

Navigating Virtual Technology Integration: Insights into Teachers' Concerns and Experiences

¹Dr. M.Harie Karthikeyan, ²Mr.B. Venugopal, ³Dr.T K. Saravanakumar

¹Assistant Professor

Department of Visual Communication

Faculty of Science and Humanities, SRM Institute of Science and Technology Kattankulathur, Chennai

²(PhD, Research Scholar),

Department of Media Sciences,

Anna University, Chennai - 600 025

³Assistant Professor

Department of Visual Communication

Faculty of Science and Humanities, SRM Institute of Science and Technology Kattankulathur, Chennai

How to cite this article: M.Harie Karthikeyan, B. Venugopal, T K. Saravanakumar (2024) Navigating Virtual Technology Integration: Insights into Teachers' Concerns and Experiences. *Library Progress International*, 44(3), 7119-7124.

ABSTRACT

Technology in the initial stage of development in Indian education environment as it emerged in recent years only. In the Indian context, Zoom and Webex technologies more imperative, since it was the only combination of video conferencing and it provides course material designed for limited students which enhances the teaching medium. Hence, this study adopts simple random Sampling method an attempt was made to study the impetus of technology. The questionnaire was disseminated to the selected 450 college lectures in Chennai who are with two years of experience. In the circulated 450 questionnaires, only 438 questionnaires were returned with 17 improperly filled, out of the questionnaire returned there were 182 males and 239 females. Pearson Correlation test performed between pedagogical design, ICT tools usage, Perception on Interactive feature, Instructional feature, and Visual feature. Study found that lectures founds that implications of visual literacy: integrate visual literacy across all curriculum subjects; develop critical thinking skills in connection to visual images; be aware of visual literacy principles in the design of teaching and learning objects; ensure there is a balance between visual and textual literacies in the online classroom. Moreover, organisation, management or leadership plays a vital role since knowledge sharing responsibility lies not only with managers but also on teacher role.

Keywords: pedagogical design, ICT, Visual feature, Interactive feature, and knowledge sharing

Introduction

During this covid -19, pandemic various educational supporting tools plays crucial role in the educational stream. New technology, classrooms had a paradigm shift in the instructional methods to reflect the opportunities available in the present context for the enhancement of the educational process. Application of technology in education has emerged to play a vital role in the manner in which students learn and teachers educate them. Around the globe, there has been an extensive consensus emerging about the benefits that can be brought to the education system through the appropriate use of evolving information and communication technologies. India, which has the second largest education system in the world after China, has always been in a constant search for adopting newer technology for the advancement of the education system. Earlier, technology in education was a debatable topic among the various segments of society. Everyone had his or her own views on modernizing education and making it fully armed with the latest technology. There were a huge number of positives and negatives to the influx of technology in education. But

gradually as the technology embraced by the educational institutes, they realized the importance of technology in education. Its positives outnumbered the negatives, and now, with technology, education has taken a whole new meaning it leaves us with no doubt that our educational system has been transformed owing to the ever-advancing technologies. Technology and education are a great combination if used together with the right motives and vision. Interactive whiteboard Technology is one kind of education technology which is the need of the hour. As the traditional educational devices like slide projectors, videotapes, and audiotapes, which have already vanished for the deployment of the computers, the traditional blackboard seems to be next in the line of the victim.

Aten, B. M. (1996) stated that the only purpose of education was to teach a student how to live one's life by developing one's own mind and equipping oneself to deal with reality. Students started to taught to think, understand, integrate and prove. The essentials of the knowledge discovered in the past and had to be equipped to acquire further knowledge by self-effort through the support of technology. The interactive style of teaching through Multimedia Technology replaced the traditional way of teaching, Learning Management System, Content Management System, e-learning, Virtual Learning and Interactive White Board Instructional Design (Agrawal, 2009). In the last three decades, the educational system shifted from a rigid form stereotypical approach to the interactive approach. Berson, M (2006) pointed out that the effective instructional process needed the teachers to provide instruction with the aid of multimedia, i.e. pictures, videos, and animations, not merely through the words. Bhattacharya (2006) also stated that the instruction process involved both hearings and seeing in the classroom which helped the learned to visualize and comprehend. In addition, he found that audio-visual aids in the teaching-learning process helped teachers to be better in teaching and made them more active, effective and efficient.

