The Role And Relevance Of ICT Tools And Techniques Among Higher Educational Institutes In West Bengal

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Abstract

The present paper is concerned with the Covid-19 Pandemic impact on Higher Educational Institutes (HEIs) predominantly. The Pandemic impact has frozen Educational institutes and their works. It has also made HEIs all over the world clueless to enhance safety environment for teaching-learning. The pandemic lockdown has masqueraded numerous challenges to Higher Educational Institutes (HEI), particularly to West Bengal context. While the Higher Educational Institutes (HEIs) in West Bengal address various issues relating to Students' motivation, interests and performance, the pandemic impact paves ways to explore Technology-Adapted teaching-learning frameworks to empower the faculties to involve students in teaching-learning-performance paradigm. Harris and DiMarco (2010) have indicated that Educational institutes have to have locking out danger to keep students safe in crisis. This is an indication that Educational institutes have to adopt new strategies to help the students to be safe in environment and help them to cope with their studies away from the HEI environment. The current research was based on a predetermined sample size: a sample of 117 teachers from 17 Higher Educational Institutes (out of 200) from West Bengal have been collected and tabled further. The variables used in in the current research has the Cronbach's Alpha N of Items (57) reliability Statistics value is .908. On the basis of quantitative analysis involving correlation analysis with control situations like years of operation and gender perception and factor analysis, the researcher has enumerated the data outcomes. The data findings are: the need assessment of Pandemic impact, interventions through ICT tools and technqiues to bridge the learning gap, attitude of teachers towards ICT teaching techniques and the mean value of ICT tools used to increase the active participation of Students online. Thus the current research has explored the Pandemic situation and its influence towards discovering newer technological solutions to bridge the learning gap and help the Students to be innovative through digital platforms and become merely a Student-centred approach.

Key Words: Covid-19, Pandemic impact, learning gap, ICT tools, technology and Active participation

I. Introduction

The Pandemic Covid-19 has devastated the nature and the World of Education around Globe. Higher Educational Institutes (HEIs) all over the world have faced the challenges of teaching-learning and meeting

the demands of the students. The outbreak of Covid-19 has brought the downfall of HEIs in terms of curriculum design, implementation and outcomes. There is also a digital divide among HEIs who have not familiar with online education and pedagogy models. Thus, it has been observed that the Pandemic Lockdown has imposed numerous responsibilities to Higher Educational Institutes (HEI), particularly to West Bengal context to cater to the needs of the Students. It gives an opportunity to analyze the educational scenario in HEIs and invites concrete responses from HEIs. This paper attempts to explore the new avenues to train the teachers in Technology-Adapted solutions and help them to adopt newer ways of imparting quality education through online platforms.

II. Research Backdrop

Many Research studies are providing insights on the impact of Covid-19 on Educational Institutes. The research outcomes of Burgess & Sievertsen, (2020) have indicated that the pandemic influence has made the Educational Institutes to meet the closure of complete schooling and other activities have been marooned. The research findings of Rundle, Andrew G., et al (2020) have indicated that Covid-19 has impacted on Students more health hazards and causing obesity risk in them while they are at home for a long period of time. The insights of Andrew G., et al (2020) has been matched with findings of Sahu, (2020) who indicated that the closing of educational institutes have impacted on Students, Academic Staff, Universities programs and career opportunities. Research findings of Nicola, Maria, et al (2020) have indicated that many Post Graduate programmes and research projects have been suspended due to the impact of Covid-19 and there is no way out to continue the research studies. It has been observed that Cao, Wenjun, et al (2020) have indicated that the sudden termination of Academic institutes have delayed in final year project completions and caused psychological and mental pressure on students. Chick, et al, (2020) indicated that Pandemic covid-19 has led the HEIs to discover alternative models of providing educational opportunities to the student fraternity. Bansal, (2020) Proposed an alternative route to revival of Higher Educational Institutes in the pandemic closure. He further indicated that there is a sharp rise on online teaching-learning process, enhancing students with performance and outcomes. The research findings of Huang, et al, (2020) indicated that Higher Educational Institutes use the online technical solutions and services to instruct students with more flexibility in time and in space. Thus, the research findings have indicated that there is an acute gap between the completion of studies, pursuing higher studies or availing job opportunities and the need for new strategies.

III. Methodological Framework

In the light of the insights drawn from extant literature coupled with the theoretical and conceptual perspective, an effort has been taken in this paper address the research gaps, objectives, sample sizes and the selection of variables.

