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Educational Technology in the Digital Age: A Basis for Integrated Framework of Technology Supported Instructions

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Abstract

In the digital age, the educational technology concepts must be integrated in the role of teachers as they prepare the instructional materials given the available technology as well as continuous professional learning enhancement is needed to cope up with the increasing demands and different challenges of the present time specifically the advanced technological innovations. In addition, teachers as lifelong learners need to update their knowledge and upgrade their skills or capabilities for them to be self-directed learners, confident persons, concerned citizens and active contributors for the higher educational institutions and the society at large when it comes to educational technology. This research is to determine how teachers' perceived educational technology in the digital age as a basis for integrated framework of technology supported instructions. Also, the researcher is motivated to be able to provide recommendations as basis for an integrated framework of technology supported instructions leading towards an enhanced teaching-learning process.

Keywords

Educational Technology; Integrated Framework; Teaching-Learning.

1. Introduction

In the educational technology in the digital age, the mindest of a win for all is what Berg and Walker (2021) emphasized in their discussions on empowering people, in this study the teachers as they prepare techonologically supported instructional materials leading towards better teaching and learning process. Moreover, in developing support structure it involves professional learning that will help in getting the win for all objective in an educational technology setting making an academic environment a more meaningful and rewarding place. Collaboration can help teachers get into the ways for success and remove or eliminate barriers by listening into others to understand the issues and challenges completely when it comes to educational technology as well as around learning, practices, processes, systems, and shared decision making involving in particular technology supported instructional materials.

As to this date there is no problem in the university but as technology evolves, the importance of technology will grow too. Teachers not only need training on how to take their students into the future with the next technological invention, but also stay abreast and use technology in their own lives in order to effectively use it in the classroom. Taking a sampling study of 50 teachers in a university in Hunan province as an example, as to this date there is no problem in the university but as technology evolves, the importance of technology will grow too. Teachers not only need training on how to take their students into the future with the next technological invention, but also stay abreast and use technology in their own lives in order to effectively use it in the classroom.

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2. Research Instrument and Technique

This research study aimed to determine how teachers perceived educational technology in the digital age as a basis for integrated framework of technology supported instructions leading towards an enhanced teaching-learning process.

The study was conducted in a university in Hunan Province, China .It covered the participant-teachers of the school of computer science and engineering who are capable and willing to provide their insights and experiences on the following specific questions; determining how do teachers perceive educational technology in the digital age in terms of the following digital literacy dimensions; critical , operational, and cultural; assessing the extent of the impact of educational technology on how teachers prepare their instructional materials as regards to the degrees of classroom technology integration namely substitution, augmentation, modification, redefinition. Also, the study looked into the significant difference in the perception of teachers about educational technology in the digital age when grouped according to profile. The specific questions will help the research formulate basis for integrated framework of technology supported instructions leading towards an enhanced teaching-learning process.

Purposive Sampling was used to select the respondents of the study . The specific criteria for the respondent-participants are as follows; (1) Must be employed in the School of Computer Science and Engineering in Hunan Province, China, (2) Must be teacher who uses mobile educational pedagogies for at least one year; (3) Has adequate experiences in teaching using mobile education; (4) Educational attainment best fits the criteria of the subjects being handled; and (5) willingness, knowledge of the research issue, and capacity to participate in the research.

It was guided by research descriptive design method and limited to a self-made questionnaire which was validated by at least three (3) experts and the adviser. The survey questionnaire was tested its reliability through Cronbach Alpha Reliability test. The time constraints and the pandemic situation evidently hinders a wider coverage wherein the researcher decided to prioritize teachers within the target university.

3. Conceptual Framework

This study was anchored with digital literacy dimensions created by Green Bill, one useful approach for both understanding the complexities of digital literacies and curriculum design as updated and discussed by Green and Beavis (2012) asserting a holistic, integrated view of digital literacy as comprising three interlocking dimensions. The three dimensions are operational, critical and cultural .

The framework as Figure1 shows it presents the research paradigm of the study wherein it shows interrelations among educational technology, digital literacy and technology-supported instructional materials. Technology is a part of everyday academic interactions as digital tools and devices when used properly will evidently make technology as a powerful tool in the transformation of teaching and learning. Digital literacy and technology supported instructional materials will help in formulating the integrated framework of technology supported instructions leading towards an enhanced teaching-learning process.

The four different degrees of classroom technology integration are described as follows ; On the substitution stage, The technology is again directly substituted for a traditional tool or method, but with significant enhancements to the student experience. On the augmentation stage, Instead of replacement or enhancement, this is an actual change to the lesson's design and its learning outcome. On the modification stage, it is the beginning to move from enhancement to transformation. On the redefinition stage, it is the designing of learning experiences that can only happen with the integration of technology.

