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A Study on Attitude of Urban and Rural College Student Teachers Towards Science

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ABSTRACTS

Integration of Information, Communication, and Technology (ICT) assist teachers in meeting the global demand for technology-based teaching and learning tools and facilities to replace traditional teaching techniques. ICT is seen as one of the most important factors in the country's future development. The purpose of this study is to examine teachers' perspectives of the effectiveness of integrating ICT into the teaching and learning process in the classroom. A total of 101 instructors from ten public secondary schools in Kuala Lumpur, Malaysia, received a survey questionnaire at random. Using SPSS (version 21) software, the data for this quantitative study was analyzed for descriptive and inferential statistics. The findings show that ICT integration is quite effective for both teachers and pupils. According to the findings, one of the most important variables in the effectiveness of technology-based teaching and learning is instructors' well-equipped preparation with ICT tools and facilities. Teachers' professional development training programs were also found to play an important influence in improving students' learning quality. Other facets of ICT integration, particularly from a management perspective in terms of strategic planning and policymaking, should be considered in future studies.

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1. INTRODUCTION

The phrase "technology" has become an essential concern in many disciplines, including education, in the twenty-first century. This is because, in most countries, technology has become the primary means of knowledge transfer.

Today's technological integration has resulted in breakthroughs that have completely affected the way people think, work, and live. As a result, schools and other educational institutions that are responsible for preparing pupils to live in a "knowledge society" must incorporate Information, Communication, and Technology (ICT) into their curriculum. ICT integration in education refers to the incorporation of computer-based communication into the daily classroom teaching process (Ghavifekr & Rosdy, 2015).

Teachers are viewed as crucial players in employing ICT in their daily classes, in addition to educating pupils for the contemporary digital environment. Because of ICT's potential to provide a dynamic and proactive teaching-learning environment, this is the case.

While the goal of ICT integration is to improve the quality, accessibility, and cost-effectiveness of instruction delivery to students, it also refers to the advantages of networking learning communities to meet the difficulties of present globalization (Albirini, 2006; Hattangdi & Ghosh, 2008). The adoption of ICT is not a one-time event, but rather a series of measures that fully support teaching and learning as well as information resources (Ghavifekr & Rosdy, 2015).

In education, ICT integration refers to a technology-based teaching and learning process that is directly linked to the use of learning tools in schools (Villena & Caballes, 2020). The topic of ICT integration in schools, specifically in the classroom, is critical since pupils are familiar with technology and would learn better in a technology-based setting. This is because the use of technology in education has a significant impact on pedagogical aspects since the usage of ICT will lead to successful learning with the assistance and support of ICT elements and components.

It is true to suggest that technology-based tools and equipment can help students learn practically any subject, starting with mathematics, physics, languages, arts and humanities, and other key fields.

ICT can be utilized in a variety of ways to assist teachers and students in learning about their subject areas. Educational movies, stimulation, data storage, database use, mind-mapping, guided discovery, brainstorming, music, and the World Wide Web (www) are all examples of technology-based teaching and learning that will make the learning experience more gratifying and relevant (Ismail *et al.,* 2020).

Students, on the other hand, will gain from ICT integration since they will not be constrained by a limited curriculum and resources; instead, hands-on activities in a technology-based course will be intended to encourage their comprehension of the subject. It also assists teachers in developing lesson plans that are successful, creative, and engaging for students, resulting in active learning.

Previous studies have shown that incorporating ICT into the classroom improves the learning process and optimizes students' active learning capacities (Wang, 2015).

The integration strategy entails incorporating appropriate ICT use in a subject area with complex concepts and abilities to increase student accomplishment and attainment. Furthermore, a curriculum review is required so that only connected ICT materials and appropriate software are installed to meet the curriculum's key purposes and objectives.

The enhancement strategy entails utilizing ICT to place a strong emphasis on the issue being discussed. Microsoft PowerPoint, for example, can be used to present the topic in a

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unique and creative way that encourages conversation and the exchange of ideas and opinions. Finally, when ICT is used to aid and support a student's learning, it is referred to as a complementary method. This method allows students to be more organized and efficient by allowing them to take notes on the computer, submit their work by email from home as long as they meet the deadline, and seek information from a variety of internet sources to complete the assignment assigned to them.

Here, the purpose of this study is to examine teachers' perspectives of the effectiveness of integrating ICT into the teaching and learning process in the classroom.

2. METHODS

2.1. Research Design

The data received from all of the respondents were collected and analyzed using quantitative methods in this study. Before it was delivered to the selected group of respondents, the researchers designed and finalized the questionnaire.

A few sections of the questionnaire were specifically developed to address research "knowledge on technology usage confirmation and real" use Intention to use Ease of use as perceived Objectives for perceived usefulness in terms of the effectiveness of ICT integration for students in learning and effective parts of ICT integration in public schools in Kuala Lumpur, Malaysia. As a result, the questionnaire was delivered to the respondents to collect data.

