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RESEARCH PAPER

Implementation of E-Learning in Public and Private Schools: Impact of COVID-19 Pandemic

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ABSTRACT

The present study aimed to explore the impact of virtual learning on student's educational progress related to E-learning practices during pandemic, modification of teaching methodology, skills and competencies as well as teaching effectiveness. The study was descriptive survey; in order to investigate the findings the questionnaire was circulated among 500 participants i.e the academic and administrative staff of public and private schools using simple random sampling technique. Data were analyzed by using SPSS. The empirical outcomes of this research work signify that the adoption of virtual-Learning schools drastically improved students' skills towards learning new ideas. There was no significant difference among teachers on gender basis, regarding the student's competencies, administrative roles, and government initiatives. Moreover, in this research work high level of internal consistency has been pragmatic for scale. These findings advocate that using E-Learning in schools could be an effectual to enhance students learning and teacher's skill. Government and administration have plenty of digital resources at school level to initiate the digitalization and should start emphasizing on practices of the virtual learning even in the presence of limited resources, not only in the duration of any pandemic but also in future perspectives.

KEYWORDS E-Learning, Public and Private Schools, Virtual Learning

Introduction

Online learning and training fully utilize the advantages brought by the innovation of Internet technology, breaking through the constraint of time and space and constructing a new learning representation that differs from face-to-face learning (Panigrahi et al., 2018). Students who study via an online learning platform used as a virtual classroom can interact with teachers freely (Ganesh et al., 2015). However, researchers have pointed out that experimental courses which involve practical learning have often been implemented in face-to-face classrooms. In contrast, the vast majority of online courses lack hands-on activities requiring experimental operations. However, it is possible to complete online experimental courses with a set of components and a single-board microcontroller that are not incredibly costly (Burford& Gregory, 2002).

Accordingly, students in all high schools were required to engage in theoretical and hands-on learning in online experimental courses, such as electronics courses, biochemistry laboratory courses, meaningful online extracurricular activities, information technology courses, and so on. Meanwhile, due to other factors, online courses have faced some difficulties during the COVID-19 pandemic. For example, due to the change in the delivery of the course materials, students might not be able to carry out hands-on activities as expected (Ghaemi&Potvin, 2021; Yaseen, et al. 2020). Many studies have focused on college students' online learning.

The only differentiation between traditional on-campus learning and E-learning is the information and communication technology environment. ICT is based on creating, organizing, transmitting, and storing information. It is similar to printing in face-to-face communication. Without the contribution of ICT, E-learning cannot be established. With the assistance of virtual learning, ICT has occupied a powerful communication capability that completely alters the educator learning model into the students learning model. ICT provides a broader spectrum where many institutes offer courses over the Internet. LMS is used to access the course and allows the students to access course material, results, quizzes, assignments, and discussion forums (Mortimer, 1999).

Literature Review

The Internet plays a vital role in supporting remote work, online learning, online collaboration, and so forth (Favale et al., 2020).

The drastic growth of ICT, especially internet usage, has opened tremendous learning and educational opportunities for better future development (Garrison, & Anderson, 2003). It has also unrushed the various kind of learning; likewise, the LMS (Learning Management System) for different learning activities and contents created by multimedia Rosenberg, M. (2001).

Nowadays, the nature of the classroom has changed by increasing the growth of ICT (Jacky,2006). The internet has become a paradigm for academic purposes and allows teachers and students to collaborate via web-based courses (Dowling, 2003).

The rapid increase of ICT creates unparalleled opportunities and has challenged the conventional notion of schooling. Moreover, it ultimately reflects the way of learning. In higher education, virtual learning became a strong theme from every aspect. It will radically impact education in the near future, essential and pushing all universities to consider it for implementation. Future structures of education and training of virtual learning are accepted as the mainstream of education and training. The effect is already relevant, and most developed countries want to enjoy it.

Currently, the form of virtual education is the fastest mode of education at national and international levels. Internet access and improvement in quality education is the primary cause of the growth of virtual learning. Gradually, it has also been gaining momentum.

To initiate, we may say that virtual learning is a platform for transforming traditional learning (Rafferty, Orton, & Ashford, 2003). While for getting information, skills, and knowledge from using the apt application of the internet and its technology is called E-learning. As per the definition of the European Commission, "The improvement of quality learning by using multimedia technology with internet accessibility may enhance the resources, collaborations and remote exchange as well (Henry, 2001).

