Evaluating the Use of Educational Technologies by Secondary School Teachers for Effective Service Delivery in Pakistan

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Abstract   *The existing study attempts to evaluate the use of educational technology by secondary school teachers for effective service delivery in Pakistan. The major purpose of this endeavor was (a) to trace out the secondary school teachers' competencies regarding educational technologies; (b) to observe and record proficient use of teachers' educational technology for effective service delivery in Pakistan. The study was based on descriptive research design and observational checklist was used to analyze the secondary school teacher skills in term of effective use of educational technologies. A sample of 453 respondents (Secondary School Teachers) was selected by using multiple stage sampling technique. On the base of analysis of the study, most of the teachers were found weak in using educational technologies while teaching. As audio visual aids adds new attraction and interest in the process of teaching and learning and students can get knowledge in pleasant environment.*

Key Words: Educational Technologies, Effective Service Delivery

Introduction

The teaching profession deliberates as a constructing block of recreation for the any professions. The nature of tutoring practices provides the ultimate outcome of students and sets them as talented citizens (Beard & Wilson, 2006). Teachers are assumed as central part in promising excellence and capability in learning society (Wlodkowski & Ginsberg, 2017). The generosity of a state is relied on how effectively intellects are arranged the altered responsibilities in the society. It is vital to set a more significant attention on professional deviations through continuous preparing of mentors to meet the demands of teaching profession (Castiglia, 2008). The idea of professional teaching is changed all over the world to develop the aptitudes of teachers (Furlong & Maynard, 2012).

According to Danielson (2013) progress of teachers concentrated slightly on revolution of instructional methods. In 21st century, the teachers are progressed in developing the students' sensible enthusiasm by demonstrating how this learning can be linked in this present world (Palmer 2002; Renzulli 2012; Council 2013). They are wanted to shape their students' concern so that it helps them in long lasting learning.

In present age, unlike what could not happen before, the technological interventions in course of instructions keeps utmost importance in way to have the data utilized and to upgrade the level of correspondence. Individuals look at sideways to keep the instructions more innovative at times but surely this cannot be done without the meager amount of help extended by multiple tools and applications like the Web technology and educators themselves. The question stands there that are the teachers as well as the schools in a position to introduce the plausible benefits of technological innovation in training and workshops and that whether the underlying advantages are known to them? This paper aims to take one through the practical significance of instructive innovation in the classroom premises besides its corresponding benefits of utilization shall be explored.

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Though not in full, educational technology is still being introduced in the classroom structure. The new entrants are making their way to take full advantage of these said technological tools which thus transmute into their academic learning along with creating a sense of understanding that this psychological information would turn out to be quite helpful to be embedded in future programs of education. Making use of such innovative technology really helps out in augmenting the subjective qualities and abilities of an individual. Said technology invites immense learning and to gather fresh information that is particularly available on cell phones.

Current Research

The existing study attempts to evaluate the use of secondary school teachers' educational technology skills for effective service delivery. The major purpose of this endeavor was (a) to trace out the secondary school teachers' competencies regarding educational technologies; (b) to observe and gauge proficient use of teachers' educational technologies for effective service delivery in Pakistan. To achieve the research objectives, researchers attempted to answer the following research questions.

1. What are the secondary school teachers' competencies regarding educational technologies?
2. What is the appropriate frequency and use of secondary school teacher's educational technology for effective service delivery?
3. What are appropriate strategies to improve the teacher competencies in term of educational technology?

