for training on the theme among different sub samples, except the sub sample of teachers with experience more than 25 years. Among the sub sample of teachers with experience more than 25 years, 51.22 per cent are with preference viz., need training in certain areas, on the theme. The figures of percentages reveal that there exists need for training in certain areas on Teaching Manual preparation.

59. Local Resource Mapping

Percentages of preferences of Primary School Teachers for Inservice Training on Local Resource Mapping are estimated and presented in Table 79.

TABLE 79

Percentages of Need Assessment on Local Resource Mapping

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	17	14.66	65	56.03	34	29.31	116
2	Female	90	18.11	255	51.31	152	30.58	497
3	Lower Primary School	53	16.72	155	48.90	109	34.38	317
4	Upper Primary School	54	18.24	165	55.74	77	26.01	296
5	Government School	36	12.41	154	53.10	100	34.48	290
6	Government Aided School	71	21.98	166	51.39	86	26.63	323
7	DPEP Districts School	55	18.71	146	49.66	93	31.63	294
8	Non- DPEP Districts School	52	16.30	174	54.55	93	29.15	319
9	Qualified TTC only	74	17.33	220	51.52	133	31.15	427
10	Qualified B.Ed only	27	16.98	85	53.46	47	29.56	159
11	Qualified both TTC and B.Ed.	6	22.22	15	55.56	6	22.22	27
12	Experience upto 5 years	24	15.48	76	49.03	55	35.48	155
13	Experience from 6 to 15 years	37	16.37	118	52.21	71	31.42	226
14	Experience from 16 to 25 years	39	20.42	104	54.45	48	25.13	191
15	Experience more than 25 years	7	17.07	22	53.66	12	29.27	41
16	Total sample	107	17.46	320	52.20	186	30.34	613

Figures given in Table 79 suggests that, in the Total sample of 613 Primary School Teachers, 30.34 percent need comprehensive training, 52.20 per cent need training in certain areas and 17.46 per cent need no training on the theme, local resource mapping. The Table reveals that more number of teachers is with the preference need training in certain areas on the theme, than the other two modes of preferences. The Table also reveals that there is no much variation for the order of preference for training on the theme among different sub samples. The figures of percentages reveal that there exists need for training in certain areas on local resource mapping.

60. Utilisation of Support Services Like PTA/CPTA/MPTA for Instruction

Percentages of preferences of Primary School Teachers for Inservice Training on the theme utilisation of support services like PTA/CPTA/MPTA for instruction are estimated and presented in Table 80

TABLE 80

Percentages of Need Assessment on Utilisation of Support Services like PTA/CPTA/MPTA for Instruction

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	38	32.76	48	41.38	30	25.86	116
2	Female	143	28.77	248	49.90	106	21.33	497
3	Lower Primary School	101	31.86	149	47.00	67	21.14	317
4	Upper Primary School	80	27.03	147	49.66	69	23.31	296
5	Government School	81	27.93	138	47.59	71	24.48	290
6	Government Aided School	100	30.96	158	48.92	65	20.12	323
7	DPEP Districts School	82	27.89	144	48.98	68	23.13	294
8	Non- DPEP Districts School	99	31.03	152	47.65	68	21.32	319
9	Qualified TTC only	128	29.98	203	47.54	96	22.48	427
10	Qualified B.Ed only	45	28.30	77	48.43	37	23.27	159
11	Qualified both TTC and B.Ed.	8	29.63	16	59.26	3	11.11	27
12	Experience upto 5 years	39	25.16	68	43.87	48	30.97	155
13	Experience from 6 to 15 years	67	29.65	118	52.21	41	18.14	226
14	Experience from 16 to 25 years	63	32.98	86	45.03	42	21.99	191
15	Experience more than 25 years	12	29.27	24	58.54	5	12.20	41
16	Total sample	181	29.53	296	48.29	136	22.19	613

Figures given in Table 80 suggests that, in the Total sample of 613 Primary School Teachers, 22.19 percent need comprehensive training, 48.29 per cent need training in certain areas and 29.53 per cent need no training on the theme, utilisation of support services like PTA/CPTA/MPTA for instruction. The Table reveals that more number of teachers is with preference, need training in certain areas than the other two modes of preferences. The Table also reveals that there is no much variation among that order of preference for training on the theme among different sub samples. The figures of percentages reveal that there exists need for training in certain areas on utilisation of support services like PTA/CPTA/MPTA for instruction

61. Content Enrichment

Percentages of preferences of Primary School Teachers for Inservice Training on the theme enrichment of concepts related to content/school subjects are estimated and presented in Table 81.

TABLE 81

Percentages of Need Assessment on Content Enrichment

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	26	22.41	65	56.03	25	21.55	116
2	Female	103	20.72	264	53.12	130	26.16	497
3	Lower Primary School	80	25.24	156	49.21	81	25.55	317
4	Upper Primary School	49	16.55	173	58.45	74	25.00	296
5	Government School	49	16.90	149	51.38	92	31.72	290
6	Government Aided School	80	24.77	180	55.73	63	19.50	323
7	DPEP Districts School	64	21.77	159	54.08	71	24.15	294
8	Non- DPEP Districts School	65	20.38	170	53.29	84	26.33	319
9	Qualified TTC only	93	21.78	225	52.69	109	25.53	427
10	Qualified B.Ed only	33	20.75	86	54.09	40	25.16	159
11	Qualified both TTC and B.Ed.	3	11.11	18	66.67	6	22.22	27
12	Experience upto 5 years	37	23.87	80	51.61	38	24.52	155
13	Experience from 6 to 15 years	46	20.35	120	53.10	60	26.55	226
14	Experience from 16 to 25 years	38	19.90	110	57.59	43	22.51	191
15	Experience more than 25 years	8	19.51	19	46.34	14	34.15	41
16	Total sample	129	21.04	329	53.67	155	25.29	613

Figures given in Table 81 suggests that, in the Total sample of 613 Primary School Teachers, 25.29 percent need comprehensive training, 53.67 per cent need training in certain areas and 21.04 per cent need no training on the theme, enrichment of concepts related to content/school subjects. The Table reveals that more number of teachers is with preference of need training in certain areas of enrichment of concepts related to content/school subjects. The Table also reveals that there is no much variation for that order of the preference for training on the theme among different sub samples. The figures of percentages reveal that there exists need for training in certain areas on Content Enrichment.

62. Reutilisation of Teaching-Learning Materials/Products

Percentages of preferences of Primary School Teachers for Inservice Training on the theme reutilisation of Teaching-Learning Materials/Products are estimated and presented in Table 82.

TABLE 82

Percentages of Need Assessment on Reutilisation of Teaching-Learning Materials/Products

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	39	33.62	50	43.10	27	23.28	116
2	Female	162	32.60	227	45.67	108	21.73	497
3	Lower Primary School	107	33.75	143	45.11	67	21.14	317
4	Upper Primary School	94	31.76	134	45.27	68	22.97	296
5	Government School	90	31.03	132	45.52	68	23.45	290
6	Government Aided School	111	34.37	145	44.89	67	20.74	323
7	DPEP Districts School	93	31.63	134	45.58	67	22.79	294
8	Non- DPEP Districts School	108	33.86	143	44.83	68	21.32	319
9	Qualified TTC only	148	34.66	189	44.26	90	21.08	427
10	Qualified B.Ed only	44	27.67	77	48.43	38	23.90	159
11	Qualified both TTC and B.Ed.	9	33.33	11	40.74	7	25.93	27
12	Experience upto 5 years	46	29.68	77	49.68	32	20.65	155
13	Experience from 6 to 15 years	74	32.74	94	41.59	58	25.66	226
14	Experience from 16 to 25 years	69	36.13	82	42.93	40	20.94	191
15	Experience more than 25 years	12	29.27	24	58.54	5	12.20	41
16	Total sample	201	32.79	277	45.19	135	22.02	613

Figures given in Table 82 suggests that, in the Total sample of 613 Primary School Teachers, 22.02 percent need comprehensive training, 45.19 per cent need training in certain areas and 32.79 per cent need no training on the theme, reutilisation of Teaching-Learning Materials/Products. The Table reveals that more number of teachers is with preference for training in certain areas of the theme, than the other two modes of preferences for training. The Table also reveals that there is no much variation for that order of preferences for training on the theme among different sub samples. It is also notable there the Percentages of preferences for comprehensive training in this theme is less than preferences for training not needed on this theme. The figures of percentages reveal that there exists need for training in certain areas on the theme, reutilisation of Teaching Learning Materials/Products.

63. Control of Delinquency among pupils

Percentages of preferences of Primary School Teachers for Inservice Training on the theme Control of Delinquency among pupils are estimated and presented in Table 83.

TABLE 83

Percentages of Need Assessment on Control of Delinquency Among pupils

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	22	18.97	44	37.93	50	43.10	116
2	Female	99	19.92	183	36.82	215	43.26	497
3	Lower Primary School	66	20.82	111	35.02	140	44.16	317
4	Upper Primary School	55	18.58	116	39.19	125	42.23	296
5	Government School	48	16.55	99	34.14	143	49.31	290
6	Government Aided School	73	22.60	128	39.63	122	37.77	323
7	DPEP Districts School	58	19.73	108	36.73	128	43.54	294
8	Non- DPEP Districts School	63	19.75	119	37.30	137	42.95	319
9	Qualified TTC only	80	18.74	159	37.24	188	44.03	427
10	Qualified B.Ed only	35	22.01	58	36.48	66	41.51	159
11	Qualified both TTC and B.Ed.	6	22.22	10	37.04	11	40.74	27
12	Experience upto 5 years	30	19.35	59	38.06	66	42.58	155
13	Experience from 6 to 15 years	42	18.58	84	37.17	100	44.25	226
14	Experience from 16 to 25 years	42	21.99	68	35.60	81	42.41	191
15	Experience more than 25 years	7	17.07	16	39.02	18	43.90	41
16	Total sample	121	19.74	227	37.03	265	43.23	613

Figures given in Table 83 suggests that, in the Total sample of 613 Primary School Teachers, 43.23 percent need comprehensive training, 37.03 per cent need training in certain areas and 19.74 per cent need no training on the theme, control of delinquency among pupils. The reveals that more number of teachers is with preference need comprehensive training on the theme, than the other two modes of preferences for training. The Table also reveals that there is no much variation in that order of preferences for training on the theme among different sub samples. The figures of percentages reveal that there exists high need for comprehensive training on control of delinquency among pupils

64. Handling pupils with Learning Disabilities

Percentages of preferences of Primary School Teachers for Inservice Training on the theme Instructional methods for Children with Learning Disabilities are estimated and presented in Table 84

TABLE 84

Percentages of Need Assessment on Handling Pupils with Learning Disabilities

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	7	6.03	36	31.03	73	62.93	116
2	Female	53	10.66	134	26.96	310	62.37	497
3	Lower Primary School	35	11.04	82	25.87	200	63.09	317
4	Upper Primary School	25	8.45	88	29.73	183	61.82	296
5	Government School	28	9.66	62	21.38	200	68.97	290
6	Government Aided School	32	9.91	108	33.44	183	56.66	323
7	DPEP Districts School	28	9.52	80	27.21	186	63.27	294
8	Non- DPEP Districts School	32	10.03	90	28.21	197	61.76	319
9	Qualified TTC only	43	10.07	110	25.76	274	64.17	427
10	Qualified B.Ed only	15	9.43	54	33.96	90	56.60	159
11	Qualified both TTC and B.Ed.	2	7.41	6	22.22	19	70.37	27
12	Experience upto 5 years	12	7.74	39	25.16	104	67.10	155
13	Experience from 6 to 15 years	23	10.18	62	27.43	141	62.39	226
14	Experience from 16 to 25 years	19	9.95	57	29.84	115	60.21	191
15	Experience more than 25 years	6	14.63	12	29.27	23	56.10	41
16	Total sample	60	9.79	170	27.73	383	62.48	613

Figures given in Table 84 suggests that, in the Total sample of 613 Primary School Teachers, 62.48 percent need comprehensive training, 27.73 per cent need training in certain areas and 9.79 per cent need no training on Instructional methods for Children with learning disabilities. The Table reveals that more number of teachers is with preference need comprehensive training, than the other two modes of preferences for training on the theme. The Table also reveals that there is no much variation for that order of preference for training on the theme among different sub samples. It is also notable that less than 15 per cent of teachers only are with preference that there is no need of training in this area. It is also notable there the Percentages of preferences for comprehensive training on this theme is very higher than the other two modes of preferences for training on this theme. The figures of percentages reveal that there exists very high need for comprehensive training on Instructional methods for Children with learning disabilities.

