TECHNOLOGY INTEGRATION AND TRANSFORMATIVE INNOVATION IN EDUCATION

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ABSTRACT

Integrating technology into the classroom helps and supports teachers in bridging the gap and making up for the weakness of traditional teaching methods with technology-based teaching and learning tools and facilities. Teachers' ability to integrate technology is a growing topic concern about the importance of technology and skilled readiness in the 21st century in both academia and the global society. This study attempted to determine the correlation between technology integration and transformative innovation in education. The descriptive survey method of research was applied in this research study. Survey questionnaire in checklist form served as the main instrument for gathering the needed data. Statistics tools such as mean, standard deviation, Product Moment Correlation were used. The study revealed that all the measures of technology integration such as response and support, teachers' adaptation and technology application are significantly related to the transformative innovation of education in terms of performance, reforms and opportunities, and vision and aspiration. Based on the above findings, the following recommendations are given: It is suggested that school administrators may offer professional development to create innovative practices in technology integration. Next, the teachers are also encouraged to participate in training to utilize transformative innovation from technology integration and increase collaborative learning with colleagues. Lastly, future researchers may conduct similar descriptive correlational studies about transformative innovation in education with the perception of stakeholders on issues and challenges that innovative transformation would bring.

Keywords: Technology Integration, Transformative Innovation, Response and Support, Teachers' Adaptation and Technology Application

1. INTRODUCTION

Technology is a powerful tool that can support and transform education in many ways, from making it easier for teachers to learning processes creation of instructional materials to open up new opportunities for people to learn and work together. With the global reach of the Internet and the ubiquity of smart devices that can connect to it are ushering in a new era of anytime anywhere education. It will instructional designers and educational technologies need to make the most of the opportunities provided by technology to change education so that effective and efficient education is available to everywhere. Teachers and school systems have to work to jointly pursue technology integration at an optimal level where innovative technology-based approaches to teaching and learning is adopted and integrated in the learning curricula (Limon, 2015).

The factors influencing technology integration include human resources, moreover as technological resources. additionally, administrators must even be conscious of the present availability of resources that their school could offer. It's through an open mind that investments shall be made so as to supply quality technology. The market today has built varied computers, laptops and tablets which are kid- friendly, but the most concern lies on the design. Teachers must be equipped with the abilities to integrate technology seamlessly into their instruction, in ways in which move beyond mere presentation and communication, to an area of creation, innovation, and problem solving.

The principle of promoting and nurturing teacher creativity and capacity to champion innovation goes to the heart of debates on the identity of teachers as professionals, and the types of teacher development, training and learning that schools may wish to promote in order to encourage the initiation and uptake of transformative innovation in educational system.

Essentially, for transformative innovation to occur, teachers need to have response and support in technology integration, improve technological adaptation and application, and empowered to innovate through distributed leadership, to be given a role

in mobilizing change and to try alternative practices and approaches and share them with others - the process of sharing that transfers ownership of the innovation becomes fundamental.

The above explanation ignites the researcher to study the response and support, teachers' adaptation and application in technology integration in teaching in transformative innovation in education.

2. Literature Review

2.1 Technology Integration

Technology could be a major factor influencing education today. Schools are expected to use technology to boost the education of their students yet challenges to its integration. First are factors external to teachers like availability of apparatus, access to resources, training and support. If students and teachers don't have access to computers and fast internet connections, then implementing online teaching isn't feasible in education system. Second are factors internal to teachers like attitudes and beliefs about technology use, their skills and knowledge. In-school help and support are critical. Working online means teachers need to adapt to new pedagogical concepts and modes of delivery of teaching that they need not been trained (Schlichter, 2020).

2.2 Transformative Innovation

The Organization for Economic Co-operation and Development (OECD) defines innovation as: "significant change in selected key practices in education" (OECD, 2016). Change is defined in 3 ways. First-order change is initiated by a lecturer, like a private needing to change their practice. Second-order change is at the varsity level. this might be within the style of a school-wide initiative to interact in transformative innovation. The ultimate could be a third order change. This is often change at a vicinity or state-level, like a significant curriculum redesign (Hubers, 2020).

