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AN ANALYSIS OF THE IMPLICATIONS OF COMPUTING FOR CULTURE AND INDUSTRY, AS WELL AS ITS IMPACT ON CLASSROOM INSTRUCTION

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ABSTRACT

Many stakeholders, including politicians, investors, and others—who have worked to advance, challenge, and study the educational possibilities of information and communication technology (ICT) are the focus of this research-based dissertation project. Studies have shown that the most effective use of information and communication technology (ICT) requires a mix of constructivist pedagogy and ICT. Regardless, there are a lot of moving parts in the process of merging communication and information technologies. If there is a failure to effectively integrate ICT in the classroom, it is frequently the responsibility of the teachers involved because of the crucial role they play in this process. With a research-based professional development plan as its foundation, this endeavour seeks to educate, empower, and inspire educators to integrate information and communication technology (ICT) into their instructional toolboxes. An important step towards successful integration, this professional development program only addressed teacher aspects related to information and communication technology (ICT).

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

INTRODUCTION

Many ICT technologies have become much more user-friendly and accessible to the typical American classroom throughout the last 20 years. Teachers should be heavily utilising ICT every day, according to all the claims made about its ability to improve American education, all the programs passed by federal and state governments, and all the money spent on classroom equipment. Fields et al. (2018) found that most students

still do not get education that makes best use of ICT, despite its extensive usage in recent years (Fields et al., 2018).

Those who have grown up with technology are now enrolling in the country's schools. Their day-to-day lives, leisure options, social connections, and aspirations for the future are all improved and even created by various technological advancements, one of which is information and communication technology (ICT). The expansion of digital communication technologies has had little impact on the American educational system, one sector of the economy. As to García-Peñalvo and Mendes (2018), the reason pupils are slipping behind is because schools persist in maintaining practices from the Industrial Age, despite the global shift towards the Information Age. According to recent studies, teachers lack the knowledge and tools to effectively incorporate ICT into their lessons, which is the primary cause of this integration gap. In an effort to close the digital divide between students and professionals, some schools have begun including technology education into teacher preparation programs in response to government licencing requirements. Nevertheless, as per the findings of García-Peñalvo and Mendes (2018), there is no correlation between studying the use of ICT and the actual incorporation of these tactics into the daily lesson plans of teachers (García-Peñalvo and Mendes, 2018).

BACKGROUND OF THE STUDY

It was 1983 that the Commission for Excellence in Education put out A Nation at Risk. All high school students should be compelled to take computer science, according to A Nation at Risk. A Nation at Risk restated the prioritisation of innovation above other factors in determining a country's success. As seen in A Nation at Risk, some people find it haughty to blame schools for America's economic problems. But it did start a trend towards reform in American schools. Since the report was published in 2008, educational programs throughout the globe, including in the US, have continued to use ICT. Some have argued that, despite many changes since A Nation at Risk, technology should still be required coursework for all students (Allen, 2008). Every single government technology report emphasises the requirement of dependable hardware that is both readily available, but many also highlight other aspects of technology that are connected to integration. Both A Nation at Risk and the National Technology Plan of 2000 stressed the significance of teachers who are well equipped to use technology in the classroom.

No Child Left Behind was approved by Congress in 2001 with bipartisan backing. Bush signed the measure into law in January 2002. Aiming to address the issue of illiteracy and recover lost students, this legislation was passed. Key features of No Child Left Behind were increased government oversight of schools and a focus on reforms based

on research. So that they wouldn't carry over to the next grade and instructor, it also raised students' expectations. Researchers recommend instructing children in the proper use of technology gadgets in addition to more conventional reading abilities (Allen, 2008).

THE PURPOSE OF THE RESEARCH

Most classes still don't make much use of the school's robust IT infrastructure and well-thought-out strategy for technology. The present strategy for technology ignores the vital importance of professional growth in this field, even if incorporating technology into the core curriculum is crucial. Given the limited opportunities for career advancement, it is very doubtful that the essential abilities for incorporating ICT would be cultivated in the absence of this program. If this strategy for professional development is effective, other schools may choose to launch similar programs addressing other critical issues in education. In addition to helping kids grow into future leaders in their communities, this professional development course will show teachers how to maximise the school's yearly technology budget. If the teachers at this school are equipped to use best practices, the students will benefit from more interesting and fruitful lessons. According to Brush et al. (2020), this course will provide students with the necessary abilities to thrive in today's digital landscape. Additionally, a professional development plan tailored to each teacher will be in place. Taking this course would provide students with several benefits, including a solid foundation in information and communication technology, a boost to their creativity, improved collaboration with teachers, and many chances to showcase their progress in the classroom. The biggest perk is that it will allow them to make the most of their limited resources for the sake of their pupils' education.

There has always been pushbacks whenever there has been an effort to ask dedicated teachers for extra time. Convincing educators that the program would help both their kids and them advance professionally is crucial. Avoid starting with a school-wide project if you anticipate significant resistance by working with a smaller group of volunteer teachers. Researchers should take the time to hear from the first cohort of instructors about the course in order to refine it and enhance the on-site professional development opportunities for subsequent cohorts.