3.1. Research Gaps and Setting Objectives

The research background has enumerated a multiple layer of problems in Educational Institutes due to the influence of Covid-19 pandemic. The literature readings have exposed ample research gaps between the closure of Higher Educational Institutes, competition of courses and the future of the students from the perspectives of teaching-learning paradigm outlook. We have observed considerable gaps in literature which in other justify the rationale for carrying out a research work on the topic under study.These Insights have

indicated that Educational institutes have to adopt new strategies to help the students to be safe in environment cope with their studies away from the Higher Educational Institutes environment. Thus, the current research aims to study the effective implementation strategies of Higher Educational Institutes in West Bengal in using the Technology-Adapted Solutions and Services to go online to bridge the gap between the cessation of HEIs and Students' learning and performance. The research objectives are: (1). To study gender perception towards using Technology-Adapted content-instruction-learning solutions, (2). To study Technology-Adapted content-instruction-learning solutions in control situations namely years of experience, (3). To understand the impact of Technology-Adapted content-instruction-learning solutions on faculties of Higher Educational Institutes.

3.2. Sample Strategy

The current research has employed a pre-set sample framework: a sample of two hundred faculties from 30 Higher Educational Institutes in West Bengal were invited to participate in the online survey, interviews and Focused Group Discussion and share their views and opinions. The current research has received positive feedback from faculties and there were 117 faculties who shared their views from 17 Higher Educational Institutes in West Bengal.

3.3. Research Variables and its reliability

Based the review of literature and insights, we have obtained fifty seven variables to study the technological teaching-learning aspects being employed by Higher Educational Institutes in West Bengal. The selected variables are carefully examined and to show how reliable they are in the current research. It has been observed that A researcher like Nunnaly (1978) has pointed out that the values of Alpha coefficient is 0.7 as an acceptable reliability coefficient of the items construct. The Cronbach's Alpha value of N of Items (57) is (.908), being achieved.

IV. Research Findings

The research data has collected, computed and interpreted with desirable outcomes. The research findings have been presented with deep nights. Withrow (2013) has indicated that the findings are meaningful in the context in which they arise and it has relationship with variables.

4.1. The nature of relationship between Technology-Adapted Teaching aspects

With a view to examine the nature of relationship between the different identified aspects of Technology-Adapted teaching-learning in Higher Educational Institutes in West Bengal, the correlation analysis using Pearson's r (Pearson correlation coefficient) has been preferred. The objective 1 was to study the relationship between gender and Technology-Adapted Teaching components. The nature of relationship between the different identified aspects of Technology-Adapted Teaching of HEIs is quite interesting and provides important insights on different aspects. The Objective 1 was highlighting statistically-significant-relationships exist between the various variables used in the research. The top five aspects, which are having higher statistical relationships with other variables. The first aspect is **Exploring ICT information** which has the maximum number of relationships with 46 aspects. The first aspect has very high statistically-significant-relationships with Innovative classroom management, Understanding ICT information, Online Self-learning, Online Team-learning, Curriculum design and syllabus enhancement tools. The faculty members of HEIs are using these tools and techniques in their teaching-learning paradigm. The second aspect is **Online lecture** which has statistically significant relationship with 38 aspects. The faculty members of HEIs in West Bengal

are using the online lecture method to help the students to learn and complete the syllabus. It has impacted on students who are able to learn and articulate well of their lessons. The third aspect is **Co-designing** which has 31 aspects correlated. Co-designing involves students are able to share their learning outcomes with faculty members of HEIs. This has changed the nature of online teaching-learning pedagogy. The fourth aspect is **Subject mastery**, which is having 24 aspects statistically significant relationships. The fifth aspect is **Story Bird** which is one of the online programs used by faculty members of HEIs. This is having statistically significant relationships with 18 aspects. Thus, it is satisfactory to establish relationship between the aspects in the current research and indicating the relationship between various aspects in HEIs.

4.2. Technology-Adapted Teaching Learning in control Situations

In the context of the control situations in Objective 2, there are two parameters that have been considered namely, gender (male and female) and years of experience (greater than 10 years-Old, less than 10 years-New). The entire data was divided into gender wise and taken separately for the correlation analysis. The technology perception of Male faculty members of HEIs are different from the female faculty members. The statistically significant relationships is found.

4.2.1. Gender perception

The table 1 shows how an aspect is having more statistically significant relationships with other aspects of the research. The female faculty members are prone to use Online-Team learning which is linked with 41 aspects. It links Curriculum design, Cobocard, Poll daddy and other aspects too. These aspects are highly statistically significant. The second aspect is **Curriculum Planning** which is having overall 39 aspects statistically significant and it is relevance. It adds to the technology adaptation in teaching.

Table 1 : Gender Perception towards Technology aspects Female Faculty Members of HEIs

Correlations Individual Aspect	Total statistically significant relationships
Online Team-learning	41
Curriculum Planning	39
ICT application	39
Curriculum organization	37
Online FDPs	37

When we compare the table 1 of Female faculty members of HEIs with table 2, we could understand the relational aspects in Female is statistically significant and different from male faculty members. The current research has identified Technology-Adapted Teaching online orientation is different among male and female. The Male faculty members in HEIs are more prone to NETSUPPORT, ICT application, In-Faculty application, whereas Female faculty members are more prone to Online team learning in comparing with others.

