Prestieesci Research Review

A STUDY TO ANALYSE THE RAMIFICATIONS OF COMPUTING FOR CULTURE AND INDUSTRY AND THE INFLUENCE OF COMPUTING ON CLASSROOM INSTRUCTION

Wang Yetong*, Midhun Chakkaravarthy

Lincoln University College, 47301 Petaling Jaya, Selangor D. E., Malaysia.

Corresponding author: Wang Yetong, Lincoln University College, 47301 Petaling Jaya, Selangor D. E., Malaysia, Email: 379434395@qq.com

ABSTRACT

The purpose of this research-based dissertation project is to explore the many players, such as policymakers, investors, and others, who have endeavored to promote, question, and investigate the educational potential of information and communication technology (ICT). Using information and communication technology (ICT) in combination with constructivist pedagogy is required for best-practice utilisation of ICT, according to studies. Despite this, the process of integrating information and communication technology involves a considerable deal of moving elements. Because teachers play such an important part in the successful integration of information and communication technology (ICT) in the classroom, they are often held accountable when there is a lack of effective integration of ICT. This effort strives to educate, empower, and inspire educators to incorporate information and communication technology (ICT) into their educational toolboxes with the purpose of using a research-based professional development plan as its basis. This professional development curriculum only focused on teacher elements that are associated with information and communication technology (ICT), which is a key step towards effective integration.

Keywords: Computing culture, Industry, Influence of computing, Technology, Classroom instructions.

INTRODUCTION

Over the previous two decades, a plethora of information and communication technology (ICT) tools have become much more accessible and usable in the average American classroom. The numerous assertions regarding the potential of information and communication technology (ICT) to enhance American education, the numerous initiatives enacted by federal and state governments, and the substantial investments in classroom equipment suggest that teachers should be making heavy use of ICT on a

daily basis. Despite the widespread use of ICT in recent years, the vast majority of students still do not get instruction that makes optimal use of this tool (Fields et al., 2018).

A new generation is entering the country's educational system, one that has grown up with technology. A variety of technologies, including information and communication technology (ICT), enhance and even create their daily lives, leisure alternatives, social ties, and future goals. One area of the American economy that has been largely unaffected by the proliferation of digital communication tools is the educational system. According to García-Peñalvo and Mendes (2018), students are falling behind because schools are clinging to the past, the Industrial Age, even if the rest of the globe is progressing towards the Information Age. Recent research have shown that the main reason for this integration gap is because instructors do not have the necessary skills and resources to properly integrate ICT into their lectures. As a result of government licencing regulations, several institutions have integrated technology instruction into their teacher training courses, with the goal of bridging the gap between student and professional computer usage. However, according to García-Peñalvo and Mendes (2018), there is no link between researching how to integrate ICT and actually implementing these strategies into instructors' everyday lesson plans (García-Peñalvo and Mendes, 2018).

BACKGROUND OF THE STUDY

In 1983, A Nation at Risk was produced by the Commission for Excellence in Education. A Nation at Risk recommended computer science as a required course for all high school students. The importance of innovation to national performance was again emphasised in A Nation at Risk. Some think it's arrogant that schools are the root of America's economic woes, as shown in A Nation at Risk. Nevertheless, it initiated changes in American education. Governments throughout the world, including the United States, have persisted after the study's publication in 2008 in integrating ICT into educational programmes. Even though a lot has changed since A Nation at Risk, there is still a push to make technology a part of every student's standard curriculum (Allen, 2008). While all government technology reports stress the need of easily accessible and reliable hardware, many also draw attention to other integration-related elements of technology. A Nation at Risk and the National Technology Plan of 2000 both emphasised the importance of well-prepared educators and the need to improve teacher preparation in order to effectively incorporate technology into the classroom.