REVIEW OF LITERATURE

ICT defined as the combination of computer, digital technologies and telecommunication of media by United Nations Scientific, Educational and Cultural Organisation (UNESCO). Curtain (2002) also quoted the OECD definition about ICT "a set of activities, that facilitate by electronic means, the capturing, storage, processing, transmission and the display of information." Technology affected the learning process in different ways, like an increase in the level of student's engagement, motivating and promoting enthusiasm towards subjects taught (Bacon, 2011). Ozdemir & Kilic (2007) stated that the inappropriate consideration has been given to the organisational, cultural and professional changes required to realize the enactment of technology in schools

Kennewell & Morgan (2003) pointed out that teachers were very much excited and see the whiteboards as significant tools for teaching and learning. To engage the students, teachers were ready to practice Interactive Whiteboard. As a result, it made them prepare resources to use interactive features. Also, there were similarities in the aspirations and attitude of the cohorts of teachers. In the future, most of the teachers would recognize the value of using Interactive Whiteboard Technology to the students. Another author stated that well-experienced educators take some more time and practice before they understand the importance of Interactive Whiteboard Technology. In the future, interactive whiteboard technology alone will be used purely as presentation devices to motivating students (Glover & Miller, 2002). Armstrong, et al., (2005) critically pointed that the teachers are the precarious mediators to take the software and incorporate the software into the subject lessons and appropriate use of the Interactive Whiteboard to promote high-quality interactivity. The introduction of Interactive Whiteboards into the classroom was much more than the physical installation of the board and software. Very few research on the use of new technology from the perspective of teaching and learning. Finally, the researcher concluded that teacher had enhanced their own reflections on their changing instructional design of working with Interactive Whiteboard technology, pulls a much required real-life perspective to understanding and discharging the complexities of the classroom. Shahrizal & Harkirat, (2010) studied the integration of Interactive Whiteboard Technology which improves Secondary Science Teaching. This study was focused to find whether or not this Interactive Whiteboard technology would improve students' learning outcomes and minimize gender difference in the learning process by giving teaching and learning is a cultural activity. The finding showed that there was no gender difference in the learning process. Ozdemir & Kilic (2007) found that one of the problems with Information Communication Technology was inadequate knowledge and skills of the teacher in the classroom. (Smeets & Mooij, 2001). Technology alone would not contribute to pupil's learning without teacher's inputs and methods that stimulate students to be active. (Holmes, 2009) Also suggested it's important that teachers should be properly trained to use the interactive whiteboard technology effectively.

Baran (2010) and Lai (2010) studied on teacher's perception of training associated with the importance of Interactive Whiteboard technology and its effectiveness. This study supported collaborating and improving interaction during teaching also simplifying concepts for teaching. This study concluded that the teachers who were familiar with Interactive Whiteboard technology they could assure the quality of learning through integrating technology in classrooms. Yassin, Salim, & Sahari (2013) support of leader referred to the degree of how the school principal and team support teachers to the usage of ICT in knowledge sharing regarding material/physical, moral aspects. Technology acquisition and infrastructure were the critical areas of technology leadership, leaders of the technology need to extend technical service and support to their school (Bailey, 1997). Principals are the technology leaders; they should extend the opportunity to procure technological resources and provide appropriate support (Collis, 1988). Aten (1996) and Ford, (2000) stated that staff should be assisted when they face issues like purchasing software. School administrators played an important role in shaping the school culture and adaption of a new technique in teaching. Before implementing technology in a school, the principal of the school should be aware of the societal, organizational cultural impacts. To know whether there was any correlation between this culture and the implementation of technology as the cultural factor have an influence on the implementation of technology. Yassin, Salim, & Sahari, 2013; Arokiasamy, bin Abdullah, & Ismail, 2014 did a precise study and found that the school principals were not using technology for developmental purpose rather they were using only for an instructional and administrative purpose. They also suggested that cultural perception and leadership were positively related to the extent of computer use by principals. Yassin, Salim, & Sahari (2013) investigated the organizational factors that contributed to successful knowledge sharing using ICT among teachers. Six factors (Organization Culture, School structure, Rewards, and Recognition, Support from leaders, Social influence, Behavioural intention) have been taken in the study to see how they were affecting the implementation of ICT in knowledge sharing and to enhance the profession of teaching. They provided a positive and significant correlation between behavioral intention and organizational factors to implement ICT in knowledge sharing.

Research Methodology

Objectives

- (i) To assess the news technology design feature and lectures pedagogical perception.
- (ii) To identify the organizational factors that influence the lectures perception of technology integration.

