

Determinants of Teachers' Level of Technology Implementation: Echelon and Current Instructional Practices

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Abstract

This paper assessed the current level of technology integration of the teachers' using the LoTi Framework. The study sample comprised of 200 school teachers who had the availability and access to various kinds of technologies in the schools. The present paper analyses the ways of technology integration with their pedagogical practices by the teachers who were teaching different subjects. It also identified their level of proficiency for using technological tools into their classroom.

Keywords:- Teachers', Technology, Echelon, Instructional Practices

Introduction

Integration of ICT in education is a complex process where many agents play a role on different contextual levels. Actors as well as factors are situated at a micro level within the classroom, at a meso level within the local community or the school and at a macro level, consisting of state and national policies along with international trends. Although teachers are important agents of change, they are influential in impeding or facilitating changes that are beyond the direct control of forces on the meso and macro levels (Jedekog, 2005; Kozma, 2003; Pelgrum, 2001). According to the researchers, the pedagogies of the teachers' has a powerful bearing on learners' achievement as the teachers' are responsible for the selection of the ICT resources; the manner in which the ICT resources are made use of in the learners' lessons; the preparation of the lessons; the extent of integration of ICT within the subject; and the level of guidance and intervention. Many of the researches revealed that inadequate understanding of the opportunity of ICT resources advances to superficial or inappropriate use of ICT in the curriculum. Explicit uses of ICT can have a constructive influence on students' learning, where the ICT integration is closely associated to learning objectives and also where the selection of how the use of ICT is appropriate to the teaching-learning purposes.

The Study Profile

In the initial phase of the study a pilot survey was conducted for identifying the schools that had the availability of ICT facilities such as projectors, computers, internet facilities etc. A total of 40 schools were selected from Delhi by the method of Purposive Sampling. Thereafter, from each of the chosen schools, five teachers who were teaching class IX i.e. one teacher from every scholastic area

were selected and the standardized “Levels of Technology Implementation (LoTi)” questionnaire was administered to gather data on level of ICT-pedagogy integration of the teachers. The research instrument was grounded on the seven levels of use defined in the “Levels of Use Chart” (Loucks, Newlove & Hall, 1975). The levels of use were: (0) Non-Use, (I) Awareness, (II) Exploration, (III) Infusion, (IV) Integration, and (V) Expansion (VI) Refinement. The first four levels (Awareness, Exploration, Infusion and Integration) represented the core factors, while the remaining levels (Expansion, Refinement) were an extension of the Integration subcategory. The LoTi Framework assessed the current Level of Technology Integration of the teachers’ grounded on the Level of Technology Implementation (LoTi) Framework developed by Dr. Christopher Moersch in 1995.

Analysis and Interpretation of Data

The LoTi framework recommends eight diverse levels of integration through which a teacher progresses as and when they integrate technology with their pedagogy: Level 0- Non-use; Level 1- Awareness; Level 2- Exploration; Level 3- Infusion; Level 4a- Integration (Mechanical); Level 4b- Integration (Routine); Level 5- Expansion; Level 6 - Refinement. As and when the teacher makes advancements through each levels, a sequence of transformations commence to transpire. The use of technology by the teacher instigates by assigning of the tasks which necessitate low-level uses of technology only and further passages to assigning of the tasks and projects which involve learners to employ higher-cognitive processes for solving authentic problems. The instructional practices involving the use of technology transform from being merely teacher-centred to more learner-centred. Also, the assessment strategies turn out to be more authentic and more diverse (Moersch, 1995). As part of the LoTi framework, the “Personal Computer Use (PCU) Framework” measures the transformation in a teacher’s understanding of integrating the digital tools in the classroom as she/he passages from no understanding to highly proficient level. The “Current Instructional Practices (CIP)” framework measures the transformation in a teacher’s overall instructional methods as s/he moves from subject-based or teacher-centred, to learner based or student-centred methods of technology integration.