In 2001, with support from both parties, Congress passed No Child Left Behind. In January 2002, the proposal was passed into law by Bush. Aiming to rescue lost pupils and put a stop to illiteracy, this law was enacted. The government's emphasis on research-based reform and the expansion of educational accountability were hallmarks of No Child Left Behind. In addition, it heightened students' expectations so that they

wouldn't be carried over to the following grade and teacher. Along with traditional reading skills, researchers also suggest teaching students how to effectively use technological devices (Allen, 2008).

THE PURPOSE OF THE RESEARCH

Even though this school has a solid plan for technology and plenty of resources for IT, most courses still don't use these things very often. While it is critical to include technology into the core curriculum, the current approach to technology neglects the critical role of professional development in this area. Given the relatively minimal prospects for professional progress, it is very unlikely that the necessary skills for integrating ICT would be developed without this programme. It is possible that other schools may decide to begin comparable programmes on other important educational concerns if this professional development plan is successful. This professional development course will assist educators in making the most of the school's annual budget for technology while also achieving the stated objective of empowering students to become community leaders. The children at this school will have better, more engaging learning experiences if the instructors are given the resources to use best practices in the classroom. This course will teach students the skills they need to succeed in the modern digital world (Brush et al., 2020). On top of that, there will be an instructor-specific professional development plan. Students would gain valuable skills in information and communication technology, be inspired to be creative, work together more effectively with their professors, and have several opportunities to demonstrate their academic growth if they were to participate in this course. The most important advantage is that it will help them maximise all available resources for the sake of their students' education.

Every time there has been an attempt to demand more time from committed instructors, there has been backlash. It is essential to persuade teachers that the programme is beneficial for their students' and their own professional development. If there is going to be a lot of pushbacks, it's best to begin with a smaller group of volunteer teachers rather than a school-wide initiative. Researchers would do well to listen to the initial group of teachers' thoughts on the course so they can make it better and provide future participants more opportunity for on-site professional development.

LITERATURE REVIEW

From the first days of writing with chalk and slates to the current day of computers and all the software and hardware that goes into them, technology has always played a significant role in education. Inventors and researchers who have devoted their careers to bettering the quality of education in the United States have achieved substantial

technological advancements in this field. Researchers mainly focused on technological innovations that are part of information and communication technology (ICT) as a whole (Hsu et al., 2018).

With the introduction of the personal computer, initiatives to integrate ICT into the realm of education began. The expectation of PCs' usage in educational settings inspired a number of developments with the goal of making them more user-friendly. In the 1970s, the first computers entered the realm of education. Throughout the 1980s, there were more advancements that improved the utilisation of desktop computers in educational settings. The advent of the Internet in the 1990s capped off the Information Age's rise (Kwon et al., 2018).

A slew of other developments in ICT that occurred at the same time as the expansion of the Internet made these resources more available and applicable to educational settings. Educators' use of technology in the classroom and outside increased dramatically. Notably, despite the introduction and creation of these new forms of information and communication technology, the majority of schools throughout the nation failed to incorporate them into their learning processes (Hsu et al., 2019).

RESEARCH QUESTIONS

1. What is the impact of the computer on the learning process?

METHODOLOGY

Research Design

Quantitative research seeks to find statistically significant connections between variables by collecting numerical data on variables and entering it into statistical models. To get a deeper understanding of society is the ultimate aim of quantitative research. Researchers often use quantitative approaches while examining topics that affect humans. Quantitative studies often result in data shown visually, such as in tables and graphs. Quantitative data necessitates a methodical strategy for gathering and analysing numerical information. It has a wide variety of potential uses, including data averaging and forecasting as well as the investigation of correlations and the extension of discoveries to bigger populations. The polar opposite of quantitative studies are qualitative studies, which rely on in-depth interviews and observations (e.g., text, video, or audio). Many academic fields rely on quantitative research methods. Included in this group are fields as diverse as marketing, sociology, chemistry, biology, and economics.

- **Sampling**

The questionnaire was pilot tested with 20 Chinese clients, and then a final sample of 749 customers were used to perform the research. A total of eight hundred surveys were sent out to clients chosen at random. The researcher did not consider any questionnaire that is not fully filled out for the study.