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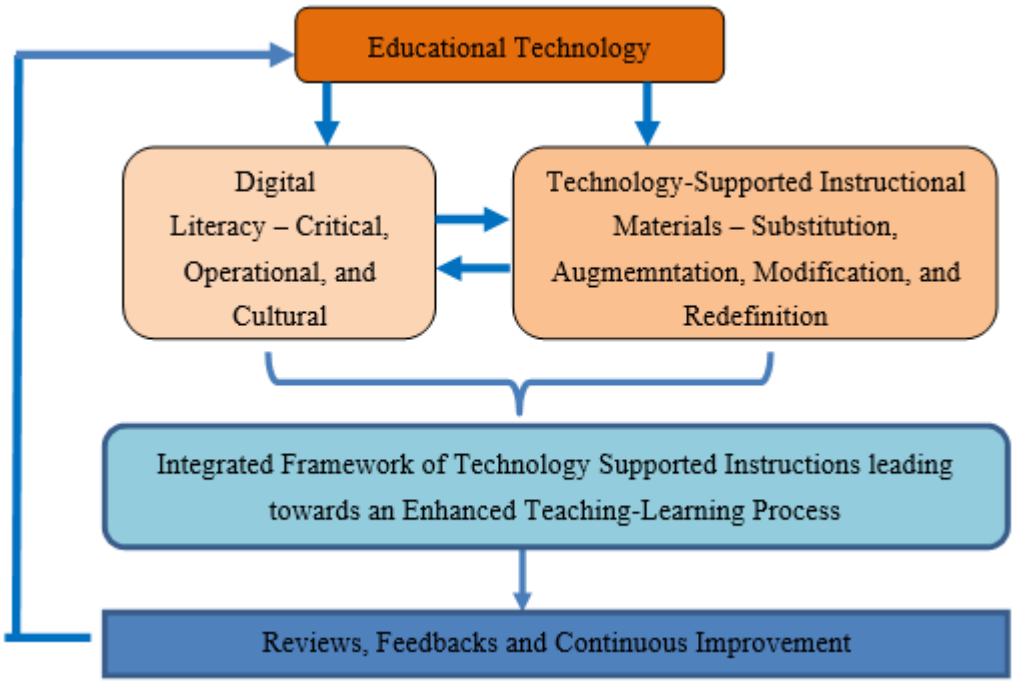

Figure 1. Research Paradigm of the Study

There is a need for reviews, feedback and continuous improvement to be able to adjust to any changes in the in the academic environment.

4. Analysis and Interpretation of data

Table 1. Teachers Perceptions on Educational Technology in the Digital Age as to Critical

INDICATORS	MEAN	STD	INTERPRETATION
1. Using educational technology to integrate curriculum, instruction, and assessment is a good idea	3.80	.40	STRONGLY AGREE
2. I feel the educational technology would be easier if I had more experience, understood how to use it to support personalize/customized learning	3.42	.50	AGREE
3. I believe using educational technology supports student motivation and improve academic performance	3.50	.51	AGREE
OVERALL	**3.57**	**.19**	**STRONGLY AGREE**

LEGEND: STRONGLY AGREE (=3.51-4.0); AGREE (=2.51-3.50); DISAGREE (=1.51-2.50); STRONGLY DISAGREE (=1.0-1.50)

Table 2. Significant Differences in the Perception of Teachers on Educational Technology in the Digital as to Years in Service

INDICATORS	MEAN	SD	F-VALUE	SIG VALUE	DECISION ON HO	INTERPRETATION
1. Critical	3.57	.19	.28	.84	ACCEPT	NOT SIGNIFICANT
2. Operational	3.37	.26	.70	.56	ACCEPT	NOT SIGNIFICANT
3. Cultural	3.45	.29	.36	.78	ACCEPT	NOT SIGNIFICANT
OVERALL	**3.47**	**.17**	**.16**	**.92**	**ACCEPT**	**NOT SIGNIFICANT**

@.05 Level of significance

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The research includes assessment on how Teachers Perceive Educational Technology in the Digital Age as to Critical, Operational, Cultural, Only a part of the table is given here. Table1 is just show on the aspect to critical, Table 2 shows the Significant Differences in the Perception of Teachers on Educational Technology in the Digital as to Years in Service. Table 3 is Summary on Impact of Educational Technology on how the Teachers Prepare their Instructional Material .

Table 3. Summary on Impact of Educational Technology on how the Teachers Prepare their Instructional Material

INDICATORS	MEAN	STD	INTERPRETATION
1. Substitution	3.21	.37	GREAT EXTENT
2. Augmentation	3.13	.40	GREAT EXTENT
3. Modification	3.07	.36	GREAT EXTENT
4. Redefinition	3.21	.42	GREAT EXTENT
OVERALL	**3.16**	**.23**	**GREAT EXTENT**

LEGEND: VERY GREAT EXTENT (=3.51-4.0); GREAT EXTENT (=2.51-3.50); MODERATE EXTENT (=1.51-2.50); NO EXTENT AT ALL (=1.0-1.50)

The Summary of the Teacher-respondents' Perception on Educational Technology in the Digital Age, with an overall mean of 3.46 is interpreted as "Agree" wherein the indicator "Critical" has the highest mean value of 3.57 or interpreted as "Strongly Agree" while, the indicator "Operational" has the lowest mean value of 3.37 or interpreted as "Agree".