Virtual learning and E-learning can be interchanged by distance, online, and flexible learning. However, these are similar terms but quite different significances. Currently, these definitions ignore the nature of E-learning. The focused view of E-learning is the Transformation tool. It has transformed traditional class-based learning via technology and provides technology-based solutions. Another definition is "Learning can be enhanced in an organized manners by using digital media tools." This investigation may lead toward the approach of learning by digital means like the internet, intranet, Electronic white boards, televisions, video conferences, and computer-based technologies. Henry, (2001). These terms do not vary any learning content but act as aid or tools for education.

In education, Myriad researchers consider virtual learning as a paradigm shift. This term entails a significant change that drastically affects the entire learning model. Learning theory is the foundation of the structure of the learning model. So, the shift also assumed the

theory change and its consequence. Virtual and E-learning profess to shift from a teacher-centered approach to a learner-centered one. Furthermore, below are the other differences (Henry, 2001).

The chief objective of this research work was to explore factors which are helpful for implementing the virtual learning in public and private schools. Below are the few research objectives which were studied to:

- Explore student's competencies and skills to handling technology
- Identify willingness and responding of the teachers towards gadgets in class rooms
- Measure technology benefits in favor of early bird's learners
- Identify role of the administration for providing facilities/ labs/ equipment's

Research Hypothesis

Ho: There is no significant effect of perceived student's competencies and skills to handle technology.

Ho: There is no significance difference in willingness and responding of the teachers towards gadgets in rooms among male and female school teachers.

Ho: There is no significance difference in perceived role of administration for providing facilities in public and private sector.

Material and Methods

This research work was premeditated to implementation of virtual learning in public and private schools.

This research work was based on the descriptive survey design. However, due to the simplicity and lack of biasing the researchers preferred Simple Random sampling Technique for aforementioned research work. 500 responses were collected for this research work from public and private schools. All of the information was collected using a questionnaire from academic staff as well as the administrative staffs of public and private schools. The Likert scale was used based on (1) Strongly disagreed, (2) Disagree, (3) Neutral, (4) Agree, and (5) Strongly agree, with the analysis of results using a statistical application called the Statistical Package for the Social Sciences (SPSS). SPSS 19 was used for the characterization and analysis of data. There were five factors of the questionnaire: Student's Competencies, Technology Benefits, Teacher's Willingness, Administrative Role, and Government Initiatives.

Results and Discussion

The outcomes are presented by analyzing the focuses of implementing virtual learning issues experienced by educators as well as higher authorities of administrative staff by using descriptive analysis. The analyzed mean value of the items helped in detection of the focuses which will be helpful for implementation of virtual learning in schools. Below tables represents the responses of educators and administrators staff in terms of percentage.

Table 1
Items related to student's competencies and skills to handling technology

Items	M	SD	Likert Scale Response %				
			1	2	3	4	5
Student's competencies 1	4.26	.79	0.6	3.9	6.5	46.5	42.5

Student's competencies 2	3.75	.94	1.3	11.0	19.4	48.4	20.0
Student's competencies 3	4.30	.65	0	1.9	5.2	54.2	38.7
Student's competencies 4	4.12	.72	0	4.5	7.1	60.0	28.4
Student's competencies 5	4.17	.71	0	3.9	6.5	58.7	31.0

Table 1 show that 42.5% of the respondents strongly agree and 0.6 % strongly disagree on first item that was related to measure the level of understanding of students about technology use. With the fact that computer is helpful for engagement and enjoyment of students and teacher due to stress free environment. The highest mean value of item three is 4.30 and SD value is .65 on third item that was related to students learning activities about technical skills should be in practice.

Table 2
Willingness and responding of the teachers towards gadgets in class rooms

Items	M	SD	Likert Scale Response %				
			1	2	3	4	5
Teacher's willingness 1	3.50	1.16	5.2	18.7	18.1	37.4	20.6
Teacher's willingness 2	4.34	.71	0.6	1.3	6.5	46.5	45.2
Teacher's willingness 3	3.92	.96	1.9	9.7	9.7	51.6	27.1
Teacher's willingness 4	4.43	.53	0	0	1.9	53.5	44.5
Teacher's willingness 5	4.27	.69	0.6	1.9	4.5	55.5	37.4
Teacher's willingness 6	4.12	.80	3.0	5.5	12.1	55.8	23.6
Teacher's willingness 7	4.11	.71	0.6	2.6	9.0	60.6	27.1
Teacher's willingness 8	4.06	.70	0	2.6	14.2	57.4	25.8

Table 2 shows that the 27.1 % of the respondents strongly agree and 0.6 % strongly disagrees with the fact that the content taught in E-learning classes can be helpful for achieving learning objectives. Item 1 was related to Learning/ teaching from home is a joyous way of learning with mean value 3.50 and SD 1.16.

