PalArch's Journal of Archaeology of Egypt / Egyptology

ANALYSING THE EFFECTIVENESS OF MODERN TECHNOLOGY IN TEACHING AND LEARNING PROCESS IN SCHOOLS

PRAMOD KUMAR. K[1], Dr Osmita Hati[2]

[1]Research Scholar, Department of Education, Dr APJ Abdul Kalam University, Indore, M P., INDIA.
[2]Research Supervisor, Asst Prof Education, Department of Education, Dr APJ Abdul Kalam University, Indore, M P., INDIA.

PRAMOD KUMAR. K[1], Dr Osmita Hati[2], ANALYSING THE EFFECTIVENESS OF MODERN TECHNOLOGY IN TEACHING AND LEARNING PROCESS IN SCHOOLS,-- Palarch's Journal Of Archaeology Of Egypt/Egyptology 18(10), 471-480. ISSN 1567-214x

Keywords: ICT integration; Teaching and learning; Technology effectiveness; Education; India.

ABSTRACT

The objective of this research was to develop a model that defines the key components for enhancing schools using digital technology and helps to discover schools' distinctions and best practises. The unique IDI School model provides a framework for research but also a research-based approach for schools to study their own digital technology practises. The approach integrates earlier research on school reform, innovation creation and digital education technology as a specific example of learning and innovation.

Randomly, a survey questionnaire was given to 100 instructors at India's public high schools. For descriptive and inferential statistical data used SPSS (version 22), the data have been examined for this quantitative study. The findings show that ICT integration is quite beneficial for instructors as well as pupils. Results show that the well-equipped training of instructors with ICT instruments and facilities is one of the major success factors in technological learning and learning. Professional training for instructors was also shown to have an important impact in improving quality of learning for pupils.

Introduction

God's gift is technology. It is maybe the greatest of God's gifts after the gift of life. He is the mother of cultures, arts and sciences. Certainly, technology has altered our way of life. It has affected many aspects of existence and reshaped life. In all spheres of life, technology certainly plays an essential part. Thanks to technology, many manual jobs may be automated.

In recent years, the fast Internet and wireless communication technology revolution has led to the development of several interactive media networks, including mobile

learning, mobile voice and instant messaging. Traditional teaching would replace the ease and popularity of the Internet in the use of digital teaching materials and in the attainment of national competitiveness. This is why much study is carried out on mobile learning to provide better performance in transmission and universal use.

But, Education is now experiencing important difficulties: children and adolescents will have skills in the future, consider casual learning and use digital technology and contemporary pedagogical techniques to meet these challenges. In today's society, education is facing significant challenges. However, these problems were not addressed by schools.

In educational terms now information and technology are popular for the success and interest of both students and teachers in making teaching a learning process. In 1998, UNESCO World Education Study refers to students and instructors in their classroom, schools, educational institutions, needing enough access to enhance digital technology and the Internet. Teachers need to know and learn to use new digital technologies to assist all students attain high levels of education.

Although technology is ultimately incorporated into education, the employment of technology for education and education remains a problem. Although many schools now have easy access to technology, training for teachers and a positive policy climate, technology is still low in their classroom. Some relate the pedagogical views of teachers to low levels of technology in the classroom.

Literature Review

Luis Espino-Díaz, Jose-Luis Alvarez-Castillo, Hugo Gonzalez-González, Carmen-Maria Hernández-Lloret and Gemma Fernandez-Caminero (2020) The present education situation in the context of the COVID-19 pandemic is examined in this research. The global health emergency has led individuals to be contained and thus closed down and personal schooling transferred to online education. In the face of such circumstances, instructors have had to adjust themselves to their own confinement and high levels of stress at a rapid speed not only to new methodological methods. The study aims to propose a new approach to the contributions of neuroeducating professionals in the field of emotions management and motivational processes that help to provide meaningful learning for students to optimise their work within the current pandemic context through information and communication technologies (ICT).