65. Persistence of Learning Motivation among pupils

Percentages of preferences of Primary School Teachers for Inservice Training on the theme persistence of Learning Motivation among pupils are estimated and presented in Table 85.

TABLE 85
Percentages of Need Assessment on
Persistence of Learning Motivation among pupils

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	11	9.48	60	51.72	45	38.79	116
2	Female	91	18.31	219	44.06	187	37.63	497
3	Lower Primary School	57	17.98	147	46.37	113	35.65	317
4	Upper Primary School	45	15.20	132	44.59	119	40.20	296
5	Government School	43	14.83	122	42.07	125	43.10	290
6	Government Aided School	59	18.27	157	48.61	107	33.13	323
7	DPEP Districts School	37	12.59	143	48.64	114	38.78	294
8	Non- DPEP Districts School	65	20.38	136	42.63	118	36.99	319
9	Qualified TTC only	72	16.86	192	44.96	163	38.17	427
10	Qualified B.Ed only	27	16.98	70	44.03	62	38.99	159
11	Qualified both TTC and B.Ed.	3	11.11	17	62.96	7	25.93	27
12	Experience upto 5 years	23	14.84	76	49.03	56	36.13	155
13	Experience from 6 to 15 years	37	16.37	101	44.69	88	38.94	226
14	Experience from 16 to 25 years	35	18.32	84	43.98	72	37.70	191
15	Experience more than 25 years	7	17.07	18	43.90	16	39.02	41
16	Total sample	102	16.64	279	45.51	232	37.85	613

Figures given in Table 85 suggests that, in the Total sample of 613 Primary School Teachers, 37.85 percent need comprehensive training, 45.51 per cent need training in certain areas and 16.64 per cent need no training on the theme, persistence of Learning Motivation among pupils. The Table reveals that more number of teachers is with preference for need training in certain areas on the theme, than the other two modes of preferences. The Table also reveals that there is no much variation for that order of preferences for training on the theme among different sub samples. It is also notable that less than 21 per cent of teachers only are with preference that there is no need of training in this area. The figures of percentages reveal that there exists need for training in certain areas on the theme, persistence of Learning Motivation among pupils

66. Handling of Large Classes

Percentages of preferences of Primary School Teachers for Inservice Training on the theme Handling of Large Classes are estimated and presented in Table 86.

TABLE 86

Percentages of Need Assessment on Handling of Large Classes

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	15	12.93	48	41.38	53	45.69	116
2	Female	95	19.11	191	38.43	211	42.45	497
3	Lower Primary School	57	17.98	113	35.65	147	46.37	317
4	Upper Primary School	53	17.91	126	42.57	117	39.53	296
5	Government School	46	15.86	107	36.90	137	47.24	290
6	Government Aided School	64	19.81	132	40.87	127	39.32	323
7	DPEP Districts School	39	13.27	119	40.48	136	46.26	294
8	Non- DPEP Districts School	71	22.26	120	37.62	128	40.13	319
9	Qualified TTC only	75	17.56	160	37.47	192	44.96	427
10	Qualified B.Ed only	31	19.50	65	40.88	63	39.62	159
11	Qualified both TTC and B.Ed.	4	14.81	14	51.85	9	33.33	27
12	Experience upto 5 years	24	15.48	74	47.74	57	36.77	155
13	Experience from 6 to 15 years	37	16.37	75	33.19	114	50.44	226
14	Experience from 16 to 25 years	41	21.47	74	38.74	76	39.79	191
15	Experience more than 25 years	8	19.51	16	39.02	17	41.46	41
16	Total sample	110	17.94	239	38.99	264	43.07	613

Figures given in Table 86 suggests that, in the Total sample of 613 Primary School Teachers, 43.07 percent need comprehensive training, 38.99 per cent need training in certain areas and 17.94 per cent need no training on the theme, handling of large classes The Table reveals that more number of teachers is with preference need comprehensive training on the theme, than the other two modes of preferences for training. The Table also reveals that there is no much variation for that order of preferences for training on the theme among different sub samples, except the sub samples of upper primary school teachers, teachers qualified both TTC and B.Ed, and teachers with experience upto 5 years, who more preferred the mode, training in certain areas of the theme. The figures of percentages reveal that there exists need for comprehensive training on the theme handling of large classes.

67. Continuous and Comprehensive Evaluation (CCE)

Percentages of preferences of Primary School Teachers for Inservice Training on the theme Continuous and Comprehensive Evaluation (CCE) are estimated and presented in Table 87.

TABLE 87

Percentages of Need Assessment on Continuous and Comprehensive Evaluation (CCE)

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	26	22.41	66	56.90	24	20.69	116
2	Female	168	33.80	211	42.45	118	23.74	497
3	Lower Primary School	107	33.75	133	41.96	77	24.29	317
4	Upper Primary School	87	29.39	144	48.65	65	21.96	296
5	Government School	87	30.00	127	43.79	76	26.21	290
6	Government Aided School	107	33.13	150	46.44	66	20.43	323
7	DPEP Districts School	86	29.25	129	43.88	79	26.87	294
8	Non- DPEP Districts School	108	33.86	148	46.39	63	19.75	319
9	Qualified TTC only	132	30.91	197	46.14	98	22.95	427
10	Qualified B.Ed only	53	33.33	66	41.51	40	25.16	159
11	Qualified both TTC and B.Ed.	9	33.33	14	51.85	4	14.81	27
12	Experience upto 5 years	34	21.94	79	50.97	42	27.10	155
13	Experience from 6 to 15 years	72	31.86	97	42.92	57	25.22	226
14	Experience from 16 to 25 years	76	39.79	77	40.31	38	19.90	191
15	Experience more than 25 years	12	29.27	24	58.54	5	12.20	41
16	Total sample	194	31.65	277	45.19	142	23.16	613

Figures given in Table 87 suggests that, in the Total sample of 613 Primary School Teachers, 23.16 percent need comprehensive training, 45.19 per cent need training in certain areas and 31.65 per cent need no training on the theme, Continuous and Comprehensive Evaluation. The Table reveals that more number of teachers is with preference for need training in certain areas of the theme. The Table also reveals that there is no much variation among the preference of training for the theme among different sub samples. The figures of percentages reveal that there exists need for training in certain areas on Continuous and Comprehensive Evaluation.

68. Continuous Evaluation (CE) Activities

Percentages of preferences of Primary School Teachers for Inservice Training on Continuous Evaluation (CE) activities are estimated and presented in Table 88.

TABLE 88

Percentages of Need Assessment on Continuous Evaluation (CE) Activities

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	30	25.86	59	50.86	27	23.28	116
2	Female	172	34.61	207	41.65	118	23.74	497
3	Lower Primary School	116	36.59	123	38.80	78	24.61	317
4	Upper Primary School	86	29.05	143	48.31	67	22.64	296
5	Government School	86	29.66	127	43.79	77	26.55	290
6	Government Aided School	116	35.91	139	43.03	68	21.05	323
7	DPEP Districts School	95	32.31	114	38.78	85	28.91	294
8	Non- DPEP Districts School	107	33.54	152	47.65	60	18.81	319
9	Qualified TTC only	146	34.19	181	42.39	100	23.42	427
10	Qualified B.Ed only	51	32.08	67	42.14	41	25.79	159
11	Qualified both TTC and B.Ed.	5	18.52	18	66.67	4	14.81	27
12	Experience upto 5 years	38	24.52	72	46.45	45	29.03	155
13	Experience from 6 to 15 years	74	32.74	99	43.81	53	23.45	226
14	Experience from 16 to 25 years	77	40.31	74	38.74	40	20.94	191
15	Experience more than 25 years	13	31.71	21	51.22	7	17.07	41
16	Total sample	202	32.95	266	43.39	145	23.65	613

Figures given in Table 88 suggests that, in the Total sample of 613 Primary School Teachers, 23.65 percent need comprehensive training, 43.39 per cent need training in certain areas and 32.95 per cent need no training on Continuous Evaluation (CE) activities. The Table reveals that more number of teachers is with preference viz., need training in certain areas of the theme. The Table also reveals that there is no much variation among that order of preference for training on the theme among different sub samples. The figures of percentages reveal that there exists need for training in certain areas on planning and execution of Continuous Evaluation (CE) activities.

69. Terminal Evaluation (TE) Activities

Percentages of preferences of Primary School Teachers for Inservice Training on Terminal Evaluation (TE) activities are estimated and presented in Table 89.

TABLE 89

Percentages of Need Assessment on Terminal Evaluation (TE) Activities

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	56	48.28	39	33.62	21	18.10	116
2	Female	228	45.88	176	35.41	93	18.71	497
3	Lower Primary School	144	45.43	111	35.02	62	19.56	317
4	Upper Primary School	140	47.30	104	35.14	52	17.57	296
5	Government School	128	44.14	100	34.48	62	21.38	290
6	Government Aided School	156	48.30	115	35.60	52	16.10	323
7	DPEP Districts School	132	44.90	103	35.03	59	20.07	294
8	Non- DPEP Districts School	152	47.65	112	35.11	55	17.24	319
9	Qualified TTC only	199	46.60	147	34.43	81	18.97	427
10	Qualified B.Ed only	74	46.54	56	35.22	29	18.24	159
11	Qualified both TTC and B.Ed.	11	40.74	12	44.44	4	14.81	27
12	Experience upto 5 years	61	39.35	61	39.35	33	21.29	155
13	Experience from 6 to 15 years	104	46.02	78	34.51	44	19.47	226
14	Experience from 16 to 25 years	104	54.45	56	29.32	31	16.23	191
15	Experience more than 25 years	15	36.59	20	48.78	6	14.63	41
16	Total sample	284	46.33	215	35.07	114	18.60	613

Figures given in Table 89 suggests that, in the Total sample of 613 Primary School Teachers, 18.60 percent need comprehensive training, 35.07 per cent need training in certain areas and 46.33 per cent need no training on Terminal Evaluation (TE) activities. The Table reveals that more number of teachers is with preference of training not needed, than the other two modes of preference for training. But, the total of percentages in the two modes of preference for training viz., need comprehensive training and need training in certain areas exceeds fifty percent in most of the different sub samples. The Table also reveals that there is no much variation among that order of preference for training on the theme among different sub samples, except the sub samples of teachers qualified both TTC and Bed, teachers with experience upto 5 years and teachers with experience more than 25 years. The figures of percentages reveal that there exists need for training in certain areas on Terminal Evaluation (TE) activities.