Review of Related Literature

Krippendorff (2018) transcribes and defines the word 'communication' more as a process that initiates an exchange of ideas between two persons that is to say communicator and the receiver itself so that they attain certain level of understanding in pursuance of their considerable benefits. He further adds that colloquial communication is termed as a two-way process which solely depends on dual skills i.e. receptive skill and transmit one. The aim of communication is multifold for instance, to entertain, propagate and/or to educate which all works well for teachers to start up one way or two-way communication. In one way communication, the teacher keeps its lecture continued like what happens in Radio or TV based programs where the listeners seldom respond back to the communicator while looking at the other side, the two way communication is entirely different thereupon the teacher teaches students through instructions and the students simultaneously discharge signals that the instruction are being received in acute manner. There exists number of ways in which a teacher is said to communicate. First, dialogue delivery that is verbal by nature, it may take form of written or oral dialogues. Secondly, that is known more as a non-verb one entirely based upon unsaid messages which might get accompanied by the feels that is extended by both communicator and/or sender. Thirdly, the paralanguage, which is influenced by non-verbal communication, intends to put out something which in real terms are not stated. This entails elements like sound of the person, his feelings, quality of voice, very style of talking, tone of voice and lastly certain endorsements besides intrigue or no intrigue at all. It surely takes in fold multifarious kinds of non-verbal indication that are not supposed to reveal his identity. These encompass:

Aesthetic Communication

It is also termed as imaginative expressions of someone for instance, painting, moving, etc.

Appearance

It is the way through which the style of a person gets uncovered and thus imparts his identity.

Space Language

It consists of all concerned ways by which scenes and pieces of arts highlight taste or social status.

Symbols

These are based on status, religion and/or the self-building shots.

Visual Communication

As the name suggests, those visual signs that guide one through drawing an outline, graphic design, typography, electronic resources and shading.

Educational Technologies

Operative technologies and capable procedure of educational technologies are an essential part of the modern teaching in the world. Culture and civilization are familiarized to meet the challensges of the knowledge. The universality of ET conveyed rapid technological, social, political, and economic transformation that eventuated in a web society prepared around the educational technologies (Hefzallah, 2004). The education field had been affected by the sensitive impression of educational technology. No doubt, educational technology puts a compacted effect on the quality and quantity of teaching, learning, and research in customary and distance education institutes. ET recovers teaching and learning through its dynamic, intuitive, and engaging content, and it gives genuine balance guidelines for individual (Shayne 2008).

PowerPoint (Visual Material)

In present way of teaching, slides of PowerPoint provides the teacher with general guidelines. It is found to be an extremely used technique that is far under the control of a teacher. This approach of technology consists all those maneuvers which entice others with the help of strong introductions, pictures, sounds, etc. In one of the studies, Shayne (2008) puts forth the findings which suggest that students feel considerably well to learn if taught material is provided with application of visual devices whatsoever. On the other side of the picture, teachers have the firm belief that PowerPoint keeps excellent techniques through which they are able to engage the students for sake for learning. However, others hold the view that it is not as that important for teachers to teach. The reason behind this very fact is that there tend to exist a gap between auditor and a presenter as the latter largely keeps its attention towards slides not on the present audience. Again, Hagedon (2012) gave his viewpoint that PowerPoint is a tough task to keep momentum between the auditors and the presenter at times of exchanging thoughts that are backed up by flawless diagram design. Students are more oriented towards PowerPoint so as to better learn with more clarity, intelligence and enthusiasm. Mayer (2002) holds that the learner could take a panoramic view of visuals presented by PowerPoint.

Using Flash cards/Pictures in Teaching Language

The pictures are generally used as it makes convenient the whole process in EFL classrooms. Having made full use of picture truly enhances the environment and makes it interactive and much fascinating experience. It largely gives absolute assistance to the teachers to put out the core idea of the subject matter before the class. Furthermore, it enables students to utilize their mind during class proceedings to the fullest. On few occasions, it happens that the pictures are used to make the learners more effective in learning those things which might not be understood without its aid and all this proves to be contextualized and genuine for the learners. Right after having been taught, the learners could better figure out the difference and thus they are geared up to reproduce the course content in their own way. Not to mention again that it originally increases the cognizance capability of an individual. In due course of learning, the applications of media become quite handful for students to get aware of different course content and keep its idea for a longer period of time (Hamouda, 2013). It seems that the underlying benefits of this channel of technology are not few in number. Apart, the said pictures are available for everyone on merely a few clicks over WEB, like for example, Google has got reasonable number of pictures. Everyone has got the chance to come by any photo that propagates his set of learned instructions. A single picture could speak louder than a so-called verbal lecture delivered.