2.2. Population and Sampling

There were 101 teachers from public primary and secondary schools in Kuala Lumpur, Malaysia who participated in this study. The questionnaire was given to respondents with a teaching background at random, independent of gender, ethnicity, teaching experience, or highest teaching experience.

This study has no preferences as long as the respondents have teaching experience, particularly in public primary and secondary schools in Kuala Lumpur. Because the researchers wanted instructors from public primary and secondary schools in Kuala Lumpur to participate in this study, they specifically sought teachers from Kuala Lumpur's public primary and secondary schools. Thus, the questionnaires distributed are not equal in numbers where teachers from secondary schools dominate the overall population as compared to teachers from primary schools.

2.3. Instrument

The main instrument in this study was a survey questionnaire with a total of 43 items, which was used to assess the effectiveness of ICT integration in teaching and learning in public schools in Kuala Lumpur. A total of 101 surveys were circulated, with all respondents being asked to read the statements and react using a 4-Likert scale:

(i) 4= Strongly Disagree,
(ii) 3= Disagree,
(iii) 2= Agree,
(iv) 1= Strongly Agree.

The questionnaires were divided into four pieces. Section A is about the respondents' demographic background and has eight items: gender, race, teaching experience, kind of school, school area, preferred teaching style, highest academic qualification, and ability to use ICT in the classroom.

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The questionnaire's last three questions are more concerned with teachers' perceptions of ICT integration in schools and the factors that influence its efficacy. Section B has 15 questions about teachers' perceptions of ICT in the classroom, section C contains 10 questions about the effectiveness of ICT integration for students in learning, and section D contains 10 questions about the effective elements of ICT integration in the classroom.

2.4. Data Collection Procedure

Before it was finalized and disseminated to the target set of respondents, the researchers made changes to the questionnaire. After that, each researcher fills out 50 and 51 questionnaires, for a total of 101 questionnaires that are sent to all respondents. The data was collected over two weeks through random distribution, with some questions being emailed to responders. The respondents had 3-5 days to complete the survey and return it to the researcher for data analysis. After two weeks, the researcher gathered and collected all of the completed questionnaires for further data analysis to obtain the research's output and conclusions.

2.3. Data Analysis Process

All of the information acquired from the respondents was combined and analyzed with the Statistical Package for the Social Sciences (SPSS) version 21. Both descriptive and inferential analyses were used in the analysis. This study analyzed the frequency and proportion of the entire population in the demographic backdrop using descriptive analysis. It is also used to calculate the mean, standard deviation, frequency, and percentage to measure the effectiveness of ICT integration for students in learning and the effective parts of ICT integration in teaching in Kuala Lumpur public schools.

3. RESULTS AND DISCUSSION

The findings of this study will provide the researchers with the information they need to answer the research questions. The findings are organized according to the sections of the questionnaire, and some inferential analysis is performed on the entire data, including reliability testing and Mann-Whitney U testing. The demographic background of respondents is depicted in **Figure 1** and **Table 1**.

In comparison to traditional classroom teaching and learning, the findings of this study suggest that technology-based teaching and learning is more effective. This is because utilizing ICT tools and equipment will create a more engaging and effective learning environment for both teachers and students. However, the majority of teachers in this study feel that ICT aids classroom management by ensuring that pupils are well-behaved and focused. Furthermore, this research found that kids learn more effectively when ICT is used since the lessons are more engaging and fascinating. As a result, the participants agreed that incorporating ICT can help kids study more effectively.

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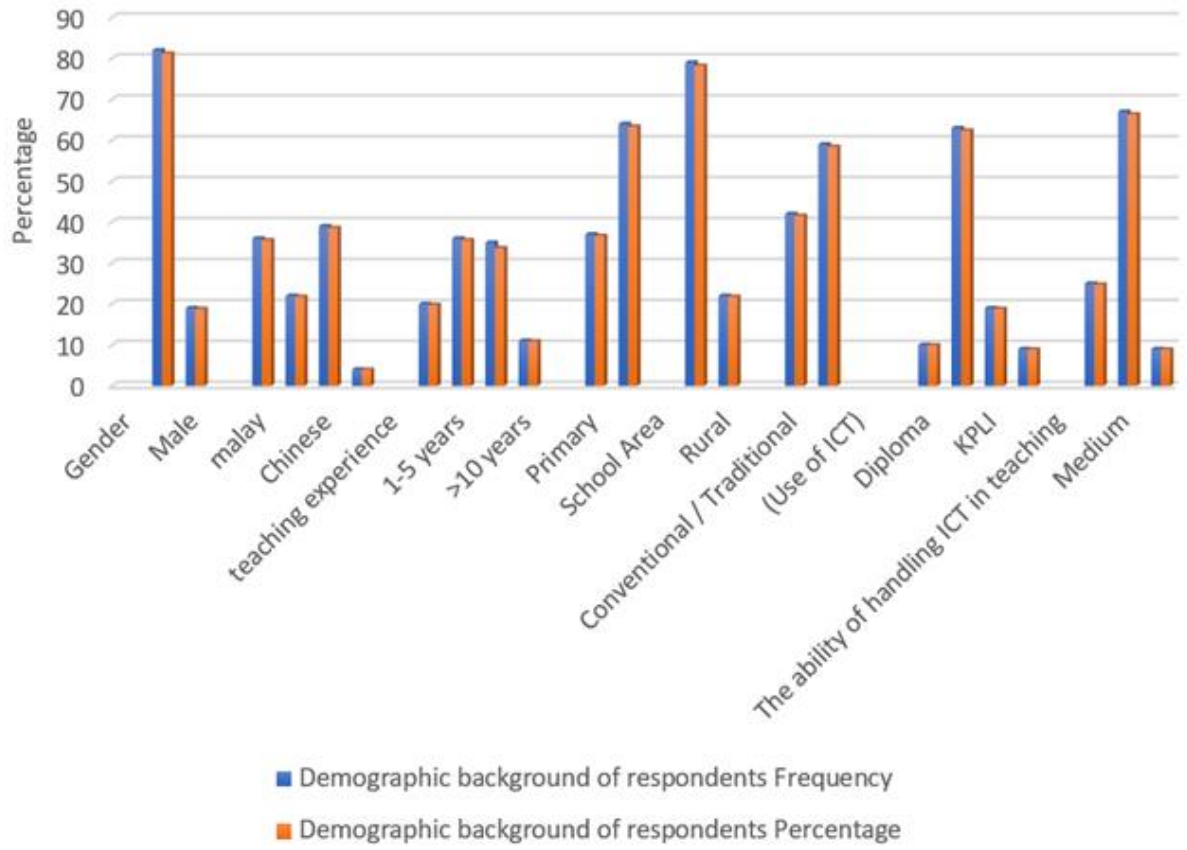