Technology in the initial stage of development in Indian education environment as it emerged in recent years only. In the Indian context, Zoom and Webex technologies more imperative, since it was the only combination of video conferencing and it provides course material designed for limited students which enhances the teaching medium. Hence, this study adopts simple random Sampling method an attempt was made to study the impetus of technology, implementation procedures, its impingement on both student and teachers, and also virtues and flaws of this technology after adapting it to the education system. The questionnaire was disseminated to the selected 450 college lectures in Chennai who are with two years of experience. In the circulated 450 questionnaires, only 438 questionnaires were returned with 17 improperly filled, out of the questionnaire returned there were 182 males and 239 females, totally 421 were taken for analysis.

Analysis

Pearson Correlation between pedagogical design, ICT tools usage, Perception on Interactive feature, Instructional feature, and Visual feature. As model explained that the positive relationship between predictor variables of (Level of ICT Tools usage, Perception on Interactive features, Perception on instructional features and Perception on visual features and Teaching faculties instructional design. Scored value of level of usage of ICT Tools between lectures' perception on instructional design ($r = .475, p < .01$); I pedagogical design between Perception on interactive features ($r = .322, p < .01$); pedagogical design between Perception on Instructional features ($r = .523, p < .01$); and pedagogical design between Perception on visual features ($r = .416, p < .01$).

Table 1. Regression Model summary for pedagogical Design and Designing Feature

Model	R	R Square	Adjusted R Square	F	Sig.
1	.682 ^a	.466	.461	90.684	.000 ^b

As model, summary result reveals that r , which indicates how the independent factor and combines will relate with the dependent factor of r value is 0.682. r^2 explain total variance by the regression model and sample, whereas r^2_{adj} explain total variance of dependent variable would account for the model, according to Field (2000) So, R-square values have strong relationship between the dependent variable (teachers' perception on Instructional Design) and independent variable (perception on Instructional features in IWB Mediated Instruction). The adjusted R square of 0.461, reflecting an overall relationship of (46.1%) of the variation has been found in Teachers' perception Pedagogical Design in Mediated Instruction. The model R square of 0.466. The relationship between teachers' perception on pedagogical design (Instruction, Interactive, and Visual) feature were statistically significant at the 0.01 level ($F = 17.64, p = 0.00$). As the above table the result of multiple linear regression to determine the relationship between two variable influencing the lectures pedagogical design at 0.05 level of signification. For this model, there were four predictors among this one were no significant contribution to the model. The significant predictors were Level of usage of ICT Tools, perception on instructional feature and perception on the visual feature. The independent variables values of ICT Tools Competences were ($b = .296, t = 7.210, p = .001$), Perception on instructional feature ($b = 0.383, t = 9.962, p = .003$), Perception on visual feature ($b = 0.336, t = 6.848, p = .02$). However, lectures' perception on interactive feature founds ($b = -0.046, t = -0.898, p = 0.37$) had no significant on lectures pedagogical design. KMO and Barlett's test is the most imperious test as its results only going to prove whether the present data is useful for factor analysis or not. First KMO test value .667 which is higher than .05 shows this present data can do with factor analysis. The initial Eigen values give the variance explained by each statement. Using the Varimax rotation algorithm, the component matrix is orthogonally rotated, and the statements were loaded into four factors. The total variance accounted for, by all the statement loaded factors with Eigen value greater than 1 is 57.434 percent, and the remaining variance is explained by other variables. Amidst the four factors formed, the first factor with 16 percent of variances is the most important organizational factor. The four factor components were then named after their loaded statements correspondingly as School culture, Professional Interaction, Reward, School Resource Structure.

Model	R	R Square	Adjusted R Square	F	Sig.
1	.491 ^a	.242	.234	33.121	.000 ^b

As a model, the summary result reveals that r , which indicates how the independent factor and combination will relate with the dependent factor of r value is 0.491. R^2 explain total variance by the regression model and sample; R square values have a relationship between the dependent variable (social-organization factors) and independent variable (perception of Instructional design in IWB Mediated Instruction). The adjusted R square of 0.234, reflecting an overall relationship of (23%) of the variation has been found on Teachers Perception Instructional Design in IWB Mediated Instruction. The model R square of 0.242. The relationship between the perception of Instructional design in IWB Mediated Instruction and teachers' perception of social organization factors were statistically significant at the 0.01 level ($F = 33.12, p = 0.00$). The null hypothesis is rejected, and the alternate hypothesis is accepted.

As the above table shows the result of multiple regression indicate that four out two factors have significant with lecture's Instructional design approach at $P < 0.05$ level of signification strongly. The independent variables values of standardized Professional Interaction ($b = .473, t = 11.02, p < .01$), School Resource Structure ($b = .43, t = 15.772, p < .05$), However, School culture have not significant predictors. Moreover, School culture and Reward factor also found to be negative predictors on lecture's perception Instructional design. So the faculties adoption digital technology from socio-organizational influential factor were professional interaction between their teaching other teaching member for their institution and school resource structure and available of ICT tools and usage of the time were a high influence to adopt the technology. but reward (organizational motivation and appraisal). Teacher Intention to use ICT tools and facilitating conditions has a direct relationship with usage behavior.