Victoria I. Marin, Olaf Zawacki-Richter, Melissa Bond and Governor Francisca (2019) This article aims to provide a comprehensive examination of research into Higher Educational Applications. 146 articles were included for final synthesis, based on specific inclusion and exclusion criteria, of the originally discovered 2656 publications during the period 2007-2018. The findings indicate that most of the AIEd articles are based on computer science and STEM and quantitative techniques have been the most often employed in empirical research. The result summary shows four fields of AIEd applications for academic and institutional and administrative support services: 1. Profiling and prediction, 2. evaluation and evaluation, 3. adaptive and personalization systems and 4. smart teaching systems.

Huang-Cheng Chen, Kuang-Sheng Liu, Ming-Hung Lin (2017) When smart mobile devices become widespread in contemporary culture, the Internet breaks through time and Space limitations and becomes an all-embracing instrument for learning. This

research examines students in order to get insight into digital learning and carries out questionnaire inquiries. In this work quasi-experimental research is used to successfully accomplish the research goals and test the research hypotheses. The study topics for educational research are chosen in total 116 students in 4 courses. Research finding that 1. digital learning has better results than traditional learning on the motivation for learning, 2. digital learning has better positive effects on learning than traditional teaching; 3. motivation for learning has significantly better effects on learning effects and 4. intelligent tutoring systems.

Mohammed T. Al-Bataineh, Adel Al-Bataineh, Jennifer L. Harris (2016) This study was a quantitative examination of 4th Grade students in Central Illinois from Title 1 primary school. This research was to establish if the academic achievements of pupils are really influenced and influenced by one technology (1:1 would be utilised below). The second objective of this research was to investigate whether 1:1 technology also affects motivation for students to learn. Data were collected from the students participating in the research via the Topic Tests of the Pearson enVision Math Series and the findings of Discovery Education Assessment. The findings indicate that 1:1 technology may play a role in the academic performance and motivation of students to go to school. These results are significant because of the technological change presently faced by schools. With greater exposure to technology and professional growth for instructors in order to improve their newly learned teaching approaches, 1:1 For school districts to assist their kids at greater levels, technology may be the necessary spark.

Kara Dawson, Albert D, Cathy Cavanaugh (2011) This paper investigates how laptop computing, professional development and systemic support in 47 K-12 schools in 11 districts of the Florida Schools resulted in altered teaching methods. The comprehensive research summary records the kind and the extent to which changes were noticed in 440 classrooms over a school year, in student-centre-centered learning, technological tool-base teaching and student learning. A report on the circumstances, procedures and effects of laptop computing has been made by using numerous observations in all schools, document analysis, interviews, and teacher inquiries. Laptop computing has had a beneficial effect on changed practises in different districts, especially based on the analysis of data. Improvements in student performance across districts were also seen. This research focuses on systemic problems related to effective laptop deployment and has implications for statewide laptop applications.

Research Methodology

Research Design

Quantitative technique for collecting and analysing the data from all interviewees was used in this study. Before distributing the questionnaire to the target population, the researchers prepared the questionnaire. Few parts of the questionnaire were particularly developed to meet study goals with respect to ICT integration effective in the learning of students and successful ICT integration components at the Indian public school. The questionnaire was thus provided so that the responders could receive the information.

Population and Sampling

A total of 100 teachers from public elementary and secondary schools in India were

interviewees for this study. The questionnaire has been randomly shared with responders, independent of sex, ethnicity, learning experience and the greatest level of teaching experience. The various sections of the questionnaire were: (a) personal details; (b) ICT teaching expertise; (c) ICT education access; (d) teachers' support for ICT use; and (d) ICT learning tools use challenges; (f) teachers' ICT skills; and (g) ICT teachers use their views in the learning outcome of students. The researchers have no biases as long as respondents are educated, particularly in public elementary and secondary schools in India. As the targeted study respondents are intended for people with a teaching experience, the investigators have attempted to include teachers in this research from elementary and high schools in India. Therefore, the distribution of questionnaires is not equal when secondary school instructors dominate the whole population in comparison with elementary school teachers.