70. Part II Evaluation Activities

Percentages of preferences of Primary School Teachers for Inservice Training on Part II Evaluation activities are estimated and presented in Table 90.

TABLE 90

Percentages of Need Assessment on Part II Evaluation Activities

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	20	17.24	66	56.90	30	25.86	116
2	Female	147	29.58	227	45.67	123	24.75	497
3	Lower Primary School	81	25.55	154	48.58	82	25.87	317
4	Upper Primary School	86	29.05	139	46.96	71	23.99	296
5	Government School	66	22.76	139	47.93	85	29.31	290
6	Government Aided School	101	31.27	154	47.68	68	21.05	323
7	DPEP Districts School	64	21.77	149	50.68	81	27.55	294
8	Non- DPEP Districts School	103	32.29	144	45.14	72	22.57	319
9	Qualified TTC only	114	26.70	207	48.48	106	24.82	427
10	Qualified B.Ed only	50	31.45	69	43.40	40	25.16	159
11	Qualified both TTC and B.Ed.	3	11.11	17	62.96	7	25.93	27
12	Experience upto 5 years	34	21.94	77	49.68	44	28.39	155
13	Experience from 6 to 15 years	50	22.12	112	49.56	64	28.32	226
14	Experience from 16 to 25 years	71	37.17	83	43.46	37	19.37	191
15	Experience more than 25 years	12	29.27	21	51.22	8	19.51	41
16	Total sample	167	27.24	293	47.80	153	24.96	613

Figures given in Table 90 suggests that, in the Total sample of 613 Primary School Teachers, 24.96 percent need comprehensive training, 47.80 per cent need training in certain areas and 27.24 per cent need no training on Part II Evaluation activities. The Table reveals that more number of teachers is with preference for training in certain areas of the theme, than the other two modes of preferences. The Table also reveals that there is no much variation for that order of preference for training on the theme among different sub samples. The figures of percentages reveal that there exists need for training in certain areas on planning and execution of Part II Evaluation activities.

71. Part III Evaluation Activities

Percentages of preferences of Primary School Teachers for Inservice Training on Part III Evaluation activities are estimated and presented in Table 91

TABLE 91

Percentages of Need Assessment on Part III Evaluation Activities

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	22	18.97	61	52.59	33	28.45	116
2	Female	152	30.58	217	43.66	128	25.75	497
3	Lower Primary School	82	25.87	149	47.00	86	27.13	317
4	Upper Primary School	92	31.08	129	43.58	75	25.34	296
5	Government School	68	23.45	134	46.21	88	30.34	290
6	Government Aided School	106	32.82	144	44.58	73	22.60	323
7	DPEP Districts School	65	22.11	144	48.98	85	28.91	294
8	Non- DPEP Districts School	109	34.17	134	42.01	76	23.82	319
9	Qualified TTC only	118	27.63	199	46.60	110	25.76	427
10	Qualified B.Ed only	52	32.70	67	42.14	40	25.16	159
11	Qualified both TTC and B.Ed.	4	14.81	12	44.44	11	40.74	27
12	Experience upto 5 years	35	22.58	76	49.03	44	28.39	155
13	Experience from 6 to 15 years	53	23.45	103	45.58	70	30.97	226
14	Experience from 16 to 25 years	73	38.22	79	41.36	39	20.42	191
15	Experience more than 25 years	13	31.71	20	48.78	8	19.51	41
16	Total sample	174	28.38	278	45.35	161	26.26	613

Figures given in Table 91 suggests that, in the Total sample of 613 Primary School Teachers, 26.26 percent need comprehensive training, 45.35 per cent need training in certain areas and 28.38 per cent need no training on Part III Evaluation activities. The Table reveals that more number of teachers is with preference of need training in certain areas of the theme, than the other two modes of preferences. The Table also reveals that there is no much variation for that order of preference for training on the theme among different sub samples. The figures of percentages reveal that there exists need for training in certain areas on planning and execution of Part III Evaluation activities.

72. Recording Responses in Lesson Plan /Teaching Manual

Percentages of preferences of Primary School Teachers for Inservice Training on the theme recording responses in Teaching Manual are estimated and presented in Table 92.

TABLE 92

Percentages of Need Assessment on Recording Responses in Teaching Manual

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	35	30.17	62	53.45	19	16.38	116
2	Female	169	34.00	202	40.64	126	25.35	497
3	Lower Primary School	108	34.07	139	43.85	70	22.08	317
4	Upper Primary School	96	32.43	125	42.23	75	25.34	296
5	Government School	94	32.41	115	39.66	81	27.93	290
6	Government Aided School	110	34.06	149	46.13	64	19.81	323
7	DPEP Districts School	85	28.91	134	45.58	75	25.51	294
8	Non- DPEP Districts School	119	37.30	130	40.75	70	21.94	319
9	Qualified TTC only	142	33.26	185	43.33	100	23.42	427
10	Qualified B.Ed only	54	33.96	67	42.14	38	23.90	159
11	Qualified both TTC and B.Ed.	8	29.63	12	44.44	7	25.93	27
12	Experience upto 5 years	44	28.39	66	42.58	45	29.03	155
13	Experience from 6 to 15 years	76	33.63	94	41.59	56	24.78	226
14	Experience from 16 to 25 years	71	37.17	86	45.03	34	17.80	191
15	Experience more than 25 years	13	31.71	18	43.90	10	24.39	41
16	Total sample	204	33.28	264	43.07	145	23.65	613

Figures given in Table 92 suggests that, in the Total sample of 613 Primary School Teachers, 23.65 percent need comprehensive training, 43.07 per cent need training in certain areas and 33.28 per cent need no training on the theme, recording responses in teaching manual. The Table reveals that more number of teachers are with preference for training in certain areas of the theme, than the other two modes of preferences. The Table also reveals that there is no much variation among that order of preference for training on the theme among different sub samples. The figures of percentages reveal that there exists high need for training in certain areas on recording responses in Teaching Manual.

73. Action Research

Percentages of preferences of Primary School Teachers for Inservice Training on the theme execution of Action Research are estimated and presented in Table 93

TABLE 93

Percentages of Need Assessment on Action Research

Sl. No.	Sample of Teachers	Training not needed		Need Training in certain areas		Need Comprehensive Training		Total
		N	%	N	%	N	%	
1	Male	9	7.76	42	36.21	65	56.03	116
2	Female	62	12.47	177	35.61	258	51.91	497
3	Lower Primary School	43	13.56	103	32.49	171	53.94	317
4	Upper Primary School	28	9.46	116	39.19	152	51.35	296
5	Government School	26	8.97	83	28.62	181	62.41	290
6	Government Aided School	45	13.93	136	42.11	142	43.96	323
7	DPEP Districts School	32	10.88	112	38.10	150	51.02	294
8	Non- DPEP Districts School	39	12.23	107	33.54	173	54.23	319
9	Qualified TTC only	51	11.94	150	35.13	226	52.93	427
10	Qualified B.Ed only	18	11.32	63	39.62	78	49.06	159
11	Qualified both TTC and B.Ed.	2	7.41	6	22.22	19	70.37	27
12	Experience upto 5 years	19	12.26	54	34.84	82	52.90	155
13	Experience from 6 to 15 years	22	9.73	90	39.82	114	50.44	226
14	Experience from 16 to 25 years	25	13.09	66	34.55	100	52.36	191
15	Experience more than 25 years	5	12.20	9	21.95	27	65.85	41
16	Total sample	71	11.58	219	35.73	323	52.69	613

Figures given in Table 93 suggests that, in the Total sample of 613 Primary School Teachers, 52.69 percent need comprehensive training, 35.73 per cent need training in certain areas and 11.58 per cent need no training on the theme, execution of Action Research. The Table reveals that more number of teachers is with preference need comprehensive training, than the other two modes of preferences for training. The Table also reveals that there is no much variation for that order of preference for training on the theme among different sub samples. The figures of percentages reveal that there exists need for comprehensive training on Action Research.

4.4. TEST OF SIGNIFICANCE OF THE DEPENDENCE OF INSERVICE TRAINING NEEDS WITH EACH OF THE CLASSIFICATORY VARIABLES.

In the earlier section 4.3, the investigator estimated the percentages of preferences of Inservice Training Needs for the 73 themes of the Check List. The investigator then wanted to see whether there is difference in the preference of themes between groups of teachers formed on the basis of Classificatory Variables. That is the investigator wanted to know whether the needs depend or the classificatory variables.

All the Classificatory Variables being of the Nominal Type, investigator used the chi square test of independence to know whether (i) Needs depend on Gender, (ii) Needs depend on Teaching Level, (iii) Needs depend on Type of Management of School, (iv) Needs depend on Type of District of Schools, (v) Needs depend on the Teacher Training Qualifications and (vi) Needs depend on the Length of Service..

The chi square test of independence was applied. For, if dependence is seen after the test, then it will reflect that a significant difference due to that Classificatory Variable exists in the preference for that need

The results of chi square test of independence are given Instructional Technology Domain wise in Table 94.