The Summary on Impact of Educational Technology on how the Teachers Prepare their Instructional Materials, has an overall mean value of 3.16 or interpreted as "Great Extent" while the indicator with the highest mean of 3.21 are both "Substitution" and "Redefinition" which are both interpreted as "Great Extent". On the other hand, the indicator with the lowest mean of 3.07 is "Modification" which is also interpreted as "Great Extent".

5. Conclusion and Recommendations

Based on the presented findings of the study, the researcher came up with the following conclusions:

(1)These teachers are able to face and practice their profession during the digital era wherein educational technology is very relevant and is globally utilized by educational institutions to reach more students whether be it at online platforms or known as E-learning or the traditional face-to-face learning experiences.

(2)The teachers in the digital era are concluded to perceive the educational technology as an effective tool in teaching generation Z students who are digital natives by means of utilizing technology such as the internet in creating teaching strategies making it easier, fast and reliable for both teachers and students since the educational technology is nowadays the main platform for learning wherein it is also required for teachers to have digital literacy in critical, operational and cultural dimensions.

(3)The study concludes that the teachers who worked for more than 15 years in education no matter what degree they hold are all required to adapt to the changes brought by the generation and no significant difference is observed. The traditional teaching methods will now have to be technological and digital hence, the strategies used in crafting curriculum and instructions to students must be digitally made during this digital era. There are no significant differences when they are grouped accordingly but the focus of their study will be a factor on how easy teachers can adapt to these technological advancements.

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Based on the conclusions derived in this study, the following are the recommendations:

(1)The study recommends that teachers should continue their education and studies as they teach so as to adapt to the changes brought by the generation.

(2)The digital era was able to pave a way on how education and technology can go hand-in-hand on crafting techniques and strategies to effectively provide teachers with methods that will make teaching more concise but broad so to reach more students.

(3)It is recommended by the study to create programs that will empower traditional teachers to be motivated and be digitally literate with all the new normal and technological platforms of learning and teaching.

(4)The changes in the learning and teaching experiences of students and teachers are very much evident thus, the study recommends for teachers to learn how to gauge what is happening in the physical world over to what is happening in the digital world.

(5)Through the use of the Enhanced Teaching Framework for Digital Teachers, education system can be better.

(6)The study also recommends the use of the proposed framework "Enhanced Teaching Framework for Digital Teachers" as Figure2 shows .

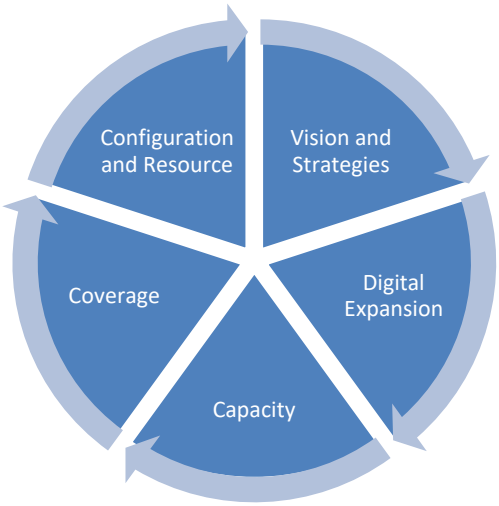

Figure 2. Enhanced Teaching Framework for Digital Teachers

In the digital era, teachers should be addressed as Digital Teachers which means that they are also inclined to technology, are very much aware of the benefits that the technology in this digital can provide them as Digital Teachers and are able to utilize technology to promote digital learning and teaching as the new normal ways of teaching and learning experience.

Configuration and Resource is the teachers' capability to access the internet and the required configurations to access it.

Vision and Strategies of the Digital Teachers must be reviewed and upgraded so as to adapt to the new normal digital phase of teaching experiences.

Digital Expansion is the stage wherein the technology is utilized to expand the reach of Digital Teachers as they teach.

Capacity of Digital Teachers to achive their goals as the better educators in this digital era is the heart of the new normal education and the success in this digital era of education will require Digital Teachers with digital skills and capability to adapt and utilize technological advancements.

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Coverage explains the entire scope of work of Digital Teachers which includes the skills in providing effective strategies in crafting instructional materials for their students and the promise to the society.

6. Summary

The educational technology is concluded to be impactful to teachers most specifically to traditional ones that may need time to adapt and practice the digital teaching platforms so as to adapt to the tech savvy students who are in the generation Z. Process such as substitution of the traditional methods to technological ones; augmentation of provide assurance that the technological advancements can be beneficial to the education system; modification will then enhance the digital teachings that will fit the digital era; and lastly the redefinition will finalize what effective strategies and techniques that will furnish the digital teaching methods by the use of technology. The study concludes that an enhanced teaching and learning process can be made by understanding and utilizing the benefits of technology in this digital era. It is important for teachers to label themselves as Digital Teachers who will be the leader of technological advancement in education.

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