Teaching Vocabulary with Visual Aid

Undoubtedly, vocabulary works as the basic element in learning a language. One must be conversant with number words of a language while talking to someone in that language. It becomes quite difficult to exhibit vocabulary in classroom teaching. The aim of teaching vocabulary should embody the very goal that the learners

should not reckon those words again and again rather they make use of those interchangeably. The visual sounds more efficient to make instruction clear in this regard. It becomes much advantageous for students to learn numerous words and develop apex level of understandability of those words along with their implication in different scenarios. It assists them to revisit those words times and again. The words which a learner comes across without visual application are seldom remained intact in the minds of the students. Again, if the said words of vocabulary are backed up with photos, this would certainly add on their capacity. It gives a clear chance to the teacher to make their audience aware as what they are being taught at the moment. It gives the same opportunity to students to widen up the horizon of their perception. McCarthy and McCarthy (2006) put forward that visuals are not only found effective rather these fuel up the start of an introduction with excitement. They give a diverse opportunity to students to sense an entity in different position as due to the fact that even a single picture is better than thousands words.

Audio-Visual Aid to Facilitate Skills of Language

During every class, different sets of media help to acquire language skills as compared to what is learnt though merely by listening or talking. A teacher, in one of her lectures, made use of English tune to streamline the process of learning listening skills. Initially the teacher firstly looked up different ways in which listening techniques could be imparted and thus she came up with the idea to play one particular melody and further requested the class to focus on tune without taking down any notes. For that very point, she kept teaching students to get aware with the tune while taking different notes. Afterwards, she also questioned students to make it visible to others present there in form of what they understood through tunes. It can be said that there were dual approaches being used i.e. listening and talking skills at the same time. The class proved quite vital as the students enjoyed each moment of the class and it also aided teacher to get students engaged in various tasks.

Advantages of Making Use of A.V. Aids

- These create enthusiasm in students to learn.
- These are found efficient as they streamline the playing field for everyone in a more decisive way and effortless manner.
- The teachers are not supposed to carry much burden which they do before.
- Teachers can surely augment their level of English competency.
- These offer a variety of options to student to experience multiple scenarios.
- English is a perplexed language though it becomes quite easy through A.V. aids.

So as far the academic education is concerned, it is seen that a lot of enthusiasm found in place especially in case of giving instructions but with the help of online correspondence and Web based services. These applications are not meant to work for a single time rather it provides everyone with a chance to pick and choose from the rest. Such set of information can easily be projected and incorporated in many tasks e.g. representation of facts, content, etc. At times, when teacher and students are working as a group they are facilitated through the use of CMC framework which entails the utilization of emails, talk box and/or newsgroups.

Research Methodology

The nature of this study was descriptive while an observation sheet was used to assess teachers' use of educational technologies. Secondary school teachers from the Punjab province were selected as population of the study. Currently, 67346 male and 65914 female secondary school teachers are working in high schools of Punjab. (https://schoolportal.punjab.gov.pk/sed_census/). The sample of 453 secondary school teachers was selected through random sampling by using multi-stage sampling technique. Punjab province was divided into three major parts (Northern cluster, Central Cluster and Southern Cluster). Further, two districts from each cluster were selected by considering one with higher and other having lower literacy rate in cluster. The sample size was rationalized as (Cohen, Manion et al. 2002) recommended taking a sample considering the size of population i.e.

if the population of a research study is 100,000 and above, then size of sample 384 participants would be considered as suitable. However, the sample 453 secondary school teachers were taken as a sample of the study, which is above the sample size recommended (Cohen, Manion et al. 2002).