TABLE 94

Results of Chi-square Test of Independence between Inservice Training Needs for different themes of Instructional Technology (Total sample = 613)

Sl. No.	Inservice Training Themes	Sub samples based on					
		Gender	Teaching level	School Type	District Type	Teacher Training Qualifi-cations	Length of Service
		Table 2x3. (d.f, 2)	Table 2x3. (d.f, 2)	Table 2x3. (d.f, 2)	Table 2 x 3. (d.f, 2)	Table 3 x 3. (d.f, 4)	Table 4 x 3. (d.f, 6)
DESIGN DOMAIN							
1	Projects	1.58	1.93	5.90	10.30**	1.49	5.77
2	Assignments	1.17	3.42	14.76**	2.95	5.34	12.44
3	Seminars	2.33	13.02**	8.74*	10.87**	3.29	6.03
4	Collections/Records	0.01	1.97	5.94	0.88	1.20	10.46
5	Experiments	1.34	0.27	5.44	5.64	5.05	5.79
6	Field Trips	3.05	1.91	2.19	0.35	0.61	5.43
7	Debates	17.16**	7.52*	4.39	4.23	0.31	2.84
8	Discussions	2.48	1.73	1.36	0.17	1.15	3.25
9	Symposiums	8.04*	9.46**	0.64	5.46	1.24	1.03
10	Workshops	7.15*	4.83	5.16	12.91**	0.19	3.69
11	Interviews/Surveys	1.28	3.30	2.12	1.31	1.92	7.35
12	Camps	3.04	8.17*	6.66	4.55	3.37	6.95
13	Club Activities	0.56	4.93	4.72	0.78	2.00	5.52
14	Library Activities	0.45	3.00	1.99	3.50	3.08	8.47
15	Learning Corners	0.53	3.88	0.30	1.77	1.09	21.23**
16	Play way	5.33	1.20	1.31	2.76	4.18	12.23
17	Observations	14.66**	0.60	3.59	0.73	3.75	6.91
18	Notes making	0.63	0.85	4.37	0.47	2.79	3.69
19	Psychological Bases of Instruction	1.67	0.02	1.17	0.60	8.22	2.66
20	Sociological Bases of Instruction	2.49	0.53	3.50	2.07	4.19	6.53
21	Philosophical Bases of Instruction	2.64	1.74	5.60	1.70	5.79	4.98
22	Activity based Curriculum	0.63	1.76	4.47	0.20	13.01*	6.90
23	Child centered Curriculum	0.00	1.50	4.78	0.29	6.69	5.06
24	Competency based Curriculum	0.01	5.24	5.59	2.41	4.27	7.96
25	Constructivism	2.35	1.73	2.42	8.16*	0.50	7.20
26	Multiple Intelligence	0.60	2.91	2.75	2.60	2.24	0.59
DEVELOPMENT DOMAIN							
27	Improvised Instructional Materials	5.22	2.55	5.68	1.88	0.86	4.27
28	T.LM – New Trends	1.07	0.85	12.37**	11.79**	3.61	8.64
29	Instructional use of Computer	0.18	1.30	7.86*	0.25	2.67	3.35
30	Print media contents Utilisation	2.27	5.91	5.43	1.91	12.60*	6.33
31	Charts, Pictures, Flash Cards etc	0.23	2.32	0.15	0.97	5.89	3.64
32	OHP Film, Slide Projectors etc	0.18	1.03	4.80	1.14	2.24	5.39

33	Other Audio-Video Equipments	0.42	0.00	10.39*	2.60	7.39	4.16
34	Preparation of Posters, Collage	1.14	0.84	8.24*	0.06	2.08	3.18
35	Magazines, Broachers	1.43	1.63	5.37	1.06	2.07	11.51
36	Local Texts	1.12	6.94*	4.32	1.05	4.42	5.58
UTILISATION							
37	Integrated Approach	0.43	9.50**	0.01	0.66	10.39*	7.07
38	Spiral Approach	1.05	10.33**	0.51	0.47	10.15*	9.31
39	Multi Level Instruction	0.24	1.52	6.35*	1.44	3.99	6.33
40	Co-operative Learning	0.08	0.59	11.69**	0.28	2.06	8.72
41	Dialogic Learning	3.48	3.59	10.79**	8.02*	6.87	6.02
42	Communicative Approach	0.01	0.14	7.90*	1.36	5.85	10.58
43	Discovery Learning	1.14	0.13	9.79**	4.06	3.20	6.06
44	Whole Language Approach	0.37	3.12	1.05	1.48	0.88	6.63
45	Information Processing Approach	2.88	0.69	13.28**	6.82*	2.57	4.75
46	Concept Attainment	0.06	13.22**	1.44	0.51	2.90	6.49
47	Process Skills	0.60	2.64	4.43	0.50	1.83	6.55
48	Life Skills	2.23	4.60	11.97**	6.26*	1.59	3.13
49	Contextualisation	2.38	6.67	2.64	2.84	3.14	10.80
50	Presentation of societal issues	5.14	0.67	12.76**	2.71	4.07	4.31
51	Nurturance of Human Values	1.36	3.44	2.99	1.30	4.58	2.29
52	Environmental Awareness	1.17	1.76	1.83	1.12	6.46	5.36
53	Nurturance of Creativity	0.55	0.14	4.19	5.23	0.33	5.92
54	Home works–Effective Utilisation	2.14	2.39	4.18	0.38	0.74	2.85
55	Teaching Reading and Writing	0.62	1.36	5.33	4.20	2.39	6.53
MANAGEMENT							
56	Year Plan Preparation	7.48*	2.23	0.82	9.36**	2.59	8.17
57	Unit Plan Preparation	4.01	0.64	1.47	9.42**	2.01	6.97
58	Teaching Manual Preparation	2.53	1.83	1.05	5.27	0.51	10.84
59	Local Resource Mapping	1.10	5.11	11.21**	1.52	1.23	5.12
60	Support services PTA/CPTA etc.	2.79	1.76	1.84	0.79	2.43	13.34*
61	Content enrichment	1.07	7.93*	14.06**	0.45	2.42	3.93
62	TLM/Products reutilisation	0.27	0.42	1.04	0.40	2.91	7.82
63	Delinquency among pupils	0.08	1.24	8.78*	0.03	0.95	1.10
64	Pupils with Learning disabilities	2.63	1.92	11.73**	0.15	4.67	3.36
65	Persistence of pupils Motivation	5.65	1.66	6.54*	6.92*	3.51	1.43
66	Handling of Large Classes	2.44	3.55	4.17	8.55*	3.33	11.99
EVALUATION							
67	Continuous & Comprehensive Evln.	8.57*	2.80	2.91	4.59	2.16	17.18**
68	Continuous Evaluation (CE)	4.03	6.08*	3.79	9.45**	6.68	11.63
69	Terminal Evaluation (TE)	0.22	0.44	2.92	0.91	1.17	11.64
70	Part – II Evaluation Activities	7.78*	0.99	8.24*	8.72*	5.66	16.45*
71	Part – III Evaluation Activities	6.39*	2.05	8.30*	10.99**	5.67	17.06**
72	Writing responses in Tg. Manual	7.20*	0.90	5.87	4.89	0.25	7.11
73	Action Research	2.12	4.34	20.90**	1.42	4.57	6.03

DISCUSSION OF RESULTS

4.4.1. Dependence of Needs with Gender

Results given in Table 94 suggest that in the case of *nine themes or nine needs only Gender is dependent.*. That is, Gender difference exists in these nine needs only out of the 73 needs. This further suggests that Male Teachers and Female Teachers perceive these nine themes as Needs of Inservice Training differently.

These nine themes are the following

i Debates

ii Symposiums

iii Workshops

iv Observations

v Year Plan Preparation

vi Continuous and Comprehensive Evaluation

vii Part II – Evaluation Activities

viii Part III – Evaluation Activities

ix Recording Response in Lesson Plan/teaching Manual

By referring to Tables given under section 4.3 It can again be seen that, in the case of themes Debates, Symposiums, Workshops, Observation, Year Plan Preparation, Continuous and Comprehensive Evaluation and of Recording Responses in Lesson Plan, Female Teachers are more in Need of Comprehensive Training than Male Teachers. It is also found that Gender Difference in the perceived needs is more in Design and Evaluation Domains of Instructional Technology. In the case of two themes only viz., Part II Evaluation Activities and Part III –Evaluation Activities, Male teachers are more in *Need* of Comprehensive Training than Female Teachers.

In the case of remaining 64 themes Inservice Training Needs are not dependent on Gender. That is, Male Teachers and Female Teachers are alike in the need of Inservice Training.

4.4.2. Dependence of with Teaching Level

Results given in Table 94 suggest that Teaching Level (LP/UP) has significant dependence with *ten themes only*. This again suggests that significant difference due to Teaching Level exists in the case of ten themes only. This further suggests that Lower Primary Teachers and Upper Primary Teachers perceive the ten themes as Needs of Inservice Training differently.

The ten themes are the following,

(i) Seminars

(ii) Debates

(iii) Symposiums

(iv) Camps

(v) Local Texts

(vi) Continuous Evaluation Activities

(vii) Integrated Approach

(viii) Spiral Approach

(ix) Concept Attainment, and

(x) Content Enrichment

In the case of the remaining 63 themes Inservice Training Needs is not dependent on Teaching Level. That is Lower Primary Teachers and Upper Primary Teachers alike perceive these 63 themes as needs of Inservice Training.

4.4.3. Dependence of Needs with Type of School Management

Results given in Table 94 suggest that the of preference of *twenty-two* Inservice Training Themes as Needs is depend on the Type of School Management. That is, significant difference exists in the preference of the twenty two themes as Inservice Training Needs with regard to Type of School Management. This suggests that Government and Aided School Teachers perceive the twenty-two themes as Needs of Inservice Training differently.

These *twenty-two* themes are the following

(i) Assignments

(ii) Seminars

(iii) Children with learning disabilities

(iv) Teaching Learning Materials- New Trends

(v) Instructional Use of Computers

(vi) Audio Video Media Equipments

(vii) Posters, Collage, etc

(viii) Part II – Evaluation Activities

(ix) Part III – Evaluation Activities

(x) Action Research

(xi) Multi level Instruction

(xii) Co-operative Learning

(xiii) Dialogic Learning

(xiv) Communicative Approach

(xv) Discovery Learning

(xvi) Information Processing Approach

(xvii) Life Skills

(xviii) Presenting social issues and problems in classrooms

(xix) Local Resource Mapping

(xx) Content Enrichment

(xxi) Control of delinquency, and

(xxii) Persistence of learning motivation

In the case of remaining 51 themes Inservice Training Needs is not dependent on School Management. That is, in the majority of Needs, Government School

Teachers and Aided School Teachers do not differ and as such it cannot be said that difference in Needs exist due to Type of School Management.

4.4.4. Dependence of Needs with Type of School Districts

Results given in Table 94 suggest that the percentages of preferences of *fifteen themes* differ due to Districts of Schools. This suggests that D.P.E.P District School Teachers and Non D.P.E.P District School Teachers perceive differently these fifteen themes as Needs of Inservice Training.

The fifteen themes are the following

i. Projects
ii. Seminars
iii. Workshops
iv. Teaching Learning Materials – New Trends
v. Continuous and Comprehensive Evaluation
vi. Part II – Evaluation Activities
vii. Part III – Evaluation Activities
viii. Constructivism
ix. Dialogic Learning
x. Information Processing Approach
xi. Life Skills
xii. Year Plan preparation
xiii. Unit plan preparation
xiv. Learning Motivation, and
xv. Handling of Classes with large size

In the case of remaining 58 themes Inservice Training Needs is not dependent on School District. That is D.P.E.P District Teachers and non D.P.E.P District Teachers alike perceive these 58 needs of Inservice Training. As difference in the needs due to

Type of School District is found not significant in the majority of Needs, it can't be said that difference in the Need, exists due to Type of School District.

4.4.5. Dependence of Needs with Teacher Training Qualifications

Results given in Table 94 suggest that the of preferences of *four themes only* differ due to Teacher Training Qualifications. This suggests that Teachers with qualification T.T.C only, with B Ed. only and with both T.T.C and B Ed.. perceive differently these four themes only as Needs of Inservice Training.

The four themes are the following

(i) Activity based Curriculum
(ii) Contents of Newspaper, Journals, Magazines, Weeklies etc
(iii) Integrated Approach, and
(iv) Spiral Approach

In the case of remaining 69 themes Inservice Training Needs is not dependent on Teacher Training Qualifications. This suggests that differences in the preference of Needs do not exist with regard to Teacher Training Qualifications.