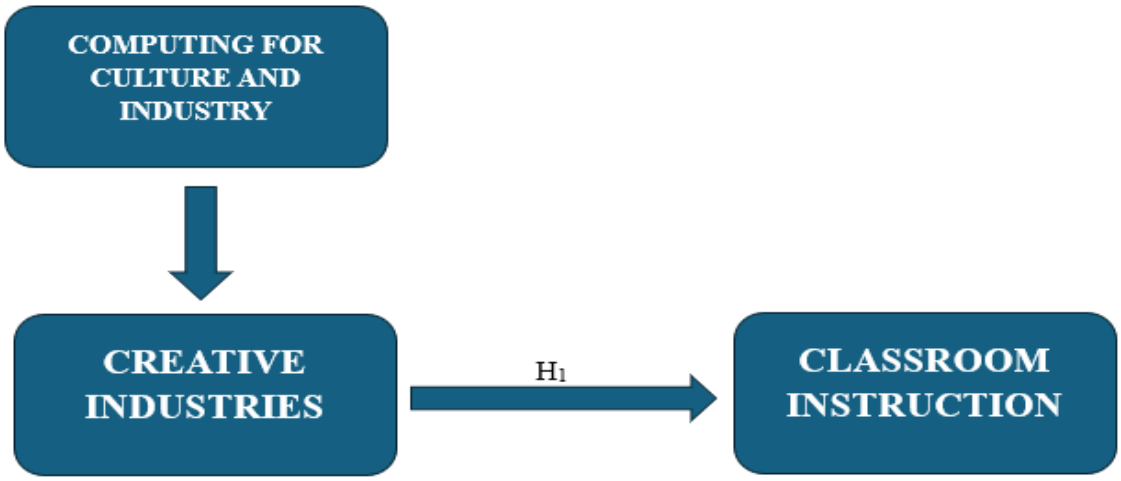
- **Statistical Software**

The statistical analysis was conducted using SPSS 25 and MS-Excel.

- **Statistical tools**

Using descriptive analysis, researchers were able to understand the data's essential nature. To determine validity, factor analysis was used.

Conceptual Framework



RESULTS

The total number of questionnaires that were given to the participants was 900. The Statistical Package for the Social Sciences (SPSS) version 25.0 software was used to evaluate 749 of the 875 returned surveys.

- **Factor Analysis**

One typical use of Factor Analysis (FA) is to confirm the latent component structure of a set of measurement items. Theoretically, latent (or undiscovered) factors are

believed to be responsible for the observed (or measured) variable scores. This model-based approach is called accuracy analysis (FA). Its primary goal is to represent the relationships between variables, including the effects of measurement error and unobserved factors.

Researcher may use the Kaiser-Meyer-Olkin (KMO) Method to see whether data is suitable for factor analysis. To determine whether the sample was sufficient, the researcher examine each model variable individually and the overall model. The statistical measures assess the possible common variance among several variables. The suitability of the data for factor analysis is often improved when the proportion is reduced.

Numbers between zero and one are returned by KMO. Sampling is deemed adequate if the KMO value falls within the range of 0.8 to 1.

It is necessary to take remedial action if the KMO is less than 0.6, which indicates that the sampling is inadequate. Use best discretion; some authors use 0.5 as this, therefore the range is 0.5 to 0.6.

KMO If it's close to zero, it means the overall correlations are tiny compared to the partial correlations. Component analysis is severely hindered by large correlations, to restate.

The following are the acceptance criteria set by Kaiser:

The following are the acceptance criteria set by Kaiser:

Very low, between 0.050 to 0.059.

0.60–0.69 falls short of the norm.

Middle grades often fall within the range of 0.70-0.79.

With a quality point score ranging from 0.80 to 0.89.

Incredible variation occurs between 0.90 and 1.00.