Instrument

The interrogators were evaluated on a self-developed cross-sectional questionnaire consisting of seven parts and 112 items. The 5-point Likert scale was based on: 5 = ever, 4 = frequently, 3 = at times, 2 = uncommon and 1 = never. The researchers create the items in accordance with the selected title so that they may give the responses to the two research questions.

Data Collection Procedure

Data collection describes the process through which a researcher collects data. The survey was allocated randomly to 100 instructors. The questionnaire was filled out and returned to the researcher for a week. 60 and 40 surveys are taken by each researcher. The study was done voluntarily by all participants. Some surveys lacked information that the details could not be utilised for this study. Finally, the researchers received 100 questionnaires to be analysed.

Data Analysis Process

For analysis using the statistical packages for social sciences (SPSS) version 22, the data collected by the respondents were collected. Descriptive as well as inferential analyses are included. In order to evaluate the frequency and proportion of the demographic population as a whole, researchers employed descriptive analysis. It also helps establish how successful ICT integration for students is in learning, the standard deviation, frequency and percentage, and also the effective components of ICT integration in education in public schools in India. The results of the study are also analysed using inferential statistics (t-test).

Result

Table 1 provides demographic results when an age of 25 is 4%, the age of 26-35% is 64% and the age of 64%, the age of 36-45 is 27% and the age of 46-55% is 3% and the age of 55% is 2%. This figure is shown as a percentage of 4%, and the age of 3% is 45% and 55%.

Gender is found to be 25 percent for males and 25 percent for females, 75 percent for female and 75 percent for females. The experience based on years of sample experience is lower than one year, the percentage is 5%, a frequency of 1-4 years is 25% and the percentage is of 25%, 5-10 years is 53%, the percentage is 53%, 1-20years is a frequency of 17% and 20-plus years is a frequency of 1%.

The study of ethnicity reveals that the Malay frequency is 37 (37%), the Chinese one is 19% and the Indian one is 19%, the Indian one is 44%, with the other being 44%

and the other frequency 0. Subjects taught in the following are: Language (frequency is 38% and 38%), Mathematics (f = 36% or 36%), Scientific (f= 22% or 22%) and Others (f = 4% or 4%). Based on the data collect, the majority of study participants are between 36 and 45 years of age, the majority are female and have five to ten years of experience.

Table 1. Demographic background of respondents

Factors	Frequency	Percentage(%)
Age		
Under 25	4	4%
26-35	64	64%
36-45	27	27%
46-55	3	3%
55+	2	2%
Gender		
Female	25	25%
Male	75	75%
Experience		
Less than 1 year	5	5%
1-4 years	25	25%
5-10 years	53	53%
10-20 years	16	16%
20 years +	1	1%
Ethnicity		
Malay	37	37%
Indian	19	19%
Chinese	44	44%
Others	0	0%
Teaching Experience		
<1 year	20	20%
1-5 years	36	36%
6-10 ears	34	34%
>10 years	10	10%
Subject Taught		
Language	38	38%
Mathematic	36	36%
Sciences	22	22%
Others	4	4%
Type of School		
Primary	36	36%
Secondary	64	64%
School Area		
Urban	78	78%

Rural	22	22%
Preference of TeachingStyle		
Conventional/Traditional	42	42%
Modern/Contemporary (Use of ICT)	58	58%
The Ability of HandlingICT in Teaching		
High	25	25%
Medium	66	66%
Low	9	9%

64 responses are from the total population depending on school type, with 64 (64 percent compared to 36 in elementary school) in high school (36 percent). More people in the city school area teach with 78 (78 percent) compared to those teaching in the rural school area with 22 in the general population based on the school area (22 percent).

Over the whole population based on teaching choice, 58 (58%) of the respondents who chose a conventional/ traditional teaching approach preferred a modern/contemporary style of teaching, compared to 42 (42 percent). Overall, most respondents consider that they have a medium capacity with 66 (66 per cent), followed by a high level of ICT handling with 25 (25 per cent) and poor capacity with 9, based on the ability to handle ICT in education (9 percent).