4.4.6. Dependence of Needs with Length of Service

Results of χ^2 test given in Table 94 suggest that in the case of *five themes only*, significant dependence exists with Length of Service. This suggests that Teachers differing in the Length of Service perceive these five themes as Needs of Inservice Training differently.

These five themes are the following

(i) Learning Corners,
(ii) Continuous and Comprehensive Evaluation,
(iii) Part II Evaluation Activities,
(iv) Part III Evaluation Activities, and
(v) Utilisation of support services like PTA/CPTA/MPTA etc

This suggests that suggestion of the above Evaluation Needs depends on length of service. In the case of the remaining 69 themes, Length of service has no dependency. It can again be seen that, no common trend can be seen in the

perception of Inservice Training Needs among the groups of teachers formed on the basis of length of service. In the case of remaining 68 themes Inservice Training Needs is not dependent on length of service. That is, teachers with different Length of Service are alike in the preference of the remaining 68 themes.

In total, eventhough there exists significant dependency of certain Inservice Training Needs on different Classificatory Variables, which rated maximum for 22 themes out of listed 73 themes. In whole it can be stated that, the Inservice Training Needs are *not significantly depend* on Classificatory Variables schools Gender, Level of Teaching, School Management, District Types, Teacher Training Qualifications and Length of Service.

4.5. IDENTIFICATION OF HIGHLY NEEDED THEMES FOR FUTURE INSERVICE TEACHER TRAINING PROGRAMMES

Percentages of preferences of Primary School Teachers for 73 themes listed in the Checklist were further analysed for identifying the highly needed themes for future in-service training programmes. Percentage of preferences for the two modes of responses viz., *Need training in certain areas* and *Need comprehensive training* were totaled for each inservice training theme. The themes holding total percentage of preferences above 75 per cent were identified as the highly needed themes for future in-service training programmes. The highly needed themes with percentage of preferences above 75 for the two modes of responses *Need training in certain areas* and *Need comprehensive training* are presented in Table 95 by ordering for preferences.

TABLE 95

Highly Needed themes for Inservice Training Programmes

Sl. No.	Inservice Training Theme	Need training in certain areas		Need comprehensive training		Total		SE_p
		N	%	N	%	N	%	
1	Computer Aided Instruction	88	14.36	512	83.52	*600	97.88	.005
2	Instructional Materials- New trends	239	38.99	354	57.75	*593	96.74	.005
3	Improvised Instructional Materials	337	54.98	237	38.66	**574	93.64	.009
4	O H P/ Film Projectors/ Slide Projectors	171	27.9	402	65.58	*573	93.48	.010
5	Psychological bases of Instruction	272	44.37	284	46.33	*556	90.70	.012
6	Information Processing Approach	268	43.72	288	46.98	*556	90.70	.012
7	Multiple Intelligence- Learning Experiences	241	39.31	312	50.90	*553	90.21	.012
8	Children with learning disabilities	170	27.73	383	62.48	*553	90.21	.012
9	Audio Visual Media Equipments	249	40.62	294	47.96	*543	88.58	.013
10	Whole Language Approach	272	44.37	270	44.05	**542	88.42	.013
11	Action Research	219	35.73	323	52.69	*542	88.42	.013
12	Constructivism - Learning Experiences	261	42.58	279	45.51	*540	88.09	.013
13	Concept Attainment- Learning Experiences	279	45.51	258	42.09	**537	87.60	.013
14	Philosophical bases of Instruction	269	43.88	268	43.72	**537	87.60	.013
15	Workshops	250	40.78	287	46.82	*537	87.60	.013
16	Discovery Learning Activities	312	50.90	222	36.22	**534	87.11	.014
17	Sociological bases of Instruction	324	52.85	208	33.93	**532	86.79	.014
18	Multi Level Instruction- Learning Experiences	262	42.74	270	44.05	*532	86.79	.014
19	Play way activities	341	55.63	190	31.00	**531	86.62	.014
20	Nurturance of Human Values	298	48.61	232	37.85	**530	86.46	.014

21	Life Skills Development	263	42.90	265	43.23	*528	86.13	.014
22	Spiral Approach- Learning Experiences	274	44.70	252	41.11	**526	85.81	.014
23	Symposiums	268	43.72	256	41.76	**524	85.48	.014
24	Process Skills Development	270	44.05	252	41.11	**522	85.15	.014
25	Projects	313	51.06	203	33.12	**516	84.18	.015
26	Dialogic Learning Activities	308	50.24	208	33.93	**516	84.18	.015
27	Persistence of Learning Motivation	279	45.51	232	37.85	**511	83.36	.015
28	Experiments	330	53.83	180	29.36	**510	83.20	.015
29	Posters, Collage etc.	337	54.98	172	28.06	**509	83.04	.015
30	Activity based Curriculum	280	45.68	228	37.19	**508	82.87	.015
31	Local Resource Mapping	320	52.20	186	30.34	**506	82.54	.015
32	Co-operative Learning Activities	334	54.49	169	27.57	**503	82.06	.016
33	Communicative Approach	304	49.59	199	32.46	**503	82.06	.016
34	Local Texts Preparation	301	49.10	202	32.95	**503	82.06	.016
35	Handling of classes with large size	239	38.99	264	43.07	*503	82.06	.016
36	Competency based Curriculum	266	43.39	232	37.85	**498	81.24	.016
37	Integrated Approach- Learning Experiences	265	43.23	233	38.01	**498	81.24	.016
38	Observations	331	54.00	165	26.92	**496	80.91	.016
39	Club Activities	298	48.61	198	32.30	**496	80.91	.016
40	Camps	275	44.86	219	35.73	**494	80.59	.016
41	Control of Delinquency	227	37.03	265	43.23	*492	80.26	.016
42	Effective Methods for teaching reading/writing	290	47.31	200	32.63	**490	79.93	.016
43	Nurturance of Creativity	281	45.84	208	33.93	**489	79.77	.016
44	Seminars	270	44.05	216	35.24	**486	79.28	.016

45	Content Enrichment	329	53.67	155	25.29	**484	78.96	.016
46	Presentation of Social Issues	316	51.55	164	26.75	**480	78.30	.017
47	Nurturance of Environmental Awareness	305	49.76	162	26.43	**467	76.18	.017
48	Child centered Curriculum	255	41.60	211	34.42	**466	76.02	.017
49	Library Activities	249	40.62	211	34.42	**460	75.04	.017

Note: ***** (very highly needed)indicates majority of teachers *Need Comprehensive Training* in the area than *Need training in certain areas*

** indicates majority of teachers *Need Training in Certain Areas* only of the theme.

The Table 95 of percentages of preferences indicates that out of the 73 themes listed in the checklist for Need Assessment, 49 themes were found as *highly needed themes* for Inservice Training. From the 49 themes, it can be seen that, these themes are related with the latest curriculum reforms. This again implies that for the successful implementation of the present curriculum, teachers highly need inservice training in almost all the dimensions of Instructional Technology.

The standard errors estimated of the above percentages reveal that the indices are very negligible suggesting that the confidence intervals of the population percentages of all the 49 themes will not be a wide one and that these sample percentages will the estimates of the population percentages.

The ordered themes suggests that the *very highly needed themes for Comprehensive Training* are (i) Computer Aided Instruction, (ii) Instructional Materials-New trends,

(iii) OHP/Film Projectors/Slide Projectors, (iv) Psychological basis of Instruction, (v) Information Processing approach, (vi) Multiple Intelligence, (vii) Children with learning disabilities, (viii) Audio Visual Media Equipments (ix) Action Research, (x) Constructivism, (xi) Workshops, (xii) Multi Level Instruction, (xiii) Life skills development, (xiv) Handling of class with large size and (xv) Control of Delinquency among pupils. Thus these very highly needed themes for comprehensive training also belong to all the five domains of Instructional

Technology. (Four themes under *Design Domain*; four themes under *Development Domain*; three themes under *Management Domain*; three themes under *Utilisation Domain;* and one theme under *Evaluation Domain*). These further suggest that all the five domains are alike needed but with least preference for *Evaluation Domain* themes.

Distribution of these 49 highly needed themes domain wise are as follows. Highly needed 49 themes are the following Design Domain (69.23 % - 18 themes out of 26 listed themes), Development Domain (70.00 % - 7 themes out of 10 listed themes), Utilisation Domain (89.47 % - 17 themes out of 19 listed themes), Management Domain (54.54 % - 6 themes out of 11 listed themes) and Evaluation Domain (14.28 % - 1 theme out of 7 listed themes). These suggest that teachers need inservice training more on themes under *Design* and *Utilisation Domains.*

Further, it is seen that the identified themes as *Need* for inservice training spread over the five dimensions of Instructional Technology.

4.6. EXTENT OF COMPUTER LITERATES AMONG THE TOTAL SAMPLE AND FOR DIFFERENT SUB SAMPLES.

Along with major objectives, the investigator also studied three minor objectives. In these, the first was to know the extent of computer literates among the total and the different sub samples of Primary School Teachers. This being a *computer knowledge society*, the investigator felt the need of such an enquiry.

Based on the responses of the teachers to the questionnaire, the investigator prepared number and percentages of *computer literates* and *non literates*. The number and percentages of *computer literates* and *non-computer literates* among the total sample and different sub samples were computed and presented in Table 96

TABLE 96

Percentages of Computer-Literates and Non Computer-Literates among Total Sample and Different Sub samples among Primary School Teachers

Sl No	Sub sample	Computer Literates		Non computer literates		Total
		N	%	N	%	
1	Male	44	37.93	72	62.07	116
2	Female	101	20.32	396	79.68	497
3	Lower Primary	63	19.87	254	80.13	317
4	Upper Primary	82	27.70	214	72.30	296
5	Government	63	21.72	227	78.28	290
6	Government Aided	82	25.39	241	74.61	323
7	DPEP Districts	55	18.71	239	81.29	294
8	Non- DPEP Districts	90	28.21	229	71.79	319
9	TTC Holders	87	20.37	340	79.63	427
10	B.Ed Degree Holders	53	33.33	106	66.67	159
11	Both TTC and B.Ed Degree	5	18.52	22	81.48	27
12	Upto 5 yrs Service	49	31.61	106	68.39	155
13	6yrs to 15 yrs Service	53	23.45	173	76.55	226
14	16 yrs to 25 yrs Service	38	19.90	153	80.10	191
15	More than 25 yrs Service	5	12.20	36	87.80	41
16	Total Sample	145	23.65	468	76.35	613

Discussion of Results

The percentages of computer literates among the total sample and different sub samples reveal that 76.35% of Primary School Teachers are Non-literates in Computer usage. Only 23.65% of teachers are computer literates as expressed by teachers themselves.

The results further reveal that more number of literates are among Male Teachers (37.93 %) and least (12.20 %) is among Teachers having service more than 25 years.

The results further suggest that the percentage of Computer Literacy varies between 12.20% to 37.93% from subsample to subsample.