LITERATURE REVIEW

Technology has always been an integral part of education, from the earliest days of writing with chalk and slates to the present day with computers and all the software and hardware that goes into them. Scientists and engineers that have worked tirelessly to improve American schools have made great strides in this area of technology. Hsu et

al. (2018) found that researchers mostly looked at new technologies that are a component of ICT.

There have been efforts to incorporate ICT into the field of education since the personal computer was introduced. Several innovations aimed at making PCs more user-friendly were motivated by the anticipation of their deployment in educational settings. Computers made their way into classrooms for the first time in the 1970s. More innovations that enhanced the use of desktop computers in classrooms occurred during the 1980s. According to Kwan et al. (2018), the Information Age came to a close with the introduction of the Internet in the 1990s (Kwan et al., 2018).

The proliferation of the Internet and other information and communication technology advancements around the same time greatly increased the accessibility and usefulness of these materials in classrooms. There was a significant increase in the usage of technology by teachers both in and out of the classroom. It is worth mentioning that most schools throughout the country neglected to integrate these new kinds of ICT into their teaching and learning practices, even though they were created and introduced (Hsu et al., 2019).

RESEARCH QUESTIONS

1. What are the effects of computers on culture, industry, and educational instruction?

METHODOLOGY

Research Design

By gathering numerical data on variables and integrating it into statistical models, quantitative research aims to discover statistically significant correlations between variables. Quantitative study ultimately aims to get a greater knowledge of society. Concerning human-related subjects, quantitative methods are often used by researchers. Tables and graphs are common ways that quantitative research presents its findings to the audience. Collecting and interpreting numerical information requires a systematic approach when dealing with quantitative data. Data averaging and forecasting are only a few of its many possible applications; others include studying relationships and expanding findings to larger populations. Qualitative studies consist of in-depth interviews and observations (e.g., audio, video, or text) and are in stark contrast to quantitative research. Quantitative research techniques are used in many

academic disciplines. Economics, sociology, chemistry, biology, and marketing are all part of this category.

- **Sampling**

Twenty Chinese consumers served as pilots for the questionnaire, while 749 customers made up the final sample for the study. Eight hundred questionnaires were sent to randomly selected customers. In the study, the researcher did not consider any incomplete questionnaires.

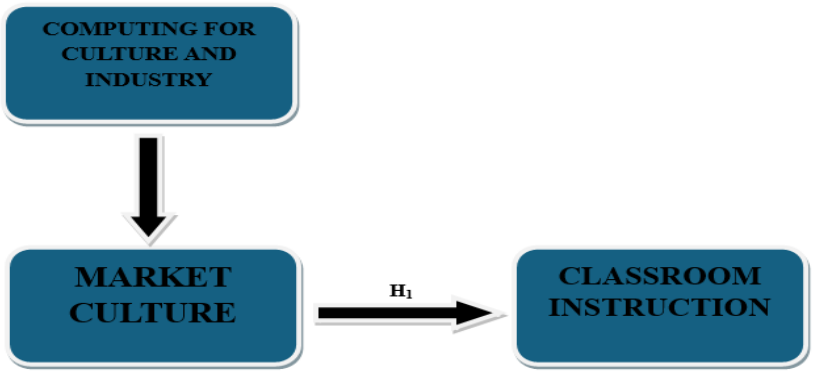
- **Statistical Software**

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

- **Statistical Tools**

Descriptive analysis let researchers grasp the core characteristics of the data. Factor analysis was used to assess validity.

Conceptual Framework



RESULTS

A total of 900 questionnaires were sent to the individuals who took part. Out of 875 surveys that were returned, 749 were evaluated using the Statistical Package for the Social Sciences (SPSS) version 25.0 software.

- **Factor Analysis**

A common use of Factor Analysis (FA) is to validate the underlying component structure of a collection of measurement items. Latent factors are theoretically considered to account for the observed variable scores. This model-based methodology is referred to

as accuracy analysis (FA). The major objective is to illustrate the connections among variables, including the impacts of measurement error and unobserved factors.

Researchers may use the Kaiser-Meyer-Olkin (KMO) Method to assess the appropriateness of data for factor analysis. To assess the adequacy of the sample, the researcher evaluated each model variable independently as well as the overall model. The statistical measures evaluate the potential shared variance across many variables. The appropriateness of the data for component analysis is often enhanced when the ratio is decreased.

KMO yields values ranging from zero to one. Sampling is considered sufficient if the KMO value is between 0.8 and 1.

Remedial action is required if the KMO is below 0.6, indicating insufficient sampling. Exercise sound judgement; some writers utilise 0.5 for this purpose, therefore establishing a range of 0.5 to 0.6.

KMO If it approaches 0, it indicates that the overall correlations are minimal in comparison to the partial correlations. Component analysis is significantly obstructed by substantial correlations.

The subsequent approval requirements established by Kaiser are as follows:

Extremely low, ranging from 0.050 to 0.059.

0.60–0.69 is below the standard.

Middle grades often range from 0.70 to 0.79.