Kapur (2018) in his study stated the implementation of innovations and educational technologies have proved to be beneficial to the individuals in carry out functioning of the educational institutions in an appropriate manner. The major benefits of innovation and educational technologies were the following: Tasks become less time consuming; facilitate editing and changes if the individuals are preparing reports or projects making use of computers; technologies have facilitated the communication of short messages, ideas and perspectives as well as lengthy assignments, reports and projects; leading to fundamental transformations in the system of education; Generation of ideas to provide solutions to problems; supporting the learning; promotion of aligned and effective assessments; creating data standards and strong information platforms; improving productivity and effectiveness; and development of technologies for implementation of managerial functions.

2.3. Conceptual Framework

Broadly across education innovation and alter, 'one of the foremost important knowledge gaps associated with sustainability is insight into both the individual and collective learning processes that are required to successfully implement change' (Hubers, et al., 2020). This is often particularly important in technological innovation, considering that technology use can cause new pedagogies and new forms of learning experiences, that the rapid rate of changes in technology and innovation may be resource intensive. There's a major need within the field for methodological approaches that are able to understand change processes, the outcomes and sustainability of these changes.
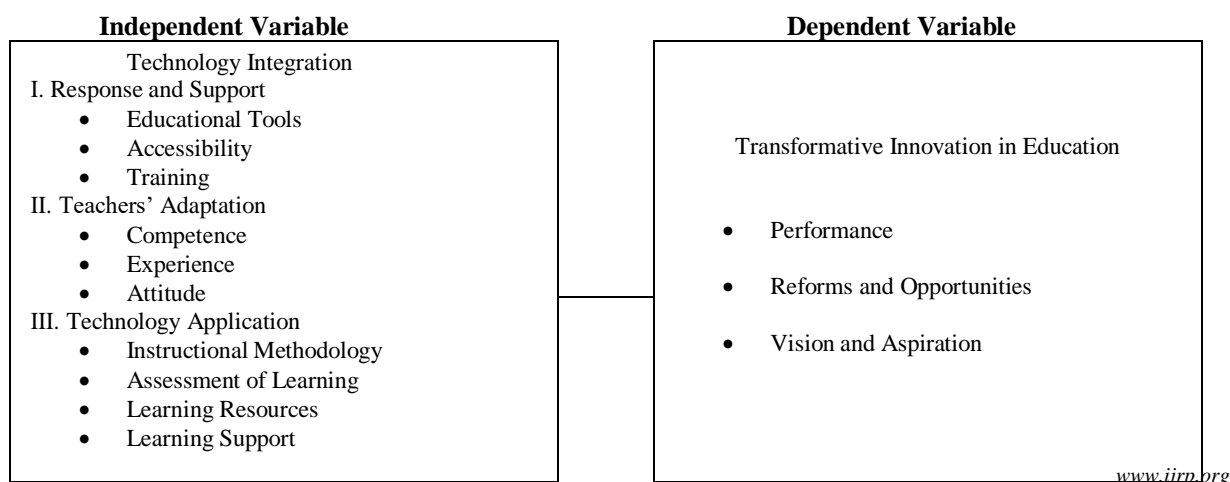
Independent Variable	Dependent Variable
Technology Integration I. Response and Support • Educational Tools • Accessibility • Training II. Teachers' Adaptation • Competence • Experience • Attitude III. Technology Application • Instructional Methodology • Assessment of Learning • Learning Resources • Learning Support	Transformative Innovation in Education • Performance • Reforms and Opportunities • Vision and Aspiration

Figure 1: Research Paradigm

3. Hypothesis

Technology integration in teaching has no significant relationship with transformative innovation in education.

4. Methodology

This study used descriptive correlational method to describe the relationship between independent and dependent variables and gather the needed information for this study. This method enables the researcher to gather quantifiable information that can be used for statistical inference through data analysis. The researcher utilized a questionnaire as a tool to gather information from the respondents on regards to technology integration in teaching and transformative innovation in education. A population technique was utilized to determine the number of research participants. The study used a researcher-made survey questionnaire to determine the data on response and support, teachers' adaptation and application in technology integration in transformative innovation in education. The researcher made a survey questionnaire consist of three parts enumerate below:

Part 1. Demographic Profile. It deals with the basic information of the respondents of the study.

Part 2. Technology Integration. Includes response and support, teachers' adaptation, and technology application.

Part 3. Transformative Innovation. Consists of performance, reforms and opportunities, and vision and aspiration.