4.7. OPINION OF TEACHERS ON THE EFFECTIVENESS OF ON-GOING INSERVICE TRAINING PROGRAMMES

Opinions of Primary School Teachers regarding the effectiveness of ongoing inservice training programmes were consolidated. Total responses under three modes viz,. Inservice Training Programme were *not effective*, *no responses* and Inservice Training Programme were *effective* were computed and are given in Table 97

TABLE 97
Percentages of reported responses of Primary School Teachers Regarding Effectiveness of on-going Inservice Training Programmes Among Total Sample and Different Sub Samples (Total sample = 613)

Sl. No.	Sample	On- going Inservice Training Programmes are						Total
		Not Effective		No Response		Effective		
		N	%	N	%	N	%	
1	Male	41	35.34	29	25.00	46	39.66	116
2	Female	83	16.70	120	24.15	294	59.15	497
3	Lower Primary	73	23.03	66	20.82	178	56.15	317
4	Upper Primary	51	17.23	83	28.04	162	54.73	296
5	Government	64	22.07	63	21.72	163	56.21	290
6	Govt Aided	60	18.58	86	26.63	177	54.80	323
7	DPEP Districts	54	18.37	62	21.09	178	60.54	294
8	Non- DPEP Districts	70	21.94	87	27.27	162	50.78	319
9	TTC Holders	88	20.61	109	25.53	230	53.86	427
10	B.Ed Degree Holders	28	17.61	36	22.64	95	59.75	159
11	Both TTC and B.Ed Degree	8	29.63	4	14.82	15	55.56	27
12	Upto 5 yrs Service	23	14.84	31	20.00	101	65.16	155
13	6 years to 15 yrs Service	51	22.57	52	23.01	123	54.42	226
14	16 yrs to 25 yrs Service	39	20.42	54	28.27	98	51.31	191
15	More than 25 yrs Service	11	26.83	12	29.27	18	43.90	41
16	Total Sample	124	20.23	149	24.31	340	55.46	613

DISCUSSION OF RESULTS

From the Table of results, it is clear that majority of teachers (55.46%) is with the opinion that the ongoing Inservice Training Programmes are *effective*. The patterns of responses are the same in the case of sub samples of teachers also. The high rate of effectiveness is by Teachers with service up to five years (65.16%) and the least rate of effectiveness is by Male teachers (39.66%). From these results, it can be commented that the ongoing Inservice Programmes are *effective*

4.8.1. SUGGESTIONS AND REQUIREMENTS OF TEACHERS REGARDING THE CONDUCT OF INSERVICE TRAINING PROGRAMMES IN FUTURE

Suggestions and requirements of Primary School Teacher regarding the conduct of Inservice Training Programmes in future were collected and consolidated in Table 98

TABLE 98
Percentages of reported suggestions of Primary School Teachers Regarding the conduct and improvement of Inservice Training Programmes Total Sample (N= 613)

Sl. No.	Suggestions for improvement of forthcoming Inservice Training Programmes (Reported 60 % and more)	N	%
1	Proper planning and time management of Training programmes	467	76.18
2	Improve subject and training competency of the Trainers	454	74.06
3	Avoid training on School working days	433	70.64
4	Avoid repeated themes of training and give more training in new areas	421	68.68
5	Comprehensive Vacation Trainings for implementation in forthcoming academic year	416	67.86
6	Try-outs and Demonstration Classes	410	66.88
7	Practical Illustrations of theories in actual classroom/school settings	398	64.93
8	Management of the heavy Curriculum	392	63.95
9	More effective Monthly Cluster Training	384	62.64
10	Monitoring and post-evaluation of the given training programmes	380	61.99
11	Assurance of availability of support materials and support services for instruction	372	60.69
12	Classes from Subject Experts, DIETS etc	368	60.03

From the Table, it is found that proper planning and time management of Inservice Training Programmes, improvement of subject competency and training competency of the trainers, avoiding training on working days and more training in new areas are the highly rated suggestions for improvement of Inservice Training Programmes.

4.8.2. Requirements of Primary School Teachers for forthcoming Inservice Training Programmes

Teachers were asked to suggest felt themes for future Inservice Training Programmes and these responses were consolidated and given in Table 99

TABLE 99
Percentages of different themes suggested by the Primary School Teachers for forthcoming Inservice Training Programmes(Total Sample N= 613)

Sl. No.	Recommended themes for future Inservice Training Programmes (Reported 60 % and more)	No. of responses	Percentages
1	Computer Education	478	77.98
2	Communicative Approach in English Teaching	454	74.06
3	Psychological Bases of Instruction	424	69.17
4	Conduction and Evaluation of Projects	420	68.52
5	Content Enrichment and Methods of Mathematics Instruction	416	67.86
6	Science Experiments and Experiment Projects	410	66.88
7	Work Experience	398	64.93
8	Art Education & Health Education	392	63.95
9	Preparation of Teaching Learning Materials	390	63.62
10	Conduction and Evaluation of Seminars	385	62.81
11	Effective Continuous and Comprehensive Evaluation (CCE)	380	61.99
12	Content Enrichment and Methods of Environment Science Education	377	61.50
13	Unit Plan Preparation	376	61.34
14	Teaching methods for More effective Reading and Writing	374	61.01
15	Enrichment of knowledge in School Subjects	369	60.19
16	Current trends and theories in the field of Instruction	368	60.03

From the Table it is found that Computer Education, Communicative Approach, Psychological Basis of Instruction and Projects were some of the highly rated themes suggested for future Inservice Training Programme. The above themes were the responses of teachers to an open-ended question in the Questionnaire. The investigator verified the above requirements of teachers with the identified highly needed themes for Inservice Training which were found as a result of the responses to the Checklist. On verification, it is seen that the themes suggested by the teachers through open-ended question are also the identified *highly needed the*mes through the Checklist.

4.9. SUMMARY OF FINDINGS

Major findings of the study with regard to Instructional Technology Awareness and Inservice Training Needs assessment of Primary Schools Teachers of Kerala are summarised and presented below.

1. Instructional Technology Awareness of Primary Schools Teachers of Kerala is appreciably moderate. The level of awareness is appreciably moderate for four domains of Instructional Technology viz., Design, Development, Utilisation and Evaluation. The level awareness is not satisfactory for the Management Domain.

2. The number of teachers Highly Aware in Instructional Technology is grater than number of teachers Low Aware for the total sample and for all the sub samples except in the case of teachers with Length of Service greater than twenty-five years.

3. The number of Teachers Highly Aware is greater in the case of Teachers with Length of Service less than five years and least among Teachers with service greater than twenty-five years.

4. The number of Teachers High Aware is higher among

   (i) Female Teachers than Male Teachers

   (ii) Government Teachers than Aided School Teachers.

(iii) Lower Primary Teachers than Upper Primary Teachers

(iv) D.P.E.P Teachers than Non. D.P.E.P District Teachers

(v) Teachers qualified both B Ed. and T.T.C than Teachers qualified T.T.C or B Ed.

(vi) Teachers with service less than five years than Teachers with services greater than five years.

5. When the mean scores of Instructional Technology Awareness was compared between sub samples of Teachers formed on the basis of Classificatory Variables, it was found that,

(i) Gender difference in Instructional Technology Awareness among teachers is not significant.

(ii) Significant difference in Instructional Technology Awareness exists between Teachers based on Level of Teaching.

(iii) There is significance difference in Instructional Technology Awareness between teachers based on School Management Type.

(iv) Difference in Instructional Technology DPEP District Teachers and Non DPEP District Teachers is not significant.

(v) Teacher Training Qualification has no significant effect on any of the domains of Instruction Technology Awareness.

(vi) Length of Service has significant effect on Instruction Technology Awareness.

6. Inservice Training Needs assessment revealed the following.

(i) Almost all the themes included in the Checklist were found to be *Inservice Training Needs.* However, 49 themes having percentage of preferences 75 and above (combined percentage for the two modes of responses viz., *Need training in certain areas* and *Need comprehensive*

training) were rated as *Highly Needed Themes* for future Inservice Training programmes.

The domain wise distribution of these identified **49** ***Highly Needed Themes*** is as follows.

DESIGN DOMAIN (**18** *Highly Needed Themes* out of **26** listed themes - **69.23 %**)

1) Psychological bases of Instruction. 2) Philosophical bases of Instruction. 3) Sociological bases of Instruction. 4) Multiple Intelligence 5) Constructivism 6) Workshops 7) Play way activities 8) Symposiums 9) Projects 10) Experiments 11) Activity based Curriculum. 12) Competency based Curriculum 13) Observations. 14) Club Activities. 15) Camps. 16) Seminars 17) Child Centered Curriculum. 18) Library Activities

DEVELOPMENT DOMAIN (**7** *Highly Needed Themes* out of **10** listed themes- **70.00%**)

1) Computer aided Instruction. 2) Audio Visual Media Equipments 3) Teaching Learning Materials – New Trends. 4) Improvised Instruction Materials 5) OHP/ Film/Slide projectors. 6) Posters, Collage, Broachers etc. 7) Local Texts.

UTILISATION DOMAIN (**17** *Highly Needed Themes* out of **19** listed themes - **89.47 %**)

1) Information Processing Approach 2) Whole Language approach 3) Concept Attainment. 4) Discovery Learning. 5) Multi Level Instruction 6) Nurturance of human values 7) Life Skills development 8) Process Skills development 9) Spiral approach. 10) Dialogic Learning. 11) Co-operative Learning. 12) Communicative Approach. 13) Integrated Approach. 14) Effective methods of Teaching Reading and Writing. 15) Nurturance of Creativity. 16) Presentation of Social issues in Class Rooms. 17) Nurturance of Environmental Awareness

MANAGEMENT DOMAIN (**6** *Highly Needed Themes* out of **11** listed themes- **54.54 %**)

1) Pupils with Learning Disabilities 2) Persistence of Learning Motivation 3) Local Resource Mapping 4) Large Classes Handling 5) Control of Delinquency among pupils 6) Content Enrichment

EVALUATION DOMAIN (**1** *Highly Needed Theme* out of **7** listed themes- **14.28 %**)

1) Action Research

These suggest that teachers need Inservice Training more on Themes under Design Development and Utilisation Domains.

7. Among the **49** *Highly Needed Themes* following **15** themes were identified as *Very Highly Needed Themes* as Inservice Training Needs demanding comprehensive training.

   1) Computer Aided Instruction, 2) Instructional Materials-New trends, 3) OHP/Film Projectors/Slide Projectors 4) Psychological basis of Instruction, 5) Information Processing approach, 6) Multiple Intelligence, 7) Children with learning disabilities, 8) Audio Visual Media Equipments 9) Action Research, 10) Constructivism, 11) Workshops, 12) Multi Level Instruction, 13) Life skills development, 14) Handling of class with large size and 15) Control of Delinquency among pupils.

8. Significant Gender Difference exists in the preferences of nine needs only. These nine needs are Debates, Symposiums, Workshops, Observations, Year Plan Preparation, Continuous and Comprehensive Evaluation (CCE), Part II Evaluation, Part III Evaluation and Recording Responses in Teaching Manual.

9. Significance difference due to Teaching Level exists in the preferences of ten needs only. These ten needs are Seminars, Debates, Symposiums, Camps, Local Texts Preparation, Integrated Approach, Spiral Approach, Concept Attainment, Content Enrichment and Continuous Evaluation (CE).