In the present study, the LoTi questionnaire containing 50 items, generated the scores for every teacher in three domains namely: 1) Level of Technology Implementation (LoTi), 2) Personal Computer Use (PCU) that assesses the comfort level as well as the proficiency level of the teachers’ for using software application programs and for troubleshooting simple problems related to hardware, and 3) Current Instructional Practices (CIP) that categorizes the teachers’ inclination towards the instructional practices which are coherent with a learner-centered curriculum design. Every domain was strengthened by one or more of the following five factors:

Factor 1 (LoTi): Use of technology for multifaceted learner projects that require problem solving, critical thinking and the real world application;

Factor 2 (PCU): Proficiency of teacher’s for using technology;

Factor 3 (CIP): Student’s impact on current instructional practices of teachers;

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Factor 4 (LoTi): Dependency on ICT resources and support for increase in comfort level for the use of technology practices;

Factor 5 (LoTi): Challenges for use of technology by the teachers' in the classroom.

The LoTi questionnaire consisted of eight diverse levels of technology integration that range from 0 (Non-Use) to 6 (Refinement). As the teacher progresses through the eight levels, the focus of instruction progresses from the teacher-centred to the learner-centred orientation (Learning Quest, 2004; Moersch, 1997). The use of technology also shows a progression from the dependence on secluded practices for instance drill as well as practice applications to an extended interpretation of technology as a product, process as well as a tool for augmenting and enhancing learners' critical thinking thereby helping them to unearth feasible solutions to problems in the real world.

The LoTi questionnaire consisted of 50 questions: 5 questions each for all the 8 Levels of Technology Integration, 5 questions catering to the levels of Personal Computer Use (PCU), and 5 questions catering to the level of Current Instructional Practice (CIP). The LoTi questionnaire was based on Likert scale ranging from 0 to 7 depicting the eight levels.

The CIP score was used to assess the level of instructional practices of the teachers' which were detached from the use of technology and revealed whether the practices of the teachers tended to be more learner-centred or subject-matter that were based on eight diverse levels that ranged from basic Level 1 that included exclusive use of a subject-based approach to highest Level 7 that involves exclusive use of a student-centred approach. The PCU scale measures the comfort and the proficiency level of computers use of the teachers. The scale of the PCU ranges from Level 0 which indicates that the teacher doesn't have the essential skills for using technology for personal use or for classroom use to the highest Level 7 which indicated that the teacher is extremely proficient in use of technology in the classrooms. Table 1 depicts the teachers' technology integration levels as obtained from the scoring of the LoTi questionnaire. A perusal of the table 1 shows that the mean value corresponds to Level 3 i.e. infusion of technology integration. A low value of S.D. shows that there is less variability among the scores.

Table 1: Level of Technology Integration

LEVEL	DESCRIPTION	Mean	S.D.
		3.64	0.85
		NUMBER (N)	PERCENTAGE (P)
0	Non- Use	0	0
1	Awareness	0	0
2	Exploration	20	10
3	Infusion	85	30.5
4a	Integration (Mechanical)	64	32
4b	Integration (Routine)	26	13
5	Expansion	29	14.5
6	Refinement	0	0
Mean Level		Level 3	

The Level 3 which is the Infusion stage is the commencement of technology use for higher-order uses whereas Level 4b which is the Integration-routine stage which is the focus goal for the teachers to be proficient in using technology for higher-order tasks in a learner-centred environment. Considerable number teachers in the present study, 40.5%, were below the “Integration level” on the LoTi scale which implies that the teachers were not using technology for supporting learner-centred instruction. A significant number of the teachers i.e. 30% were at the “Infusion level” of the LoTi scale. This implies that the teachers’ were making use of technology for supporting teacher-centred instruction. Though, nearly half of the teachers were at the integration level (45%) and were using technology for supporting learner-centred instruction. A few of the teachers moved beyond the integration level to the expansion level (14.5%), while none of them reached the refinement level.

There was no teacher at the level 0 i.e. non-use of technology: Level 0 which is the Non-Use which implies that all the teachers had access to technology-based tools for example, computers etc. and had sufficient time to pursue technology integration and the existing technology was not predominately text-based.

There was also no teacher at level 1 i.e. Awareness. This implies that the instructional focus was not exclusively on direct instruction. The students’ learning did not focus on only the lower levels of cognitive processing. The digital as well as the environmental resources were very much existent and were being used by the teachers’ not only to enhance their presentations or lectures but for higher level tasks. This also implies that the usage of technology-based tools was not detached from the teachers classroom and these were not only used for classroom or for the curriculum management tasks for example taking attendance, accessing e-mail, retrieving lesson plans from the internet, using grade book programs or a curriculum management system or to embellish or enhance teacher-directed lessons or lectures but were used effectively as part of pedagogical practices.