Research Questions

1) What are the perceptions in implementing ICT tools in teaching and learning in the classroom among school teachers?

This Table 2 provides descriptive data on views about the use of ICT instruments in school teachers' education and learning in the classroom.

Table 2: Teachers' Perceptions on implementing ICT tools in teaching and learning

	Items	**Always**	**Often**	**Sometimes**	**Rarely**	**Never**	**Mean**	***SD***
1	Students concentrate more on their learning	39 (39%)	26 (26%)	31 (31%)	4 (4%)	0 (0%)	2.02	.943
2	Students try harder in what they arelearning	42 (42%)	27 (27%)	24 (24%)	7 (7%)	0 (0%)	1.96	.931
3	Students feel more autonomous intheir learning (they can repeat exercises if needed, explore in more detail topics that they are interestedin, etc.)	39 (39%)	24 (24%)	30 (30%)	7 (7%)	0 (0%)	2.05	.989
4	Students understand more easilywhat they learn	26 (26%)	26 (26%)	38 (38%)	10 (10%)	0 (0%)	2.32	.973

5	Students remember more easilywhat they have learnt	38 (38%)	27 (27%)	30 (30%)	5 (5%)	0 (0%)	2.02	.943
6	ICT facilitates collaborative workbetween students	33 (33%)	40 (40%)	24 (24%)	3 (3%)	0 (0%)	1.97	.810
7	ICT improves the class climate (students more engaged, less disturbing)	32 (32%)	41 (41%)	25 (25%)	2 (2%)	0 (0%)	1.97	.810
	Overall mean						**2.04**	**.914**

Table 2 indicated a modest level for all disclosures. 39% of the participants always, 26% frequently, 31% at times, 4% at times seldom, and 0% never, say that students focus more on their learning (M = 2.02, SD = 0.943). In the declaration "Students struggle to study hard" (m = 1.96, SD = 0.931), 42% often, 27% frequently, 24% occasionally, 7% seldom and 0% never before. "Students are more self-sufficient in their own learning (if necessary, they may redo workouts, study subjects they are interested in, etc.)" (M = 2.05, SD = 0.989), 39% of respondents always, 24% frequently, occasionally 30%, sometimes 7% seldom, never again 0%. "Subscribe to what they learn more readily" (M = 2.32, SD = 0.973), 26% respondents always, 26% often, occasionally 38%, 10% seldom, and none at all. "Students can comprehend what they study more readily. Students may more readily recall what they've learned" (M = 2.02, SD = 0.943), 38%, 27%, occasionally 30%, sometimes just 5% and never 0%. "ICT supports collaborative work among students" (M=1.97, SD=0.810), usually 33%, sometimes 40%, sometimes 24%, rarely 3%, never ever 0%. In conclusion, ICT "Improves the school environment" (M = 1.97, SD = 0.810): 32% of the respondents usually, 41% often, 25% sometimes, 2% seldom and 0% never. The mean expression level ranged from 1.96 to 2.32. Although M = 2,04 is the total medium limit, SD = 914 is of considerable proportion.

2) To what extent do teachers use ICT tools in teaching and learning in the classroom?

Table 3 gives descriptive data on the degree to which instructors utilise ICT instruments in classroom teaching and learning.

Table 4: Use of ICT tools in classroom

	Items	**Always**	**Often**	**Sometimes**	**Rarely**	**Never**	**Mean**	**S.D**
	Produces a text using	39	24	30	7	0		
1	a word processing program	(39%)	(24%)	(30%)	(7%)	(0%)	2.05	.989
	Use emails to	26	26	38	10	0		
2	communicate with other	(26%)	(26%)	(38%)	(10%)	(0%)	2.32	0.973
3	Capture and edit digital photos, movies or other	39 (39%)	24 (24%)	30 (30%)	7 (7%)	0 (0%)	2.05	.989