10. Significant due to type School Management exists in the preferences of twenty two needs. These twenty two themes are Assignments, Seminars, Children with Learning Disabilities, Teaching Learning Materials-New Trends, Instructional Use of Computers, Audio Visual Media Equipments, Posters and Collages, Multi Level Instruction, Co-operative Learning, Dialogic Learning, Communicative Approach, Discovery Learning, Information Processing Approach, Life Skills, Presentation of Social Issues, Local Resource Mapping, Content Enrichment, Control of Delinquency among Pupils, Persistence of Learning Motivation among pupils, Part II Evaluation, Part III Evaluation and Action Research.

11. Significant difference due to District Types as DPEP/Non DPEP exists in the preferences of fourteen needs. These fourteen needs are Projects, Seminars, Workshops, Teaching Learning Materials-New Trends, Constructivism, Dialogic Learning, Information Processing Approach, Life Skills, Year Planning, Unit Planning, Persistence of Motivation among pupils, Handling of Large Class, Continuous Evaluation (CE), Part II Evaluation and Part III Evaluation.

12. Significant difference due to Teacher Training Qualifications exists in the preference of four needs, viz., Activity Based Curriculum, Contents of News Paper, Magazines, Weeklies, etc., Integrated Approach and Spiral Approach.

13. Significant difference due to Length of Service exists in the Preference of five needs viz., Learning Corners, Utilisation of Support Services, Continuous and Comprehensive Evaluation, Part II Evaluation and Part III Evaluation.

14. Results yielded by studying the three minor objectives are the following,

    1) Among the total sample of teachers only 23.65 % are computer literates; more number of computer literates are among male teachers (37.93 %) and the least (12.20 %) is among Teachers having Service more than 25 years.

    2) Majority of Primary School Teachers (55.46 %) reported that the ongoing Inservice Training Programmes are effective. The high rate of effectiveness (65.16 %) is reported by teachers with service up to 5 years and least rate of effectiveness is reported by Male Teachers (39.66 %).

3) Computer Education, Communicative Approach, Psychological Bases of Instruction, Projects, Seminars, Mathematics Content Enrichment, Mathematics Instruction, Science Experiments and Experiment Projects, Work Experience, Art Education, Health Education, Preparation of Teaching Learning Materials, Effective CCE, Content Enrichment and Methods of Environmental Science Education, Unit Plan Preparation, More effective methods for teaching Reading and Writing were the most recommended themes for future Inservice Training Programmes by Teachers against an open ended question.

4) Proper planning and time management of Inservice Training Programmes, Improving subject competency of the Trainers, Avoiding training on school working days, Avoiding repeated themes of training, More training in new areas, Vacation training for forthcoming academic year, Try outs/Demonstration Class, Practical Illustrations of theories in actual Instructional Settings, Handling of Heavy work load and Curriculum, More effective monthly Cluster Training, Monitoring and evaluation of training programmes, Assurance of availability of support materials and support services for implementing of training programmes and More class from better subject experts, DIET faculties etc. are the reported suggestions for improving Inservice Training Programmes.

TENABILITY OF HYPOTHESES

Based on the findings, hypotheses stated for the study are examined for their tenability:

The hypotheses of the present study were as follows,

1. The level of Instructional Technology Awareness of Primary School Teachers of Kerala is significantly moderate for the total sample and for sub samples of teachers when sub samples are formed on the basis of Classificatory Variables.

2. The Mean Scores of Instructional Technology Awareness is significantly different between

a. Male and Female teachers

b. Lower Primary Teachers and Upper Primary Teachers.

c. Government School Teachers and Government Aided School Teachers

d. Teachers working in schools of DPEP Districts and non-DPEP Districts.

e. Teachers having qualifications TTC, B Ed. and with both TTC and B Ed.

f. Less experienced, moderately experienced, experienced and well experienced Teachers.

3. The Inservice Training Needs of teachers will spread over all the five Domains of Instructional Technology viz., Design Development, Utilization, Management and Evaluation.

4. The Inservice Training Needs significantly depend on

a. Gender of Teachers

b. Teaching Level

c. Type of Management of Schools

d. Type of School District as DPEP and non-DPEP

e. Teacher Training Qualifications.

f. Length of Service

From the present study it was found that,

1. Instructional Technology Awareness of Primary School Teachers of Kerala is appreciably moderate for the total sample and for the different sub samples of Teachers. This suggests that this first hypothesis is *fully substantiated*.
2. The Mean Scores of Instructional Technology Awareness was compare between sub samples of Teachers formed on the basis of Classificatory Variables, and it was found that,

(i) Gender difference in Instructional Technology Awareness among Teachers is not significant

(ii) Significant difference in Instructional Technology Awareness exists between Teachers based on Level of Teaching

(iii) Significant difference in Instructional Technology Awareness exists between Teachers based on Type of School Management.

(iv) Difference in Instructional Technology Awareness is not significant between Teachers based on type of School Districts. (DPEP & non DPEP).

(v) Teacher Training Qualifications has no significant effect on Instructional Technology Awareness among Teachers.

(vi) Length of Service has significant effect on Instructional Technology Awareness among Teachers.

Thus, the second hypothesis on Instructional Technology Awareness is *partially substantiated.*

3. Domain wise distribution of the identified *Highly Needed Themes* suggests that 18 themes belong to Design Domain; 7 to Development Domain; 17 to Utilisation Domain; 6 to Management Domain and 1 to Evaluation Domain. Even though the number of Inservice Training Needs identified varies between 1 and 18, it can be said that the identified needs spread over all the five Domains of Instructional Technology. Thus, the third hypothesis is *almost substantiated*.

4. The chi-square test of dependence on the dependency of Inservice Training Needs with Classificatory Variables resulted that

(i) Gender based dependency exists in nine themes only.

(ii) Teaching Level based dependency exists in ten themes only.

(iii)School Management based dependency exists in twenty two themes only.

(iv) District based dependency exists in fifteen themes only.

(v) Teacher Training Qualifications dependency exists in four themes only.

(vi) Length of Service dependency exists in five themes only.

All these suggest that Inservice Training Needs is not depended on Gender, Teaching Level, School Management, District, Teacher Training Qualifications and Length of Service.

Thus, the fourth hypothesis is *not substantiated*.

MAJOR FINDINGS, CONCLUSIONS AND SUGGESTIONS

- Major Findings of the Study
- Conclusion
- Education Implications
- Suggestions for Further Research

Major objectives of the study were to find out the level of Instructional Technology Awareness of Primary School Teachers of Kerala and to assess their Inservice Training Needs.

This was studied by means of the following:

1. Estimation of the Mean scores and standard deviation of the level of Instructional Technology Awareness among the total sample of teachers and among different sub samples of Teachers classified on the basis of variables like Gender, Teaching Level, Type of School Management, Type of School District, Teacher Training Qualifications and Length of Service.
2. Comparison of the Mean Scores of Instructional Technology Awareness between different sub samples formed on the basis of Classificatory Variables.
3. Estimation of the percentages of preference to different Inservice Training Needs among the total sample of teachers and among different sub samples formed based on Classificatory Variables
4. Testing the significance of the dependence of Inservice Training Needs with each of the Classificatory Variables.
5. Identification of the Highly Needed Themes and the themes requiring comprehensive training for Inservice Training.
6. Computation of the extent of Computer literates among the total sample and for different sub samples of Teachers.

7 Consolidation of opinions of Teachers on the effectiveness of on-going Inservice Training Programmes

8. Consolidation of suggestions and opinion of Teachers regarding the conduct of Inservice Training Programmes.

Major findings derived by means of the above procedures are summarised and presented in this chapter. Conclusion based on the findings educational implications of the findings and suggestions for further research in the area are also given in this chapter.

5.1 MAJOR FINDINGS

Major findings of the study with regard to Instructional Technology Awareness and of Inservice Training Needs of Primary Schools Teachers of Kerala are the following.

I. (1) Instructional Technology Awareness of Primary Schools Teachers of Kerala is appreciably moderate. The level of awareness is appreciably moderate on four of the five domains of Instructional Technology viz., Design, Development, Utilisation and Evaluation. The level of Instructional Technology Awareness is not satisfactory for the Management Domain.

(2) Distribution of the scores of Instructional Technology Awareness is slightly skewed but not badly.

(3) The number of Teachers Highly Aware in Instructional Technology is greater than number of Teachers Low Aware for the total sample and for all the sub samples except in the case of Teachers with Length of Service greater than twenty-five years.

(4) The number of Teachers Highly Aware in Instructional Technology is greater in the case of Teachers with Length of Service less than five years and least among Teachers with Length of Service greater than twenty-five years.

(5) The number of Teachers Highly Aware is higher among

(i) Female Teachers than Male Teachers

(ii) Government Teachers than Aided School Teachers.

(iii) Lower Primary Teachers than Upper Primary Teachers

(iv) D.P.E.P Teachers than Non. D.P.E.P District Teachers

(v) Teachers qualified with both B Ed. and T.T.C than Teachers qualified T.T.C or B Ed.

(vi) Teachers with service less than five years than Teachers with services greater than five years.

II When the mean scores of Instructional Technology Awareness was compared between sub samples of teachers formed on the basis of Classificatory Variables, it was found that,

(i) Gender difference in Instructional Technology Awareness among teachers is not significant in any of the Domain of Instructional Technology.

(ii) Significant difference in Instructional Technology Awareness exists between Teachers based on Level of Teaching.

(iii) There is significance difference in Instructional Technology Awareness between teachers based on School Management Type.

(iv) Difference in Instructional Technology Awareness between DPEP Teachers and Non DPEP Teachers is not significant.

(v) Teacher Training Qualification has no significant effect on any of the domains of Instruction Technology Awareness.

(vi) Length of Service has significant effect on the Instructional Technology Awareness in four Domains. (Design, Development, Utilisation and Management) of Instructional Technology.

III Inservice Training Needs assessment revealed the following.

(i) Almost all the themes included in the Checklist were found to be *Inservice Training Needs.* However, 49 themes having percentage of preference 75 and above (combined percentage for the two modes of responses viz., *Need training in certain areas* and *Need comprehensive*

training) were rated as *Highly Needed Themes* for future Inservice Training programmes.

Domain wise distribution of these 49 *Highly Needed Themes* is as follows, indicating that teachers need Inservice Training more on themes under Design, Development and Utilization Domains.

DESIGN DOMAIN (**18** *Highly Needed Themes* out of the **26** listed themes - **69.23%** representation)

Themes : 1) Psychological bases of Instruction. 2) Philosophical bases of Instruction. 3) Sociological bases of Instruction. 4) Multiple Intelligence 5) Constructivism 6) Workshops 7) Play way activities 8) Symposiums 9) Projects 10) Experiments 11) Activity based Curriculum. 12) Competency based Curriculum 13) Observations. 14) Club Activities. 15) Camps. 16) Seminars 17) Child Centered Curriculum. 18) Library Activities

DEVELOPMENT DOMAIN (**7** *Highly Needed Themes* out of **10** listed themes - **70%** representation)

Themes : 1) Computer aided Instruction. 2) Audio Visual Media Equipments 3) Teaching Learning Materials – New Trends. 4) Improvised Instruction Materials 5) OHP/ Film/Slide projectors. 6) Posters, Collage, Broachers etc. 7) Local Texts.