An observation checklist was developed to evaluate the use of educational technologies of secondary school teachers. The evaluation of teachers' educational technology skills was observed in natural setting. Parameters and competencies of observational sheets were taken from National Professional Standards for Teachers in Pakistan prepared by ministry of education with the collaboration of USAID and UNESCO. All the parameters were further divided into (a) knowledge and understanding, (b) dispositions and (c) performance and skills. The obtained data from the observations of classroom teaching were used to cross check and verify the evidences i.e. corner meetings with head, focus group discussion with the colleagues, opinion of students, PTA, teachers dairies, individual conferences with teachers, peer reviews, work sheets, journal entries, students works sample, homework, research evidence, lesson plan and portfolios. This observational check list was reviewed by different experts from education and from statistical department of the Islamia University of Bahawalpur and Bahauddin Zakariya University Multan. On the basis of their comments, few items were deleted and few were added. Finally, sample of 20 classroom observations were fed and analyzed by using Cronbach Alpha value of the observation sheet which was calculated .790 by overall that is reliable a 0.70 and above values are reliable (Feldmann, List et al. 2007).

Data Analysis and Results

The major purpose of this study was to analyze secondary school teachers' effective use of educational technology. After the validation of observation sheet, classroom observations were carried out in natural setting to gather information. Following scale was used which determined the levels of evaluation.

Not Demonstrated (L-0)	Emerging (L-1)	Developing (L-2)	Proficient (L-3)	Accomplished (L-4)
Never Use	Almost Never Used	Sometime Use	Almost Every Time Use	Frequently Use

The collected data was first fed in SPSS version-22 and was analyzed by using different statistical treatments e.g. mean score, chi-square, t-test and simple percentage. In detail data analysis is presented as follows. Following are the teachers' communicative competencies and effective use of educational technologies at secondary level in Pakistan.

Effective use of Educational Technologies

Competency-1: Teacher understands the need and importance of Audio-Visual Aids.

Competency-2: Teacher knows the effectiveness of program learning.

Competency-3: Teacher applies system approach to instructional design.

Competency-4: Teacher is committed to use interaction analysis in teaching.

Competency-5: Teacher understands the importance of radio in education.

Competency -6: Teacher knows the significance of Television in Education.

Competency -7: Teacher knows how to use Computer Assisted Instruction (CAI).

Competency -8: Teacher knows the importance and need of hardware and software.

Competency -9: Teacher knows how to design lesson plan effectively.

Competency -10: Teacher knows the role of ICT in changing scenario of education.

Table 1. Effective Use of Educational Technologies of Secondary School Teachers

Competency	L-0 %	L-1 %	L-2 %	L-3 %	L-4 %	Total %	x^2	P-Value
Competency-1	3.5	19.4	36.7	32.1	8.3	100	144.43	0.003
Competency -2	2.6	23.5	39.8	16.8	17.3	100	125.21	0.004
Competency 3	3.9	27.6	35.5	28.9	4.1	100	156.20	0.023
Competency -4	5.7	25.5	32.7	30.3	5.8	100	1.87.62	0.043
Competency -5	5.5	22.1	34.6	34.5	3.3	100	282.19	0.000
Competency -6	4.2	26.4	20.4	41.4	7.6	100	221.14	0.000
Competency -7	3.5	28.4	33.4	30.4	4.3	100	201.25	0.000
Competency -8	53.3	12.4	6.8	26.1	1.4	100	231.89	0.002
Competency -9	7.6	22.4	34.2	22.1	13.7	100	34.35	0.012
Competency -10	6.7	21.5	32.5	28.5	10.8	100	434.57	0.005
Overall:	9.7	22.9	30.7	29.1	7.7	100	256.76	0.011