Table 1: KMO and Bartlett's Testa

KMO and Bartlett's Test[a]		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.858
Bartlett's Test of Sphericity	Approx. Chi-Square	4950.175
	df	190
	Sig.	.000
a. Based on correlations		

So, it turns out that claims made only for sampling are valid. The correlation matrices were subjected to Bartlett's Test of Sphericity to ensure their relevance. Kaiser-Meyer-Olkin states that a sample adequacy value of 0.858 is appropriate. The Researchers obtained a p-value of 0.00 using Bartlett's sphericity test. Results from Bartlett's sphericity test showed that the correlation matrix is not an identity matrix, which is a noteworthy finding.

Test for hypothesis

Scientific teams often "propose a hypothesis," a well-informed guess or assumption, before debating the notion with colleagues and conducting studies to ascertain its viability. As a first step in doing scientific research, studying the relevant literature is essential for developing a testable hypothesis. The primary assumption of the investigation was proven correct. All that is required to provide a possible explanation for the observed occurrence is a "hypothesis" statement. In order for the investigation to cover all bases, several theories had to be developed and tested.

DEPENDENT VARIABLE

- **Classroom Instruction**

Teaching and learning in a structured classroom environment is known as classroom instruction. Lessons given by an educator to a class or other gathering of learners constitute the bulk of the curriculum. Lectures, class debates, hands-on demonstrations, and other interactive learning activities are all part of this process, which aims to help students grasp and remember the material. Engaging pupils, imparting information and skills, and cultivating critical thinking and problem-solving abilities are the goals of classroom education. Evaluating student work, offering comments, and modifying lessons to fit different students' needs are all components of good classroom education.

INDEPENDENT VARIABLE

- **Computing for Culture and Industry**

Bringing computational methods and technology into different cultural and industrial settings is what "computing for culture and industry" is all about. Interactive media, virtual reality, and digital art are all parts of this field that employ computers to enrich cultural experiences. When applied to the business world, computational methods can streamline operations, create new goods, and increase productivity in fields as diverse as logistics, manufacturing, and services. This multidisciplinary area helps to close the gap between more conventional industries and technology, which in turn encourages innovation and opens up new avenues for progress. Computing has the ability to

revolutionise cultural expressions and industrial procedures by making them more interactive, user-friendly, and efficient.

FACTOR

- **Creative Industries**

The term "creative industries" refers to a broad category of businesses that focus on the production and sale of original works of art, concepts, and other forms of intellectual property. Advertising, architecture, art and antiques, craft, design, fashion, cinema, music, publishing, software, radio, and television industries are all part of this broader category. Cultural and economic growth are greatly influenced by them, since they drive innovation and add to the variety and uniqueness of communities. Creative industries combine creative and commercial goals, using talent and technology to create products and services with cultural and economic value. They often depend on intellectual property and are defined by a combination of these two approaches. Constantly adapting to new trends and technological developments, they are renowned for their dynamic character; they also provide substantial job prospects while encouraging creative expression on an individual and group level.

- **Relationship between Creative Industries and Classroom Instruction**

Creative industries and traditional schooling have a complex and consequential interaction. The media, design, and arts sectors, among others, often contribute ideas and materials to classroom lessons, enhancing them with practical examples and cutting-edge methods. A growing body of research confirms that students need to be able to think creatively, critically, and problem-solving in order to succeed in school. To make classroom teaching more engaging and create a more dynamic learning environment, teachers might use features from creative industries. In addition, new pedagogical approaches and materials might emerge when educators and experts from creative domains work together. Together, these efforts provide students with the tools they need to succeed in creative industries.

On the basis of the above discussion, the researcher formulated the following hypothesis, which analysed the relationship between Creative Industries and Classroom Instruction.

H01: “There is no significant relationship between Creative Industries and Classroom Instruction.”

H1: “There is a significant relationship between Creative Industries and Classroom Instruction.”