Conclusion

Technology influenced the happenings in each and every sector. In the educational field, developed countries are adopting smart classes and digital teaching aid for learning the process. It enhanced the students' ability to get exposure at the global level. It was surprising to know all college had adapted to this technology. Teaching faculties think that pictures are self-explanatory and their function is to make their subject matter easier. Some lectures have weak control over the resource available, lack of freedom to make choice or decision will lead to hesitation in adopting the innovation. The research identified that collaboration with colleagues was a matter of attitude and that teacher played a major role, if there was a positive environment in educational institutes, it will boost attitude of the teachers with collaborating with colleagues. Teachers believe technology acquisition and infrastructure were the critical areas of technology leadership, leaders of the technology need to extend technical service and support to their school. Supported finding from Anantmula (2008) culture of knowledge sharing within an organization is important because the responsibility for knowledge sharing goes beyond managers and includes teachers, these will need continuous monitored by school management. Suggestion to the management have to take part in adopting new technologies and keep themselves updated in the e-world.

Reference:

- Anantmula, V. S. (2008). Leadership role in making effective use of KM. *The Journal of Information and Knowledge Management System*, 445-460.
- Armstrong, V., Barnes, S., Sutherland, R., Curran, S., Mills, S., & Thompson, I. (2005). Collaborative research methodology for investigating teaching and learning: the use of interactive whiteboard technology. *Educational Review*, 4.
- Arokiasamy, A. R., bin Abdullah, A. G., & Ismail, A. B. (2014). Correlation between cultural perceptions, leadership style and ICT usage by school principals in Malaysia. *TOJET: The Turkish Online Journal of Educational Technology* 13(3).
- Aten, B. M. (1996). *An analysis of the nature of educational technology leadership in California's SB 1274 restructuring schools*. Unpublished doctoral dissertation, University of San Francisco.
- Bacon, D. (2011). The interactive whiteboard as a force for pedagogic change. *Information Technology in Education Journal*, 15-18.
- Bailey, G. D. (1997). What technology leaders need to know: The essential top 10 concepts for technology. *Learning & Leading with Technology*, 25(1), 57-62.
- Baran, B. (2010). Experience from the Process of Designing Lessons with Interactive Whiteboard: ASSURE as Road Map. *Contemporary Educational Technology*, 1(4), 367-380.
- Berson, M., (1996). "Effectiveness of computer technology in the social studies: A review of the literature", *Journal of Research on Computing in Education*, Vol. 28(4), Pp. 486-499.
- Ford, J. I. (2000). *Identifying technology leadership competencies for Nebraska's K-12 technology leaders*. USA: Unpublished doctoral dissertation, University of Nebraska.
- Glover, D., & Miller, D. (2002). *The interactive whiteboard as a force for pedagogic change: the experience of five elementary schools in an English education authority*. Norfolk, Vermont: AACE.
- Holmes, K. (2009). Planning to teach with digital tools: Introducing the interactive whiteboard to pre-service secondary mathematics teachers. *Australasian Journal of Educational Technology*, 351-365.
- Kennewell, S., & Morgan, A. (2003). Student Teachers' Experiences and Attitude Towards Using Interactive Whiteboards in the Teaching and Learning of Young Children. *Young Children and Learning Technologies*. UWS Parramatta: Australian Computer Society.
- Lai, H.-J. (2010). Secondary school teachers' perceptions of interactive whiteboard training workshops: A case study from Taiwan. *Australasian Journal of Educational Technology*, 26 (Special Issue,4), 511-522.
- Ozdemir, S., & Kilic, E. (2007). Integrating information and communication technology in the Turkish primary school system. *British Journal of Educational Technology*, 38(5), 907 - 916.
- Shahrizal, E., & Harkirat, D. S. (2010). Integration of Interactive Whiteboard Technology to Improve Secondary

Science Teaching and Learning. *International Journal for Research in Education*, 28.

Smeets, E., & Mooij, T. (2001). Pupil-centered learning, ICT, and teacher behaviour: observations in educational practice. *British Journal of Educational Technology*, 32(4) 403-417.

Yassin, F., Salim, J., & Sahari, N. (2013). The influence of organizational factors on knowledge sharing using ICT among teachers. *Procedia Technology*, 11, 272- 280.