Use of effective educational technology in classroom is considered as the most important aspect of classroom teaching for 21st century. Data in table reveals that most of the 36.7% teachers understand the need and importance of audio-visual aids in teaching and they somehow used to teach through audio visual aids while its *p*-value is 0.003 (<0.05). 39.8% of the teachers know the effectiveness of program learning while its *p*-value is 0.004 (<0.05). Classroom observation further indicated that the 35.5% teachers know how to apply system approach to instruction design while its *p*-value is 0.023 (<0.05). 32.7% teachers were found committed to use interaction analysis in teaching, which they were practicing during classroom teaching while its *p*-value is 0.043 (<0.05). Data further reveals that 34.6% teachers understands the importance ratio in education while its *p*-value is 0.000 (<0.05). It was also observed that 41.4% teachers slightly know the significance of television in education while its *p*-value is 0.000 (<0.05). Data in table reveals that 33.4% teachers know how to use computer assisted instruction while its *p*-value is 0.000 (= 0.05). More than half i.e. 53.3% of the teachers did not know about the hard ware and software of the computers while its *p*-value is 0.004 (<0.05). The data further portray that 34.2% of the teachers somehow know how to design lesson plan effectively while its *p*-value is 0.002 (<0.05). 34.2% secondary school teachers know the role of ICT in changing scenario of education while its *p*-value is 0.005 which is <0.05. The overall results of the study reveal that most of the respondents (30.7%) were found at level-2, 29.1% of the respondents have attained level-3, 22.9% were found at level-1, 7.7% were found at level-4 while only 9.7% of the secondary school teachers were found at level-0 while its *p*-value is 0.011 which is again<0.05. This comparative analysis showed that the competencies of teachers in-terms of use of educational technology need to be improved.

Table 2. Mean Scores of Educational Technology of SST

S No.	Teaching Competency	Mean Score
Competency -1	Teacher understands the need and importance of Audio Visual Aids.	2.12
Competency -2	Teacher knows the effectiveness of program learning.	2.34
Competency -3	Teacher applies system approach to instructional design.	2.54
Competency -4	Teacher is committed to use interaction analysis in teaching.	2.19
Competency -5	Teacher understands the importance of radio in education.	2.78
Competency -6	Teacher knows the significance of Television in Education.	2.98
Competency -7	Teacher knows how to use Application of Computer Assisted (CAI)	2.35
Competency -8	Teacher knows the importance and need of hardware and software.	2.67
Competency -9	Teacher knows how to design lesson plan effectively.	2.21
Competency -10	Teacher knows the role of ICT in changing scenario of education.	2.87
	Overall Mean Score (of the standard):	2.50

Table 11 describes the overall performance based on mean score of all skills of teachers in term of educational technology. The overall 2.50 mean score has been achieved by the secondary school teachers during observation which according to the criteria of Pakistan Accreditation Council Teacher Education, it falls between 2.50 < 3.00 that mean majority of the teachers were under the category of Not demonstrated teacher which is considered as 0-level. On the basis of above results, it can be concluded that majority of the teachers during classroom observation and with other sources of verification were found under the category of not demonstrating in using educational technologies and were found poor.

Conclusions of the study

Teacher educational technology competency is considered the most important aspect in teaching. On the basis of results of the study, it is concluded that almost one third of the secondary school teachers know the importance of ET in teaching. This comparative analysis showed that the competencies of teachers, in-terms of educational technology of teachers, is not according to the required competency level. Data describes that most of the teachers were found weak in using educational technologies while teaching. As audio visual aids adds new attraction and interest in the process of teaching and learning and students can get knowledge in pleasant environment. Data displays that almost one third of the secondary school teachers know and use audio visual aids during teaching. On the base of analysis of the study, one third of the teachers were observed as committed to use intentional analysis in teaching. Hence, the similar number of teachers know the importance of radio and television during teaching learning process. This research provides the evidences that majority of the secondary school teachers did not know how to design lesson plan effectively.

Recommendations

Keeping in view the results and conclusions of the study, it is recommended that secondary school teachers must be equipped with latest technologies so that teaching learning process may be strengthen. Trainings and workshops may be organized for teachers' pre-active activities, interactive actives and post-active activities.

Limitations

As this study is conducted in specific part of Punjab. Similar study may be conducted in different province of Pakistan so that results may be compared cross culturally. Moreover, this study only focuses teachers' educational technology competency, further studies can be conducted on other part of areas of teaching as well.

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