Few teachers (10%) were at Level 2 i.e. Exploration of the LoTi scale. At this level 2 the instructional focus of the teachers emphasized content understanding and supported direct instruction and mastery learning. The students’ learning was more focused on lower levels of cognitive processing. The ICT resources were being used by the learners for information gathering assignments, extension activities or enrichment exercises, which reinforced lower level of cognitive skill development that was associated with the content under investigation. This point towards the fact that the technology-based tools supplemented the prevailing instructional program for example educational games, tutorials, basic skill applications or complemented carefully chosen multimedia and web-based projects for example informational multimedia presentations and the internet-based research papers at the knowledge and the comprehension level. These teachers knew the fundamentals of various software packages and were proficient to hand-pick an appropriate software package for an explicit task. The students in their classes used word processing packages along with other fundamental software packages occasionally for completing the assignments. These teachers occasionally used ICT resources and applications and applied them in their particular subject areas. The teachers used ICT for acquiring explicit subject skills and knowledge and had begun to transform their teaching methodologies in the classroom, and were exploring the ways to use ICT for

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supporting their training as well as professional development needs. Typical activities in this phase included:

- Integrated learning systems
- Drill and practice
- Instructional games
- Using word processing package for writing themes
- Using content related software
- Limited use of the Internet for accessing ideas related to the curriculum
- Teachers' use of grade book software for calculating student grades

The third level was that of "Infusion" which comprised of 30.5 percent of the teachers. At this level the focus of the instruction emphasized students' higher order thinking skills and teacher-directed problems. The instructional prominence was positioned on advanced levels of cognitive processing together with exhaustive treatment of the content by employing a variety of thinking-skill approaches (e.g., problem-solving, decision-making). ICT resources were used by the teachers for execution of teacher-directed tasks which emphasized advanced levels of students' cognitive processes related to the content. This implies that ICT-based tools comprising spread-sheets, graphing and database packages, desktop publishing as well as multimedia applications and use of internet complemented particular instructional events or multimedia and web-based projects at the synthesis, the analysis and the evaluation levels. The accent was placed on advanced levels of cognitive processing along with exhaustive treatment of the content by employing a variation of thinking-skill approaches (e.g., problem-solving, decision-making, experimentation, reflective thinking as well as scientific inquiry). These teachers were proficient in using greater than one software package for creating a single product. These teachers amalgamated i.e. infused ICT into every aspect of their teaching, for preparation and management of teaching, for enlightening not only their own learning but particularly the learning of their students. At this stage, ICT enabled teachers become active and creative, they become competent to stimulate as well as manage the learning of their learners, as they become proficient in infusing a variety of ideal learning styles and usages of ICT for the achievement of the educational goals.

The teachers integrated diverse knowledge and skills from various subjects into their curriculum. At this level, the teachers completely integrated ICT in every aspect of teachers' professional lives for improving their own learning. The teachers worked in partnership with other teachers for resolving common problems and for sharing their experiences related to teaching with others.

Typical teacher usage in this phase included:

- * Robust knowledge of using the multimedia software for the purposes of instruction.
- * Using on-line resources regularly.
- * Regularly using word processing software and other application software.
- * Regularly using management software for instance personal organizers and lesson planners.

At the fourth level; the 'integration' level there were 45 percent of the teachers. This level was further divided into two levels:

i) Level 4a: “Integration (Mechanical)”. At this level there were 32% teachers where most emphasis was positioned on pre-packaged resources and materials and support was sought from other colleagues/ ICT coordinators and involvementssuch as in professional development workshops which aided the teachers in daily management of their operational curriculum. Emphasis was placed on the problem-based and the constructivistmodels of teaching which required advanced levels of learner cognitive processes together with exhaustiveinvestigation of the content. The usage of ICT resources by the teachers’ was inherent and was driven by the drive for answering student-engendered questions which dictated the process, the content and the products entrenched in the pedagogical process. This implies that technology-based tools were amalgamatedby mechanical meanswhich provided vivid context for learners' comprehension of the relevant concepts, processes and themes. Technology was alleged as a tool for identifying and solving authentic problems as supposed by the learners connecting to an overall theme or concept.

ii) 4b: Integration (Routine) - At this level were 13 percent of the teachers who engaged their learners in discovering real-world problems along with resolvingreliable problems using the available ICT resources. The teachers’ werecontained by in their comfort zone for endorsing an inquiry-based teaching model which involved learners application of their learning to the real world problems. Importance was given to the learner-centered approaches, the constructivist methods and the problem-based models of teaching which promoted individual goal fixing as well asissues resolution, self-monitoring and learner action. The technology-based tools were incorporated in a customary manner that provided vivid context for learners' comprehension of the appropriateprocesses, concepts and themes. At this level, the teachers’became proficient in designing and implementing the learning experiences for instance creating the units of instruction which empowered learners in identifying and solving authentic problems concerning an overall concept or thememaking use of the available technology.