Percent count and frequency distribution were used to describe the profile of the respondents. Mean and standard deviation were computed to perceive the variables under study. Pearson Product-Moment Correlation Coefficient was employed to test the relationship of factors related to technology integration and transformative innovation in education.

The questionnaire was subjected to validation before its administration to the respondents. For content validation, the initial draft of the research instrument was presented to the experts for critique. Revision was made to come up with an accurate instrument. The researcher submitted herself to pre-oral defense of the study for face validity of the paper and objectivity of the purpose of the study. Comments and recommendations of the validators were considered. Final draft of the research instrument was further checked prior to its administration. Hard copy of the questionnaire was distributed to the respondents. After the retrieval of the research instruments, tallying tabulation and analysis of the data followed.

5. Results

5.1 Testing of Hypothesis

Table 1: Correlation of Technology Integration in Teaching with Transformative Innovation in Education

| Technology Integration in Teaching | Transformative Innovation in Education | | | |
	Performance	Reforms and Opportunities	Vision and Aspiration	Composite Mean
Response and Support	.649**	.676**	.660**	.704**
• Education Tools	.519**	.555**	.569**	.583**
• Accessibility	.563**	.590**	.567**	.610**
• Training	.628**	.636**	.603**	.661**
Teacher's Adaptation	.741**	.807**	.818**	.840**
• Competence	.738**	.804**	.725**	.804**
• Experience	.652**	.694**	783**	.757**
• Attitude	.624**	.697**	.710**	.721**
Technology Application	.751**	.739**	.749**	.794**
• Instructional Methodology	.546**	.541**	.502**	.563**
• Assessment of Learning	.651**	.674**	.669**	.707**
• Learning Resources	.734**	.608**	.697**	.723**
• Learning Support	.673**	730**	.730**	.757**

Legend:** Correlation is significant at 0.01 level (2-tailed).

The result reveals that response and support have high correlation with transformative innovation in education. It implies that resulting in transformations within the system of education response and support in technology integration is provided and ensured the teachers that it's beneficial towards promoting well- being of the members and also the overall system of education. Aligning with Cornali's (2020) statement that education systems are required to be both effective and efficient, or in other words, to succeed in the goals set for them while making the simplest use of obtainable resources.

The result shows that teachers' adaptation has high correlational statistics with transformative innovation in education. It denotes that teachers' education, professional development, and life-long learning to incorporate attitudes, dispositions, teaching style, motivation, skills, competencies, self-assessment, self- efficacy, creativity, responsibility, autonomy to show, capacity to innovate and freedom from administrative pressure seize opportunity to develop innovative changes in educational system.

The result shows high correlation between technology application and transformative innovation of education. It implies that the utilization of technological application and modern and innovative methods, teachers can provide solutions to problems bringing about improvements within the educational system. Historic period has been a catalyst for innovation in education, research has shown that introducing new educational technologies alone doesn't improve teachers' technological integration if they're not in the midst of specific professional development and training. Therefore, in a very context of development and expansion of an increasingly digital society, training in competencies within the scope of digital literacy of teachers should be essential, nonetheless, it's often viewed as something that's often taken without any consideration.

6. Discussion

Based on the gathered data, the researcher has come up with the following: The respondents' perception on technology integration as to response and support in terms of educational tools, accessibility and training is manifested. The level of teachers' adaptation to technology integration in terms of competence, experience and attitude is practiced. The extent of technology integration in terms of technology application as to instructional methodology, assessment of learning, learning resources, and learning support is manifested. Transformative innovation in school as to performance, reforms and opportunities, and vision and aspiration is observed. Technology integration in teaching shows significant correlation with transformative innovation in education.

7. Conclusion

The findings gathered in the study led to the conclusion that all the measures of technology integration such as response and support, teachers' adaptation, and technology are significantly related to the transformative innovation in education, therefore, the posited hypothesis is not sustained.

8. Recommendation

Based on the above findings, the following recommendations are given: It is suggested that school administrators may offer professional development to create innovative practices in technology integration. Next, the teachers are also encouraged to participate in training to utilize transformative innovation from technology integration and increase collaborative learning with colleagues. Lastly, future researchers may conduct similar descriptive correlational studies about transformative innovation in education with the perception of stakeholders on issues and challenges that innovative transformation would bring.

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