Item 2 was related to Teachers expertise with latest gadgets with mean value 4.34 and SD .71 whereas item 4 with highest mean value 4.43 and SD .53 that was about the Teacher training plat forms should be in practice for enhancing IT skills. Item 5 was about the training of Students and teachers for future integration of technologies.

Item 6 was on the belief that Traditional teaching practices should be replaced by modern ways of ICT. Item 7 measures the views of teachers about content taught in E-learning classes can be helpful for achieving learning objectives with mean value 4.11 and SD .711.

Teacher's willingness about Implementation of ICT in education has completely altered the learning techniques.

Table 3
Technology benefits in favor of early bird learners

Items	M	SD	Likert Scale Response %				
			1	2	3	4	5
Technology Benefits 1	4.41	.64	0	0.6	6.5	44.5	48.4
Technology Benefits 2	4.30	.68	0.6	1.3	5.2	53.3	39.4
Technology Benefits 3	4.09	.71	0	3.9	9.7	60.0	26.5
Technology Benefits 4	4.03	1.01	3.9	7.1	5.2	49.7	34.2

Technology Benefits 5	4.21	.64	0	1.9	6.5	60.0	31.6
Technology Benefits 6	4.10	.74	0.6	1.3	15.5	52.3	30.3

Table 3 evident that 60 % of the respondents agreed that using of technology can drastically be developed their mental health---as they can freely developed their own ideas and Innovative technology means freedom for choosing multiple teaching strategies. Unlike deny of the technological implementation, respondents agreed to the benefits of technology in terms of student are learning skills. Whereas, only 3.9% of the respondents strongly disagree with the fact that technological equipment's such as personal computer or digital note books should be available in classroom

Table 4
Role of the administration for providing facilities/ labs/ equipment

Items	M	SD	Likert Scale Response %				
			1	2	3	4	5
Administration Role 1	4.34	.72	0	2.6	7.1	43.9	46.5
Administration Role 2	4.28	.71	0	53.2	5.8	50.3	40.6
Administration Role 3	4.32	.60	0	0	7.1	53.5	39.4
Administration Role 4	4.21	.76	0.6	3.2	7.1	52.3	53.61
Administration Role 5	3.63	1.20	5.2	18.7	9.7	40.6	25.8
Administration Role 6	4.21	.72	0	3.2	7.7	7.1	35.5

Table 4 shows that 53.61% of the respondents strongly agree Implementing IT in schools need multiple training courses while 53.5% were agree to the fact that schools should promote ICT based trainings for teachers and students.

Table 5
Government's initiatives to implementing the practices of technology based learning

Items	Mean	SD	Likert Scale Response %				
			1	2	3	4	5
Government's initiatives 1	4.19	.71	0.6	1.9	8.4	56.1	32.9
Government's initiatives 2	4.23	.80	0.6	3.9	7.7	47.7	40.0
Government's initiatives 3	4.29	.69	0	3.2	3.9	53.5	39.4
Government's initiatives 4	3.99	.98	1.9	9.0	9.7	46.5	32.9
Government's initiatives 5	4.23	.79	1.3	3.2	5.2	52.3	38.1

In table 5 Government's initiatives items # 2 & 5 with highest mean value of 4.23 among other items shows that professional development courses and E-learning practices should be a part of reformed curriculum . Furthermore, 53.5% of the population is agree while 32.9% is strongly agree with the fact that Educational infrastructure should be changed for the enhancement of ICT in education. Whereas, only 0.6% of the respondent are strongly disagree on the aforementioned item.

Table 6
Sampling t-test on Student's competencies in terms of gender

Variable Name	Categories	N	M	SD	Df	t	p
Gender	Male	230	4.06	.46	153	-.1.27	.07
	Female	270	4.16	.52			

This table 6 showed that an independent sample t-test was conducted to compare the Student's competencies factors for both groups of male and female. The value of p is greater than 0.05 Hence, there is an insignificant difference is found in the analysis of gender's categories.

Table 7
Independent sampling t-test on Administrative Role in terms of gender

Variable Name	Categories	N	M	SD	Df	t	P
Gender	Male	230	4.07	.48	15	-.2.21	.23
	Female	270	4.24	.51			

Table 7 purported that an independent sample t-test was conducted to compare the Administrative Role's factors for both groups of male and female. The value of p is .07 which is greater than 0.05, hence, it is clearly shown that there is an insignificant difference in the analysis of male and female respondents.