Teachers at this level used software for solving explicit problems in innovative and noble manner. Their learners not only used computers but also were proficient in using other related technological equipment in curriculum based-projects by analyzing the resources along with knowledge creation. Since ICT was gradually infused into all the dimensions of teaching-learning, across all the school subjects and into every aspect of classroom as well as school management, thereby the traditional teacher-centered approach towards the classroom activities was progressivelysubstitutedwith the more learner-centered ones. The teachers became guides, assisting their learners to construct knowledge themselves. Their learners worked on real-life problemscollaboratively in groups and also simultaneously communicated with other learning groups. They also accessed resources on the Internet forinvestigate on the assignments. Learner valuations were also being redesigned with the intention to reflect the new ways of learning.

The fifth level was that of ‘Expansion’ which comprised 14.5% of the teachers. In this level the teachers extended the learnerassociationsoutside the classroom for authenticated issues resolution problem-solving and. The importance is given to learner-centered approaches that self-monitoring and promoted personal goal setting, learner accomplishments and associations with other groups such as with other schools, governmental agencies and diverse cultures. The sophistication and the complexity of the ICT resources used were proportionate with (1) the spontaneity and

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resourcefulness of the teacher's experiential-based style for teaching-learning and (2) the learners' level of multifaceted thinking along with exhaustive understanding of the content experienced in the classroom. This implies that technology admittance was extended beyond the boundaries of the classroom. The teachers' enthusiastically elicited networking and sharing of technology applications with other schools, research institutions and universities and governmental agencies for expanding learner experiences aimed at issues resolution, learner activism and problem-solving surrounding a major concept or theme. The teachers at this level of ICT integration were proficient in sharing their knowledge of computers and associated technologies through peer coaching, mentoring and modeling. These teachers encouraged the students & co-workers to experiment with software & technologies.

At the furthest culmination of the spectrum of ICT-integration levels was the 'Refinement' phase. None of the teachers reached this level of technology integration.

CURRENT INSTRUCTIONAL PRACTICES

The CIP scale measured the level of instructional practices of the teachers and revealed whether the instructional practices of the teachers tended to be based more on the subject-matter or the learner-centred approaches, on the basis of seven different levels which ranged from Level 1 that was completely based on a subject-based approach to Level 7 which solely operated on a student-centred approach. The Level 0 indicated that the teacher was not engaged in a formal classroom setup. A perusal of table 2 shows that the mean CIP score is 21.085 which falls under CIP Level 5.

Table 2: Current Instructional Practices

CIP LEVEL	MEAN	S.D.
	21.085	6.269
	NUMBER (N)	PERCENTAGE (P)
0	0	0
1	8	4
2	22	11
3	31	15.5
4	62	31
5	42	21
6	19	9.5
7	17	8.5

There was no teacher at Level 0 i.e. the learning atmosphere was not annulled of either the formal or the informal instruction and the teachers were engaged in a formal classroom setup. At level 1 there were 4% teachers. At this level the teaching-learning experience was aligned with a highly organized subject-centered approach to teaching-learning categorized by unvarying and consecutive activities for all the learners. The teachers exclusively supported a subject-centered approach for learning and for giving the instructions. The pedagogical strategies tended to be disposed toward giving lectures

and teacher-led presentations. The usage of curriculum resources was associated to explicit content standards and served as the focal point of the students' learning. The learning activities tended to be successive and unvarying for all the learners. The assessment techniques focused on traditional procedures such as quizzes, short-answers questions, essays and true-false questions. The projects assigned to the learners tended to be teacher-directed in terms of finding project outcomes along with the necessities for completion of the project.