Table.2: ANOVA test (H1)

ANOVA					
Sum					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	75207.347	235	4700.459	672.417	.000
Within Groups	681.563	513	8.212		
Total	75888.910	748			

“In this study, the result is significant. The value of F is 672.417, which reaches significance with a p-value of .000 (which is less than the .05 alpha level). This means the H1: “There is a significant relationship between Creative Industries and Classroom Instruction” is accepted and the null hypothesis is rejected.”

DISCUSSION

The requirement for proper professional development for successful technology and communication integration is generally accepted and addressed in chapter two in this thesis, but the precise decisions that went into establishing this course may not be as obvious. The course begins with an instructor survey to assess school ICT integration culture. After this poll, school management and teacher-leaders meet to create an ICT integration vision. This survey for administrators, teachers, and others may help them understand the school's culture. If ignored, the implementer may prepare the programme for failure. Individual teachers' ICT integration efforts may be hampered if the educational institution's culture doesn't accept it. Researchers say school culture is a first-order integration barrier. Administrators and teachers working collaboratively on a schoolwide ICT integration plan has two benefits. Start with educators on the steering team. It also assures government assistance for ICT integration efforts. (Kwon et al., 2020) suggest administrative help is essential for ICT integration. To sustain effective ICT integration, researchers recommend strong leadership.

CONCLUSION

Today, government programmes and investments attempt to incorporate ICT into schools. Many believe technology motivates and prepares students for the 21st century. History of classroom ICT use indicates the country's inadequate ICT integration. ICT integration boosts ICT component investments via creativity, collaborative instruction, intervention, and inquiry-learning. Most believe that only constructivist schooling can guarantee this. Constructivist education emphasises student-centered, inquiry-based learning. Constructivist education promotes cooperation and critical thinking. Tech may

improve constructivist learning. ICT use falls short of academic, reformist, and integration proponents' promises. Integrating ICT into classrooms seems impossible for teachers. ICT integration affects several schools, scientific, administrative, student, and teacher difficulties. Teachers are sometimes accused of inadequate ICT integration due to their importance. Teachers determine classroom activities based on their beliefs, attitudes, self-efficacy, creativity, and skills. These characteristics mix with college, technical, administrative, & student factors to generate almost unlimited circumstances unique to each teacher. To utilise ICT, teachers require training, support, and incentives.

REFERENCES

1. Allen, L. (2008, April). The technology implications of A Nation at Risk. Phi Delta Kappan, 608-610.
2. Brush, T., Ottenbreit-Leftwich, A., Kwon, K., & Karlin, M. (2020). Implementing socially relevant problem-based computer science curriculum at the elementary level: students' computer science knowledge and teachers' implementation needs. Journal of Computers in Mathematics and Science Teaching, 39(2), 109–123
3. Fields, D. A., Kafai, Y., Nakajima, T., Goode, J., & Margolis, J. (2018). Putting making into high school computer science classrooms: Promoting equity in teaching and learning with electronic textiles in exploring computer science. Equity & Excellence in Education, 51, 21–35.
4. García-Peñalvo, F. J., & Mendes, A. J. (2018). Exploring the computational thinking effects in pre-university education. Computers in Human Behavior, 80, 407–411.
5. Hsu, T.-C., Chang, S.-C., & Hung, Iskrenovic-Momcilovic, O. (2019). Pair programming with scratch. Education and Information Technologies.
6. Hsu, T.-C., Chang, S.-C., & Hung, Y.-T. (2018). How to learn and how to teach computational thinking: Suggestions based on a review of the literature. Computers & Education, 126, 296–310.
7. Kwon, K., Lee, S. J., & Chung, J. (2018). Computational concepts reflected on Scratch programs. International Journal of Computer Science Education in Schools, 2(3), 1–15.
8. Kwon, K., Leftwich, A., Brush, T., & Jeon, M. (2020). Effects of problem-based learning curriculum for computer science education in an elementary school. Paper presented at the AERA Annual Meeting, San Francisco, CA.
9. Selwyn, N. (2008). Realising the potential of new technology? Assessing the legacy of new labour"s ICT agenda 1997-2007. Oxford Review of Education, 34, 701-712.