Table 8
Independent sampling t-test on Government Initiatives in terms of gender

Variable Name	Categories	N	M	SD	Df	T	P
Gender	Male	230	4.11	.59	15	-1.39	.50
	Female	270	4.24	.58			

The aforementioned table 8 showed that an independent sample t-test was conducted to compare the Governments Initiative factors for both groups of male and female. The value of p is .50 which is greater than 0.05, hence, it is clearly shown that there is an insignificant difference in gender analysis outcomes.

Table 9
One-way ANOVA on Technology benefits in terms of Educational level

	SS	DF	Mean	F	P
Between groups	1.29	4	.32	1.38	.24
Within groups	35.22	150	.23		
Total	36.52	154			

This table 9 shows the comparison of technology benefits in terms of educational levels. It can be clearly seen that the value of p is greater than 0.50 hence, the value of the one- way ANOVA is found no significance among features.

Table 10
Two- way ANOVA on teacher's willingness in terms of Education & experiences

Source	Type III SS	Df	MS	F	P
Corrected Model	1.638[a]	8	.20	.88	.52
Intercept	379.67	1	379.67	1646.76	.00
WorkExperience	.003	1	.003	.01	.90
EducationLevel	1.23	4	.31	1.34	.25
WorkExperience * EducationLevel	.20	3	.06	.30	.82
Total	2632.65	155			

This table 10 showed that the outcomes after implementing Two-way ANOVA on teacher's willingness in terms of Educational level and working experiences. It is evident that the values of p are greater than 0.05. Therefore, there is no significant difference is found among the aforementioned factors.

Table 11
Co-relationship between Administrative Role and Government Initiatives

Variable Name	N	r
Administrative Role & Government Initiatives	155	.55

This table 11 indicates the relationship between variables. It is evident that the value of Pearson correlation (r=0.55). Hence, it is concluded that there exist a positive relationship between Administrator role and government initiative towards the implementation of virtual learning.

Table 12
Reliability of sampling

No of items	Cronbach's Alpha Based on Standardized Items	Mean
30	.93	4.14

This table 12 revealed that there were30 items in the virtual learning implementation scale. After implementing the reliability test the value of Cronbach's Alpha is 0.93 and means of item is 3.11.

Discussion

This research investigates the factors that are helpful and highlight the barrier affecting implementing of virtual learning across the public and private schools. This study explored the impact of virtual learning on students' educational progress, the favorability of teachers' responses about E-learning practices during a pandemic, modification of teaching methodology, skills and competencies, and teaching effectiveness. Moreover, this study highlights specific concerns; if resolved by the government or overcome by concerned authorities, the outcomes are fruitful for implementing virtual- learning in public and private schools. However, previous studies have also explored the impact of mentor, learner, and course factors on students' learning outcomes in K-12 online education (Zheng et al., 2020).

ICT related professional development training courses should be in practice and Government can initiate the awareness campaign of e-learning, and cope up the most significant barrier for smooth implementation of E-learning at school levels .e.g. Electricity failure.

E-learning practices should be a part of reformed curriculum or be in daily classroom activities to cope up the complete failure of education in future pandemics. Technology can help the students to know about new things. Usage of technology can drastically be developed their mental health---as they can freely developed their own ideas and Innovative technology means freedom for choosing multiple teaching strategies. The E-learning methodology is the main source of providing self learning modes.

The increase of COVID-19 has given a threat to humanity, as this pandemic has also enforced many global activities to close, including educational activities on campus.

Conclusion

The findings of this research advocate that using virtual-Learning in schools could enhance students' learning skills and teachers as well. Meanwhile, both the front-line pupils' learners and educators are excitedly willing to promote and adopt virtual learning strategies on school levels. Government has plenty of digital resources at the school level to initiate the digitalization of learning. Moreover, school administration should start emphasizing practices of virtual learning even in the presence of limited resources on ground realities at school levels, not only during the duration of any pandemic but also in future perspectives, to make students skillful in driving safely for competing for the technological advancement of globalization shortly. Implementing virtual learning is becoming a top trend in the whole

world. No doubt, it has replaced all the traditional learning techniques. It is integrated daily and has become crucial for learning, training, and educational purposes. However, despite these realities, Pakistan remains behind in implementing virtual learning entirely in public and private schools.