At level 2 were 11% teachers. At this level the teaching-learning experiences aligned with a abstemiously structured subject based approach to teaching-learning categorized by undeviating and progressive activities for all the learners. The teachers exclusively supported a subject-based approach to instruction however not with the same intensity as in Level 1. The teachers supported pedagogical practices consistent with a subject-based approach to teaching-learning, however not at the same level of commitment or intensity. Pedagogical strategies tended to be disposed toward delivering lectures and teacher-led presentations. Usage of curricular resources aligned to specific content standards served as the focal point for learning of the students. Learning activities tended to be uniform and sequential for all the learners. The assessment techniques focused on traditional procedures such as quizzes, short-answers questions, essays and true-false questions. The projects assigned to the learners tended to be teacher-directed in terms of finding project outcomes along with the necessities for completion of the project.

At level 3 were 15.5% teachers. At this level the learning experiences aligned with a adaptable subject-based approach to teaching and learning categorized by unvarying and chronological activities however having restricted inputs from the learners. The teachers primarily supported a subject-based approach with teacher-led presentations and unvarying and progressive lessons, but they sometimes also supported more learner-directed projects. The teachers supported pedagogical practices allied with a subject-based approach to teaching-learning i.e. an approach that was categorized by progressive and unvarying learning activities for all learners, teacher-led presentations and the usage of traditional assessment procedures. Nevertheless, the teachers sometimes supported the usage of learner-directed projects which provided prospects for learners to regulate the appearance and the impression of the finished product based on explicit content standards.

At level 4 were 31% teachers. At his level the learning involvement integrated both a learner and subject-based approach to teaching and learning categorized by learning activities amended to the learners' level of readiness. Based on the content, the teachers either used a subject-matter based or learner-based approach to pedagogy. The teachers felt contented sustaining and employing either a learning-based or a subject-matter approach to pedagogy based on the content being considered. In the subject-based approach the learning activities have a tendency to be progressive, learner projects tended to be undeviating for all learners, the usage of lectures and teacher-led presentations were the standard along with the conventional assessment approaches. In the learner-centered approach, the teaching-learning activities were differentiated and grounded typically on the questions of the learners, the teachers' served additionally as a facilitator or a co-learner in the classroom, the learner projects were principally learner-centered, and the usage of alternate evaluation approaches together with performance-based assessments, peer reviews, and learners' reflections were the standard.

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At level 5 were 21% of teachers. At this level the teaching-learning experience aligned with a firmly coupled learner-centered style to teaching and learning categorized by differentiated and dependable activities determined by the questions of the learners. The teachers pedagogical practices tended to incline more towards the learner-centered approach. The indispensable content entrenched in the standards emerged based on learners' requirements to know as the learners' attempted to research and resolve the issues of importance to the learners using problem-solving and critical-thinking skills. The kinds of teaching strategies and learning activities used in the learning environment were diversified and determined by the questions of the learners. Both learners and teachers were involved in formulating suitable evaluation tools such as performance-based assessments, peer reviews, journals, self-reflections through which the performance of the learners would be evaluated. Nevertheless, the usage of teacher-led activities such as presentations, teacher-directed projects, lectures got surfaced based on the nature of the content being addressed as well as at the anticipated level of learners' cognition.

At level 6 were 9.5% teachers. At this level learning experience was aligned with a discreetly coupled learner-centered approach to teaching and learning characterized by differentiated and dependable activities determined by the questions of the learners'. The teachers supported a learner-centered approach to instruction, however that was not at the equivalent level of commitment or intensity as in level 7. The indispensable content entrenched in the standards emerged based on learners' necessity to know as they make an effort to research as well as resolve the issues of importance to them by means of skills of problem-solving and critical thinking. The kinds of teaching strategies and learning activities expended in the learning milieu were differentiated and determined by learners' questions. Learners, facilitators, teachers and occasionally the parents all were involved in formulating suitable evaluation tools such as journals, performance-based assessments, peer reviews, self-reflections by which the performance of the learners' would be measured.

At level 7 were 8.5% of teachers. At this level learning experience aligned with a exceedingly adaptable learner-centered approach to teaching and learning categorized by differentiated and dependable activities determined by learners' questions. The teachers exclusively supported a learner-centered approach to instruction. The indispensable content entrenched in the standards emerged based on learners' necessity to know as they make an effort to research as well as resolve the issues of importance to them by means of skills of problem-solving and critical thinking. The kinds of teaching strategies and learning activities expended in the learning milieu were differentiated and determined by learners' questions. Learners, facilitators, teachers and occasionally the parents all were involved in formulating suitable valuation tools such as journals, performance-based assessments, peer reviews, self-reflections by which the performance of the learners' would be measured.