Table 2 : Gender Perception Technology aspects Male Faculty Members of HEIs

Correlations Individual Aspect	Total statistically significant relationships
NETSUPPORT	34
ICT application	31
In-Faculty training	31
Curriculum design	30
Curriculum organization	30

4.2.2. Role Years of Experience in Technology-Adapted Teaching Learning

The Years of experience plays a vital role in adopting technology in teaching and learning. The Years of experience of the faculties in HEIs are considered for the correlation analysis to study the impact on them. It is to understand how faculties with More than 10 years of experience adopt in comparison with faculties with less than 10 years of experience in Technology-Adapted Teaching and Learning.

4.2.2.1. Years of Experience more than 10 yrs

Table 3. Years of Experience more than 10 yrs.	Statistical Significance
ICT application	38
Curriculum Planning	37
Out-bound Faculty training	37
Curriculum organization	36
Online Team-learning	36
GOOGLE MEET	36

The table 3 shows the correlation analysis and how one aspect of Technology-Adapted teaching learning establishes relationship with other aspects in HEIs. The Statistical Significance of first aspect namely **ICT application** is high with faculties of 10 yrs.

The faculties with 10 yrs experience in HEIs are more prone to use ICT application, curriculum planning, Online team learning and curriculum organization of the content of teaching-learning. These aspects have strong correlations with other aspects used in the study.

4.2.2.2. Years of Experience less than 10 yrs

The faculties with less than 10 yrs experience in HEIs are more prone to analyse first the problems that are faced by the students, followed by ICT technology adaptation. The correlation aspects generally show the minimum interaction in comparison with more than 10 yrs of experience.

Table 4. Years of Experience less than 10 yrs.	Statistical Significance
Syllabus Gap	30
ICT adaptation	29
NETSUPPORT	29
Curriculum organization	28
GOOGLE MEET	27
OPENSIS	27

4.3. Extracting the different dimensions of Technology-Adapted teaching learning

Objective 3 was to extract the different dimensions of Technology-Adapted teaching learning components with principal component analysis and it has been employed using Varimax rotation and Kaiser's criterion (Fabrigar & Wegener, 2012). The sample adequacy test has been done with the Kaiser-Meyer-Olkin Measure of Sampling Adequacy value of (0.734). The KMO tests has led further to extract the dimensions. The fifty seven variables are converted into 6 dimensions (factors). The first factor is **Online Instruction Gimmicks** which has the factor score of (0.912) covering 12 aspects namely; Story Bird, Scribble Maps, Wordle, Essay Map, Mixbook, Explora Tree, icharts, wikispaces and Wallwisher. Faculties in HEIs are using online platforms to instruct the students and assist them in their learning. The impact on the Faculties have been positive in their technology-adapted teaching. The Second factor is **Collaborative learning strategies**, having the factor score of (0.888) and comprising of 9 aspects. Collaborative learning strategies are found to be strongly practiced among Faculties in HEIs namely Co-learning, Co-designing, Co-developing, subject mastery, reinforcement and so on. The third factor is **ICT-Adoption Strategies**, having factor scores of (0.853) and it covers 8 aspects namely Exploring ICT-information, Understanding ICT-information and applying in the context of Online technology-adapted teaching. The faculties are found to be technology-adapted oriented and teach the students with online mode of transferring knowledge. The fourth factor **Assessment Strategies** which comprises of 6 aspects with factor score (0.836). The fifth factor is **Skill Impact** covering 6 aspects with factor score of (0.814). Faculties have developed their cognitive, creative and reflective skills by using technology-adapted teaching and

learning. The final sixth factor is Outcome Strategies, covering 4 aspects with the factor score of (0.777). The knowledge of students is being tested with online evaluative programs like Survey Money, Poll Daddy and icharts and Students were awarded grades.

V. Conclusion and Recommendation

The current research has given a new orientation to the Higher Educational Institutes (HEIs), in West Bengal. Though Many HEIs have not gone to online mode of communication with students before the lockdown, the covid-19 has impacted on HEIs in West Bengal to use the online mode of communication to instruct students. One of the Major outcomes of the current research is to link Faculties with online technology-adapted teaching learning components. The online teaching-learning platforms have opened new doors to impart outcome based education and help the students to become co-designers in learning environment. Higher Educational Institutes have accomplished their vision of educating the students with quality inputs and they have used online mode of communication systems to ensure the quality education. Faculties have used the paradigm of Technology-adapted teaching learning with speed, space and skill. This study could be replicated in other states of India with validation of variables used in the current research.

Reference

Bansal, S. (2020). Impact of the COVID-19 Pandemic on Education, Rise of Online Teaching Learning Process & Effects on Health of Kids. *Rise of Online Teaching Learning Process & Effects on Health of Kids (May 8, 2020)*.