	graphics							
4	Edit text online containing internet links and images	26 (26%)	26 (26%)	38 (38%)	10 (10%)	0 (0%)	2.32	0.973
5	Create a database	38 (38%)	27 (27%)	30 (30%)	5 (5%)	0 (0%)	2.02	.943
6	Edit a questionnaire online	32 (32%)	41 (41%)	25 (25%)	2 (2%)	0 (0%)	1.97	0.810
7	Email a file to someone, another student or teacher	32 (32%)	41 (41%)	25 (25%)	2 (2%)	0 (0%)	1.97	.810
8	Participate in a discussion forum onthe internet	32 (32%)	41 (41%)	25 (25%)	2 (2%)	0 (0%)	1.97	.810
9	Create and maintain blogs or web sites	30 (30%)	40 (40%)	28 (28%)	2 (2%)	0 (0%)	2.02	.816
10	Participate in social networks	14 (14%)	45 (45%)	36 (36%)	5 (5%)	0 (0%)	2.32	.777

Table 3 shows a modest degree of the whole of the disclosures. 39% of respondents are always, 24% are often, 30% are sometimes, 7% are seldom and 0% are never, however, for the statement: 'Produce text using word processing software' (M=2.05,SD=989). 26% of the respondent always responded, 26% frequently, 38% sometimes, 10% seldom, and 0% never, for the "Use e-mails to interact with others" (M = 2.32 SD = 973). "Capturing and editing digital photographs, film and other images" (M = 2.05, SD = .989) is usually up to 39%, sometimes 24%, sometimes 30%, rarely 7%, never 0%. "Online text editing links and pictures" (M=2.32, SD=.973), 26 respondents always and 26%, sometimes 38%, seldom 10% and never before 8%. "Build databases" (M = 2,02, SD = 0,943), 38% responder always, 27%, 30% sometimes, 5% seldom, 0% never. The 'Edit online questionnaire' (M = 1.97, SD = 0.810), 32% of respondents always, 41%, sometimes 25%, rarely 2% and never 0%. "Send a file to a person, a student or a faculty member" (M= 1.97, SD=.810), usually 32% of respondents, 41% of respondents, occasionally 25%, sometimes 2% of respondents, never 0%. Participate in an online forum" (M=1.97, SD=0.810), 32% of respondents often, 41% frequently, 25% sometimes, 2% seldom, and 0% never before. "Create and manage blogs or websites" (M=2.02, SD=816), usually up to 30 respondents, occasionally 40%, sometimes up to 28%, rarely up to 2% and never 0 percent. "Social networking" (M=2,32; SD=0,777), 14%, 45% frequently, 36% sometimes, 5% seldom, 0% never before. "Social networking"

Hypothesis Testing

The Mann-Whitney U trial in this study is used to evaluate the researcher's hypothesis (see Table 8). The test compares the differences between two separate groups to one dependent variable. The Mann-Whitney U Evaluate is used to test the null hypothesis

established by this researcher as an inferential study. Mann-Whitney U Test is used in clinical studies to compare the effectiveness of two therapies when the data are usually not distributed.

H01 - In teaching with the school type there is no significant difference between the teacher's understanding of ICT (Primary & Secondary)

	Type of School	N	Median	Range	Mean Rank	Mann-Whitney U	p
Score_B	Primary	37	2.33	2.20-2.33	59.89	855.00	0.02**
	Secondary	64	2.20	1.95-2.33	45.86		

** Significant P < 0.05

CONCLUSION

The study shows that students agree with the help of digital learning in the field. The increased learning time for pupils with digital learning improves learning performance comparatively.

The findings show that the average level of perception in school teachers in implementing ICT tools in the classroom shows high levels of challenges in the use of ICT tools in the education and learning of teachers in the classroom and the recognition of the efficiency of ICT tools in the support of teaching and training. Research findings indicate that instructors still remark on the obstacles in the introduction of teaching and learning ICT technologies in schools.

Specialist Cachia and Ferrari study respondents (2010) rated important technologies for learning, for example computers (98%) and educational software (93%), among the best technology. On the other hand, the rate of ICT usage among school instructors has been shown to be medium. The study indicates, however, that more instructors have utilised classroom teaching software computers to display or show the pupils instances. You also like to utilise the computer to obtain and monitor student outcomes.