Exhibiting a quality point score between 0.80 and 0.89.

Significant fluctuation exists 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		

It follows that assertions made only about sampling are, in fact, valid. To make sure the correlation matrices were relevant, we ran them via Bartlett's Test of Sphericity. According to Kaiser-Meyer-Olkin, an adequate sample size is 0.858. Using Bartlett's sphericity test, the researchers were able to acquire a p-value of 0.00. An interesting discovery was made when Bartlett's sphericity test revealed that the correlation matrix is not an identity matrix.

Test for hypothesis

As a first step in testing a concept, scientific teams may often "propose a hypothesis," which is essentially an educated estimate or supposition. In order to formulate a testable hypothesis, the first stage in doing scientific research is to review the relevant literature. It turned out that the investigation's main premise was right. An explanation for the observed event might be offered with only a "hypothesis" statement. It was necessary to formulate and test several hypotheses for the inquiry to be comprehensive.

DEPENDENT VARIABLE

- **Classroom Instruction**

Traditional classroom education involves both teaching and learning taking place inside a predetermined framework. Most of the curriculum consists of teacher-led classes or other gatherings of students. In order to ensure that students understand and retain the information, this approach incorporates a variety of interactive learning activities such as class discussions, practical demonstrations, and lectures. The purpose of classroom instruction is to captivate students, provide them with knowledge and skills, and foster their capacity for analytical reasoning and practical problem-solving. An important part of providing quality education in the classroom is assessing student work, providing feedback, and adapting courses to individuals' needs.

INDEPENDENT VARIABLE

- **Computing for Culture and Industry**

What we mean when we talk about "computing for culture and industry" is bringing computational approaches and technology into various cultural and industrial contexts. Some examples of this area's work that use computers to enhance cultural experiences include digital art, virtual reality, and interactive media. Computational approaches have the potential to revolutionise several industries, including logistics, manufacturing, and services, by improving efficiency, generating new products, and

boosting productivity. By bridging the gap between traditional industries and technology, this interdisciplinary field promotes innovation and paves the way for further advancement. By making them more engaging, accessible, and productive, computers may transform cultural expressions and industrial processes.

FACTOR

- **Relationship between Market culture and Classroom Instruction**

How the ideas, beliefs, and competitive dynamics of a market-driven society impact educational goals, curriculum design, and teaching techniques is what we mean when we talk about the link between market culture and classroom instruction. Practical skills, quantifiable results, and preparation for employment needs may take precedence in classroom methods in a market-oriented culture that values efficiency, performance, and flexibility. This connection influences teaching methods by pushing teachers to mimic business demands, encourage creativity, and provide pupils skills needed in a global economy.

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

H01: "There is no significant relationship between Market culture and Classroom Instruction."

H1: "There is a significant relationship between Market culture 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 Market culture and Classroom Instruction” is accepted and the null hypothesis is rejected.”

DISCUSSION

Chapter 2 of this thesis addresses the widely acknowledged need for professional growth in order to integrate technology and communication effectively; yet, the specific choices that led to the creation of this course may not be immediately apparent. In order to gauge the culture of ICT integration in schools, the first step of the course is an instructor survey. Following this survey, administration and teacher-leaders will convene to formulate a strategy for integrating ICT. Anyone interested in learning more about the school's culture may take this survey. If the implementer doesn't pay attention, the software might be set up to fail. If school culture doesn't embrace technology integration, individual instructors' attempts to do so may be hindered. According to the research, one of the primary obstacles to integration is the school's culture. There are two upsides to having school administrators and teachers work together on an ICT integration strategy. Prioritise educators serving on the steering committee. Additionally, it guarantees that the government would support initiatives to integrate ICT. Administrative support is crucial for the integration of ICT, according to Kwan et al. (2020). Researchers suggest that excellent leadership is crucial for the long-term sustainability of ICT integration.

CONCLUSION

Efforts are being made by the government to integrate ICT into schools via various programs and funding. In the eyes of many, teaching using technology inspires and equips pupils to thrive in the modern world. The country's insufficient integration of ICT is shown by its history of classroom usage of ICT. Through innovation, collaborative learning, intervention, and inquiry-based learning, the incorporation of ICT enhances investments in ICT components. Most people think that only a constructivist approach to teaching can make this happen. The focus of constructivist education is on learning that is inquiry-based and student-centered. Critical thinking and teamwork are fostered via constructivist pedagogy. Technological advancements have the potential to enhance constructivist learning. The promises made by academics, reformists, and integrationists on the use of ICT are not fulfilled. For some reason, educators just can't seem to figure out how to incorporate technology into education. Several academic

institutions, as well as administrative, student, and teacher challenges, are impacted by the incorporation of ICT. Because of their significance, teachers are often said to have not integrated ICT adequately. Educators' views, attitudes, self-efficacy, inventiveness, and abilities influence the classroom activities they choose to implement. Each educator faces an infinite number of unique challenges due to the interplay of these traits with college, technical, administrative, and student variables. Teachers need resources (time, money, and assistance) to learn how to use technology in the classroom.

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