UTILISATION DOMAIN (**17** *Highly Needed Themes* out of **19** listed themes - **89.47%** representation)

Themes : 1) Information Processing Approach 2) Whole Language approach 3) Concept Attainment. 4) Discovery Learning. 5) Multi Level Instruction 6) Nurturance of human values 7) Life Skills development 8) Process Skills development 9) Spiral approach. 10) Dialogic Learning. 11) Co-operative Learning. 12) Communicative Approach. 13) Integrated Approach. 14) Effective methods of Teaching Reading and Writing. 15) Nurturance of Creativity. 16) Presentation of Social issues in Class Rooms. 17) Nurturance of Environmental Awareness

MANAGEMENT DOMAIN (**6** *Highly Needed Themes* out of the **11** listed themes- **54.54%** representation)

Themes : 1) Pupils with Learning Disabilities 2) Persistence of Learning Motivation 3) Local Resource Mapping 4) Large Classes Handling 5) Control of Delinquency among pupils 6) Content Enrichment

EVALUATION DOMAIN (**1** *Highly Needed Theme* out of the **7** listed themes- **14.28%** representation)

Theme : 1) Action Research.

IV Among the **49** *Highly Needed Themes,* **15** themes were identified as *Very Highly Needed Themes* as Teachers need comprehensive training in these areas. These 15 themes are the following. .

1) Computer Aided Instruction, 2) Instructional Materials-New trends, 3) OHP/Film Projectors/Slide Projectors 4) Psychological basis of Instruction, 5) Information Processing approach, 6) Multiple Intelligence, 7) Children with learning disabilities, 8) Audio Visual Media Equipments 9) Action Research, 10) Constructivism, 11) Workshops, 12) Multi Level Instruction, 13) Life skills development, 14) Handling of class with large size and 15) Control of Delinquency among pupils.

V When Needs were tested for dependence with the Classificatory Variables, results derived are the following :

i Needs depend on Gender in 9 themes only. These nine themes are : Debates, Symposiums, Workshops, Observations, Year Plan Preparation, Continuous and Comprehensive Evaluation (CCE), Part II Evaluation, Part III Evaluation and Recording Responses in Teaching Manual.

ii Needs depend on Teaching Level on 10 themes only. These ten themes are : Seminars, Debates, Symposiums, Camps, Local Texts Preparation, Integrated Approach, Spiral Approach, Concept Attainment, Content Enrichment and Continuous Evaluation (CE).

iii Needs depend on Type of School Management on 22 themes. These twenty-two themes are : Assignments, Seminars, Children with Learning Disabilities, Teaching Learning Materials-New Trends, Instructional Use of Computers, Audio Visual Media Equipments, Posters and Collages, Multi Level Instruction, Co-operative Learning, Dialogic Learning, Communicative Approach, Discovery Learning, Information Processing Approach, Life Skills, Presentation of Social Issues, Local Resource Mapping, Content Enrichment, Control of Delinquency among Pupils, Persistence of Learning Motivation among pupils, Part II Evaluation, Part III Evaluation and Action Research.

iv. Needs depend on Type of School District on 14 needs. These fourteen themes are: Projects, Seminars, Workshops, Teaching Learning Materials-New Trends, Constructivism, Dialogic Learning, Information Processing Approach, Life Skills, Year Planning, Unit Planning, Persistence of Motivation among pupils, Handling of Large Class, Continuous Evaluation (CE), Part II Evaluation and Part III Evaluation.

v. Needs depend on Teacher Training Qualifications on 4 Needs. These four themes are : Activity Based Curriculum, Contents of News Paper, Magazines, Weeklies, etc., Integrated Approach and Spiral Approach.

vi. Needs depend on Length of Service on 5 needs. These five themes are : Learning Corners, Utilisation of Support Services, Continuous and Comprehensive Evaluation, Part II Evaluation and Part III Evaluation.

VI. Results yielded by studying the three minor objectives are the following,

i) Among the total sample of teachers only 23.65 % are computer literates. More number of computer literates are among Male Teachers (37.93 %) and the least (12.20 %) is among Teachers having Service more than 25 years.

ii) Majority of Primary School Teachers (55.46 %) reported that the ongoing Inservice Training Programmes are effective. The high rate of effectiveness (65.16 %) is reported by Teachers with Service up to 5 years and least rate of effectiveness is reported by Male Teachers (39.66 %).

iii) The most recommended themes for Inservice Training are the following as responded by Teachers against an open ended questionnaire. Computer Education, Communicative Approach, Psychological Bases of Instruction, Projects, Seminars, Mathematics Content Enrichment, Mathematics Instruction, Science Experiments and Experiment Projects, Work Experience, Art Education, Health Education, Preparation of Teaching Learning Materials, Effective CCE, Content Enrichment and Methods of Environmental Science Education, Unit Plan Preparation, More effective methods for teaching Reading and Writing.

iv) The major suggestions of Teachers for improving Inservice Programmes are the following. Proper planning and time management of Inservice Training Programmes, Improving subject competency of the Trainers, Avoiding training on school working days, Avoiding repeated themes of training, More training in new instructional areas, Vacation training for forthcoming academic year, Try outs/Demonstration Classes, Practical Illustrations of theories in actual instructional settings, Handling of heavy work load and Curriculum, More effective monthly Cluster Training, Monitoring and evaluation of training programmes, Assurance of availability of support materials and support services for implementing training programmes and More training from better subject experts, DIET faculties etc.

5.2. CONCLUSIONS

Summary of findings led the investigator to conclude as follows:

Primary School Teachers of Kerala State are moderately aware of Instructional Technology. It is somewhat lacking in the Management Domain when compared to other four Domains of Instructional Technology viz., Design, Development, Utilisation, and Evaluation.

Majority of the 73 themes listed as Inservice Training Needs were found as Needs for either *Comprehensive Training* or for *Training in Certain Areas.* However, 49

themes are identified as *Highly Needed Themes* and among these 15 themes are wanted by Teachers for Comprehensive Training.

When identified Inservice Training Needs were analysed Domain wise, it was found that most of the Needs are from the Design, Development and Utilisation Domains. Majority of the needs do not depend on Gender or Teaching Level or School Management or School District or Teacher Training Qualification or on Length of Service. Only some themes depend on these Classificatory Variables.

5.3. EDUCATIONAL IMPLICATIONS.

On the basis of the major findings and on the conclusions derived, the investigator puts forth the following recommendations for the better use of Instructional Technology; better conduct of Inservice Training Programmes and there by for effective instruction to primary school pupils of Kerala.

1. Make long range planning and arrangement for Inservice Training Programmes on Design, Development and Utilisation Domains of Instructional Technology as it was found that majority of the high rated needs for Inservice Training were of Design, Development and Utilisation Domains. It was also found that Instructional Technology Awareness is comparatively low in aspects of Management Domain. Therefore, arrange programmes for the Management aspects also.

2. Among the 73 themes provided in the checklist for Inservice Training Needs Assessment, it was found that 15 themes are *Very Highly Needed Themes* as majority of Teachers need *Comprehensive Training* in these 15 themes. Such themes are the following. Computer aided Instruction, New trends in Teaching Learning Materials, Handling of Overhead/Film/Slide Projectors, Psychological bases of Instruction, Information Processing Approach, Multiple Intelligence, Handling pupils with Learning Disabilities , Audio Visual Media Equipments, Action Research, Constructivism, Workshops, Multi Level Instruction, Life Skills, Handling of Large Classes and Control of Delinquency among pupils. An inspection of these themes reveals that these *needs* are real

cross sections of the themes as felt through interaction with Teachers. Even though the themes rated for *Comprehensive Training* are not new or not out of syllabus of the preservice training, these were listed as the top needed only because a good understanding of these themes is unavoidable for successful instruction in these days.

3. Make aware of the teachers through Inservice Training Programmes that Instructional Technology is not to be conceptualised just in terms of computer hardwares and softwares, but also in terms of human skills, resource management, problem solving and instructional settings.

4. It is often found that among teachers psychological, mechanical, mathematical and professional fears exist in using Instructional Technology. This may be one of the reasons for low computer literacy rate and high rating of need for Inservice Training on instructional uses of computers. Such fears are to be eliminated by incorporating or involving teachers with such activities.

5. Arrange Inservice Training Programmes for effective utilization of computer mediated resources; give updated and latest versions of computer training and also make teachers competent on preparation of instructional softwares. By this teachers can confidently provide Computer Aided Instruction

6. Provide linkage between Preservice and Inservice Teacher Training Programmes to supplement and complement each other.

7. Equip the Teachers with research based Teaching Learning Materials, emerging transactional approaches, instructional uses of Information and Communication Technology, and with adequate technological facilities.

8. Teachers are to be trained to determine when, why and how of Information and Communication Technology should be effectively utilised in instructional situations.

9. Tryout inservice education and training programmes on self-instructional modes.

10. Place learner and learning in the heart of technology based instruction.

11. Find out the barriers for effective implementation of Instructional Technology through scientific investigation. Lack of proper planning, unsuitability of the time, less demonstrations and try outs, insufficiency of incentives, lack of expertise of Resource Persons, lack of follow-up sessions, programmes not assessing the conceptual needs of teachers, outdated teacher training and support system, non reality of instructional theories and situations, non grouping of teachers based on length of service are some of the barriers found through investigations against effective Inservice Training. Take measures for rectifying these and for providing maximum opportunities to enrich the teachers for effective implementation of Instructional Technology

12. Inservice Teacher Training programmes are to be more collaborative and teacher centered. Collective reflections of teachers during training sections, connection between learning process and outcomes, and pragmatic application of learning and instructional theories in class rooms are sum of the measures significantly be made for effectiveness of Inservice Training Programmes.

13. Provide more *decentralised* Inservice Teaching Training Programmes that are school based and school focused, and determine their effectiveness.

14. Provide for objective efficient functioning of On Site Support Team. (OSST)

15 Make teachers available of the Instructional Technology Awareness packages published by NCERT, SCERT, DIETs, BRCs, CRCs etc.

16. While arranging programmes, special care may be taken for having programmes on Children with special needs and on Integrated Education for the Disabled Children (IEDC). In these areas, select teachers be trained as Resource Teachers.

5.4. SUGGESTIONS FOR FURTHER RESEARCH

The studies reviewed and the findings of this study led the investigator to suggest the following areas for further research.

1. Replication of the study among Secondary and Higher Secondary School Teachers.

2. A study on the relation of Instructional Technology Awareness with Inservice Training Needs among different levels of Teachers.

3. To workout a Strategic Model of Inservice Training prorammes for the enhancement of Instructional Technology Awareness and for its better use.

4. To prepare Instructional Technology Models for the effective transaction of select topics of different levels of Teaching.

5. A study on the relative effect of the five Domains of Instructional Technology on effective instruction.

6. A study of the institutional roles in making Teachers for effective utilisation of Instructional Technology.

7. To frame a Curriculum for Preservice Service Teacher Education aiming at developing competencies in the innovative practices of instruction.