PERSONAL COMPUTER USE

The PCU scale is a measurement of the teacher's comfort and proficiency with ICT resources and tools for use in the classroom. The PCU scale ranges from Level 0 which indicated that the teachers'

do not possess the essential skills for using technology for personal use or for use in the classroom; to Level 7 that indicated that the teachers' are very confident in using technology in the classrooms.

Table 3: Personal Computer Use

PCU LEVEL	MEAN	S.D.
	NUMBER (N)	PERCENTAGE (P)
0	0	0
1	18	9
2	12	6
3	90	45
4	33	16.5
5	24	12
6	13	6.5
7	10	5

A perusal of table 3 shows that none of the teachers were at level 0; thus, all the teachers had interests and skill level for using digital tools. They felt comfortable and had the appropriate skill level for using computers for individual use and did not rely merely on the usage of overhead projectors, chalkboards, and traditional paper-pencil activities. They used computers for disseminating information and for tasks related to classroom management.

At level 1 were 9% teachers who had little skill level with using digital tools or resources for students' learning. They had an overall awareness of several technology-related tools such as spreadsheets, word processors or the internet, however the teachers' were not generally using them.

At level 2 were 6% teachers who had little to moderate skill level related to using of the digital tools or resources for students' learning. They occasionally browsed the internet, used e-mail, or used the word processing software; however, they did not have the self-confidence or felt relaxed in troubleshooting easy technology-related glitches or problems as they arose. At school, teachers' use of computers was restricted to a preparation of grade book or the attendance program.

At level 3 were 45% teachers who had started to be a routine user of ICT tools and had a reasonable understanding of their influence on student learning. They had moderate proficiency in the skill level for using computers for tasks related to personal use. These teachers had begun to become consistent users of designated applications such as internet browsers, word processor programs, e-mail. The teachers also felt comfortable in troubleshooting uncomplicated technology-related problems but mostly relied on the technology support staff or other colleagues for assisting the teachers with any troubleshooting issues.

At level 4 were 16.5% teachers who commonly used ICT tools and resources for supporting student learning. They demonstrated moderate to high proficiency in the skill level required for using computers for personal use and commonly used a comprehensive range of software applications including multimedia for examples spreadsheets, Microsoft PowerPoint and simple database

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applications. The teachers typically had the confidence and were able to troubleshoot simple problems related to the hardware, software and peripheral problems without any support from the technology support staff.

At level 5 were 12% teachers who were able to use an extensive range of prevailing and evolving technologies for sustenance of students' learning and promoted the optimistic influence on learners' success. These teachers confirmed highly proficient skill level for using computers for personal use and these teachers were frequently able to use the computers for producing sophisticated multimedia products, generating their own web pages, and readily used common productivity applications, web-based tools and desktop publishing software. The teachers' were also proficient and had the confidence for troubleshooting most of the problems related to hardware, software and peripheral problems without any assistance from the technology support staff.

At level 6 were 6.5% teachers who had very high proficiency in the skill level required for using digital tools and resources for supporting the learning of the students. They had commenced to take on leadership roles advocating the use of technology, and reflected on the latest research. These teachers demonstrated high to extremely levels of proficiency in the skill level for using computers for personal use and were experienced in using most of the multimedia, desktop publishing, web-based and productivity applications. The teachers' characteristically served as trouble-shooters for other colleagues in necessity of assistance and occasionally sought certification for accomplishing carefully chosen technology-based skills.

At level 7 were 5% teachers who were exceptionally sophisticated in the usage of digital tools and resources related to the learning of the students'. These teachers were also a part of establishing the vision for infusion of technology, and were incessantly in quest of creative usage of the digital tools and resources. These teachers demonstrated extremely high level of skill proficiency level in relation to the use of computers for personal use. These teachers were proficient computer users, trouble-shooters, and technology mentors. The teachers' were typically involved in training other colleagues and staff on any tasks related to the use of technology and were frequently involved in designated support groups that allowed them admittance to solutions for all technology-based questions they may have had.

Conclusion

It was found that the teachers were using technology in their pedagogical practices at the level of 'Infusion' of ICT integration according the LoTi scale. The teachers were yet to achieve the highest level of ICT integration which was the 'Refinement' according the LoTi scale where the learners collaborate with teachers within and beyond the classroom boundaries.

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