Recommendations

In the light of findings and conclusions, the following recommendations are given:

- A digital library and devoted classrooms with all types of equipment and tools are needed also necessary to apply e-learning instead of coming to the school.
- In addition to all of this, the role and importance of focusing on many things related to the characteristics of the pupil, such as the characteristics of the student's background knowledge and how to motivate the students as one of the instructive impacts.
- Schools should promote ICT based trainings for teachers and students
- ICT related professional development training courses should be in practice and conducting different online training workshops and seminars regularly is very important and need of time, for teaching staff, in particular, to support the relevance of e-learning, in addition to regular concentration to IT infrastructure and periodic protection of computers and supporting equipment is also needed.

References

Education in Pakistan: Possible Solutions. *International Journal of Evaluation and Research in Education*, *3*(2), 79-84.

Brown, K. L. (2003). From teacher-centered to learner-centered curriculum: Improving learning in diverse classrooms. *Education*, *124*(1).49-54

Burford, J. F., &Gregory, P. H. (2002).Asynchronous hands-on experiments for mechatronics education. *Mechatronics* 12, 251–260.

Chen, Y. N., Chen, H. M., Huang, W., & Ching, R. K. (2006). E-government strategies in developed and developing countries: An implementation framework and case study. *Journal of Global Information Management (JGIM)*, *14*(1), 23-46.

Curran, C. & Fox, S. (1997). Telematics and Open and Distance Learning, Dublin: National Distance Education Centre.

Dowling, C. (2003). New educational technologies: do they improve learning? , On the Horizon, 22(1) 14-16.

Favale, T., Soro, F., Trevisan, M., Drago, I., and Mellia, M. (2020).Campus traffic and e-Learning during COVID-19 pandemic. *Comput.Netw.*

Foray, D. (2004).The Economics of Knowledge, MIT Press, Cambridge, USA.

Ganesh, G., Paswan, A., & Sun, Q. (2015). Are face-to-face classes more effective than online classes? An empirical examination. *Marketing Education Review*, *25*(2), 67-81.

Garrison, D. & Anderson, T. (2003). E-Learning in the 21st Century. London: Routledge Falmer.

Ghaemi, R. V., & Potvin, G. (2021).“Hands-on education without the hands-on?an approach to online delivery of a senior lab course in chemical engineering while maintaining key learning outcomes,” in *Proceedings of the Canadian Engineering Education Association (CEEA)*, (Kingston ON: Queen;s University Library).

Guri-Rosenblit, S. (2005). 'Distance education' and T -Learning': not the same thing. *Higher Education*, 49,467-493.

Henry, P. (2001). "E-Leaming technology, content & services", Education & Training, *43*(4), 77-85

Jacky, P. (2006). ICT Teaching Experience Sharing in Higher Education: An Education Development Approach, Informatics in Education - An International Journal, 5(2), 265-284.

Merrill, M. D. (1992). Constructivism and instructional design in TM Duffy. *DH Jonassen ed*.

Mustafa, N. (2020). Impact of the 2019–20 coronavirus pandemic on education. *International Journal of Health Preferences Research*, 4(1), 25-30.

Mylonas, P. &Tzouveli, P. (2004). Towards a personalized E-Learning scheme for teachers. This paper appears in: Advanced Learning Technologies, Proceedings. IEEE International Conference_pp: 560- 564.

Panigrahi, R., Srivastava, P. R., & Sharma, D. (2018). Online learning: adoption, continuance, and learning outcome—a review of literature. *Int. J. Inf. Manage.* 43, 1–14.

Rafferty, J., Orton, S. & Ashford, M. (2003). Towards E-Learning: opportunities and challenges. In, Burgess, Hilary and Taylor, Imogen (eds.). Effective Learning and Teaching in Social Policy and Social Work. Oxford, UK, Routledge.

Rehman H. & Khan N., "The flaws in Pakistan's Education System", Abasyn Journal of Social Sciences, *4*(1), 211-230.

Rosenberg, M. (2001). E-Learning. USA: McGraw-Hill.Save the Children & UNICEF "Disciplining The Child Practices and Impacts", NWFP: School &Lietarcy Department, 2005.

Shui-Fong L. & Yin-Kum L. (2007). The Roles of Instructional Practices and Motivation in Writing Performance, *The Journal of Experimental Education*, *75*(2). 111-120

Yaseen, Z., Jathol, I. & Muzaffar, M. (2020). Covid-19 and its Impact on South Asia: A Case Study of Pakistan, *Global International Relations Review*, III(I), 20-26

Zheng, B., Lin, C.-H., and Kwon, J. B. (2020).The impact of learner-, instructor-, and course-level factors on online learning. *Comput. Educ. 2*(5). 45-56