REFERENCE

1. Brill, J. M., & Galloway, C. (2007). Perils and promises: University instructors' integration of technology in classroom-based practices. British Journal of Educational Technology. 38(1), 95-105.
2. Anttila, M., Valimaki, M., Hatonen, H., Luukkaala, T., & Kaila M. (2012). Use of web-based patient education sessions on psychiatric wards. International Journal of Medical Informatics, 81(6), 424- 433.
3. Merriam, S. (1998). Qualitative Research and Case Study Applications in Education. San Francisco, CA: Jossey-Bass. Messmann, G., & Mulder, R. (2011). Innovative work behaviour in vocational colleges: understanding how and why innovations are developed. Vocations and Learning, 4, 63–84
4. Dahiya, S. S. (2005). ICT-Enabled Teacher Educator, University News, 43-page 109-114 May 2-8

5. Katsenou, C., Flogaitis, E., & Liarakou, G. (2015). Action research to encourage pupils' active participation in the sustainable school. Applied Environmental Education & Communication, 14(1), 14–22.
6. Luis Espino-Díaz, Gemma Fernandez-Caminero, Carmen-Maria Hernandez-Lloret, Hugo Gonzalez-Gonzalez and Jose-Luis Alvarez-Castillo, "Analyzing the Impact of COVID-19 on Education Professionals. Toward a Paradigm Shift: ICT and Neuroeducation as a Binomial of Action", Sustainability 2020, 12, 5646;
7. Olaf Zawacki-Richter, Victoria I. Marín, Melissa Bond and Franziska Gouverneur, "Olaf Zawacki-Richter, Victoria I. Marín, Melissa Bond and Franziska Gouverneur", International Journal of Educational Technology in Higher Education (2019) 16:39
8. Ming-Hung Lin, Huang-Cheng Chen, Kuang-Sheng Liu, "A Study of the Effects of Digital Learning on Learning Motivation and Learning Outcome", EURASIA Journal of Mathematics Science and Technology Education ISSN: 1305-8223 (online) 1305-8215 (print) 2017 13(7):3553-356
9. Jennifer L. Harris, Mohammed T. Al-Bataineh, Adel Al-Bataineh, "One to One Technology and its Effect on Student Academic Achievement and Motivation" CONTEMPORARY EDUCATIONAL TECHNOLOGY, 2016, 7(4), 368-381
10. Cathy Cavanaugh, Kara Dawson, Albert D., "An Evaluation of the Conditions, Processes, and Consequences of Laptop Computing in K-12 Classrooms" Journal of Educational Computing Research 45(3):359-378
11. Gutierrez, G., Canul-Reich, J., Ochoa Zezzatti, A., Margain, L., & Ponce, J. (2018). Mining: Students comments about teacher performance assessment using machine learning algorithms. International Journal of Combinatorial Optimization Problems and Informatics, 9(3), 26–40
12. Anttila, M., Valimaki, M., Hatonen, H., Luukkaala, T., & Kaila M. (2012). Use of web-based patient education sessions on psychiatric wards. International Journal of Medical Informatics, 81(6), 424- 433.
13. Cavanaugh, C., Dawson, K., & Ritzhaupt, A. (2011). An evaluation of the conditions, processes, and consequences of laptop computing in K-12 classrooms. Journal of Educational Computing Research, 45(3), 359-378.
14. Ortega-Sánchez, D.; Gómez-Trigueros, I.M. Massive Open Online Courses in the Initial Training of Social Science Teachers: Experiences, Methodological Conceptions, and Technological Use for Sustainable Development. Sustainability 2019, 11, 578
15. Mendoza, L.-R.; Moya, E. TIC y Neuroeducación Como Recurso de Innovación En El Proceso de Enseñanza y Aprendizaje ICT and Neuroeducation as a Resource of Innovation in the Process of Teaching and Learning. Rehuso Rev. de Cienc. Hum. Y Soc. 2020, 5, 85–96