Burgess, S., & Sievertsen, H. H. (2020). Schools, skills, and learning: The impact of COVID-19 on education. *Vox (April 1)*.

Cao, W., Fang, Z., Hou, G., Han, M., Xu, X., Dong, J., & Zheng, J. (2020). The psychological impact of the COVID-19 epidemic on college students in China. *Psychiatry research*, 112934.

Chick, R. C., Clifton, G. T., Peace, K. M., Propper, B. W., Hale, D. F., Alseidi, A. A., & Vreeland, T. J. (2020). Using technology to maintain the education of residents during the COVID-19 pandemic. *Journal of Surgical Education*.

Cohen, J., & Kupferschmidt, K. (2020). Countries test tactics in 'war'against COVID-19. In: American Association for the Advancement of Science.

Crawford, J., Butler-Henderson, K., Rudolph, J., & Glowatz, M. (2020). COVID-19: 20 Countries' Higher Education Intra-Period Digital Pedagogy Responses. *Journal of Applied Teaching and Learning (JALT), 3*(1).

Elçi, A., Yaratan, H., & Abubakar, A. M. (2020). Multidimensional Faculty Professional Development in Teaching and Learning: Utilizing Technology for Supporting Students. *International Journal of Technology-Enabled Student Support Services (IJTESSS), 10*(1), 21-39.

Huang, R., Liu, D., Tlili, A., Yang, J., & Wang, H. (2020). Handbook on Facilitating Flexible Learning During Educational Disruption: The Chinese Experience in Maintaining Undisrupted Learning in COVID-19 Outbreak. *Beijing: Smart Learning Institute of Beijing Normal University*.

Kraemer, M. U., Yang, C.-H., Gutierrez, B., Wu, C.-H., Klein, B., Pigott, D. M., . . . Hanage, W. P. (2020). The effect of human mobility and control measures on the COVID-19 epidemic in China. *Science, 368*(6490), 493-497.

Lippe, M. P., & Kaylor, S. K. COVID-19 Resource: Building bridges of hope over roaring waters: Education during a crisis.

Marshall, A. L., & Wolanskyj-Spinner, A. (2020). *COVID-19: Challenges and Opportunities for Educators and Generation Z Learners.* Paper presented at the Mayo Clinic Proceedings.

Masters, G. N., Taylor-Guy, P., Fraillon, J., & Chase, A.-M. (2020). Ministerial Briefing Paper on Evidence of the Likely Impact on Educational Outcomes of Vulnerable Children Learning at Home during COVID-19.

Nicola, M., Alsafi, Z., Sohrabi, C., Kerwan, A., Al-Jabir, A., Iosifidis, C., . . . Agha, R. (2020). The socio-economic implications of the coronavirus and COVID-19 pandemic: A review. *International Journal of Surgery*.

Organization, W. H. (2020). *Critical preparedness, readiness and response actions for COVID-19: interim guidance, 22 March 2020*. Retrieved from

Ozili, P. K. (2020). Covid-19 pandemic and economic crisis: The Nigerian experience and structural causes. *Available at SSRN 3567419*.

Peck, R. N., Shedafa, R., Kalluvya, S., Downs, J. A., Todd, J., Suthanthiran, M., . . . Kataraihya, J. B. (2014). Hypertension, kidney disease, HIV and antiretroviral therapy among Tanzanian adults: a cross-sectional study. *BMC medicine, 12*(1), 125.

Rundle, A. G., Park, Y., Herbstman, J. B., Kinsey, E. W., & Wang, Y. C. (2020). COVID-19 Related School Closings and Risk of Weight Gain Among Children. *Obesity*.

Sahu, P. (2020). Closure of Universities Due to Coronavirus Disease 2019 (COVID-19): Impact on Education and Mental Health of Students and Academic Staff. *Cureus, 12*(4).

Singhal, S., Bheda, J. B., Jogi, J., Rathod, P., Damor, R., & Badola, A. (2020). Impact of ICT based tools on Teaching-Learning System-a case study. *INDIAN JOURNAL OF EDUCATIONAL TECHNOLOGY, 2*(1), 21.

Sintema, E. J. (2020). Effect of COVID-19 on the Performance of Grade 12 Students: Implications for STEM Education. *Eurasia Journal of Mathematics, Science and Technology Education, 16*(7), em1851.

Tran, T. P., & Meacheam, D. (2020). Enhancing Learners' Experience through Extending Learning Systems. *IEEE Transactions on Learning Technologies*.

UNESCO. (2020). COVID-19 Impact on Education. *UNESCO Institute for Statistics data Report* Retrieved from https://en.unesco.org/covid19/educationresponse

Withrow, B. L. (2013). *Research Methods in Crime and Justice*: Taylor & Francis.