Figure 1. The demographic background of respondents.

Teachers in China have a good attitude about using the Internet in teaching and learning, according to Internet users in EFL Teaching and Learning in China. Teachers have some understanding of how to use the Internet in teaching and learning. They haven't done a good job of integrating the Internet into their teaching and learning. Their understanding of ICT and network technology is limited.

Similarly, the first two statements aligned with the findings of this study, which found that the majority of instructors believe ICT integration for students in learning is effective. ICT helps students become more creative and innovative as their knowledge paradigm expands since it gives them the confidence to communicate better and convey their views and ideas. ICT aids pupils in acquiring all four learning skills, specifically, when they can acquire necessary information and knowledge.

However, according to this study, public school teachers in Kuala Lumpur, Malaysia, are not provided adequate time to learn and use ICT. The majority of pre-service teachers indicated that they only use elementary ICT tools for educational purposes. This study discovered that while most teachers believe ICT integration is effective, the ICT tools provided in school are insufficient and in poor condition; training and professional development are not adequately provided for teachers; technical support is provided but could be improved over time, and the computer lab in school is in poor condition with welds.

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Table 1. The demographic background of respondents.

Factors	Frequency	Percentage
Gender		
Female	82	81.19
Male	19	18.81
Race		
Malay	36	35.64
India	22	21.78
Chinese	39	38.61
Others	4	3.96
teaching experience		
<1 year	20	19.8
1-5 years	36	35.64
6-10 years	35	33.66
>10 years	11	10.89
Type of school		
Primary	37	36.63
Secondary	64	63.37
School Area		
Urban	79	78.22
Rural	22	21.78
Preference of teaching style		
Conventional / Traditional	42	41.58
Modern / Contemporary (Use of ICT)	59	58.42
Highest academic qualification		
Diploma	10	9.9
Degree	63	62.38
KPLI	19	18.81
Master	9	8.91
The ability to handle ICT in teaching		
High	25	24.75
Medium	67	66.34
Low	9	8.91

To summarize, the very first stage of ICT adoption must be successful for teachers and students to make the most of it. As a result, the preparations for technology-based teaching and learning begin with the school's top management's proper implementation and support. ICT integration in schools will be a major success and benefit for both teachers and children if the installation process of technology integration in schools is done correctly from the start and ongoing maintenance is effectively supplied.

Teachers must be given time to learn and explore ICT, as well as go through the "trial-and-error" phase before they are entirely comfortable with it and can use it for teaching and learning. Finally, to improve the country's educational system's competency, the integration of ICT in the classroom requires careful consideration. This will help to improve the national education's global ranking and develop a better future workforce. To improve the use of ICT in the classroom, the government must improve and transform teachers' perceptions about ICT integration. Teachers play a critical role in ensuring that every new policy is implemented

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effectively and efficiently. Advanced technology and communication devices should be available to children wherever they are, whether at school or home, to drive the changes that are occurring. Furthermore, to promote effective learning and satisfy the requirement for 21st-century teaching skills, instructors must be literate and have solid skills and expertise in using ICT to improve their teaching techniques and approach.

4. CONCLUSION

Issues and obstacles of ICT integration may be overly common, but in-depth studies of ICT integration in fundamental courses in schools are rarely covered. It would be beneficial if more research could be done on the hurdles that instructors face while employing ICT in their regular classes at schools. Furthermore, rather than focusing solely on public schools, it is preferable to undertake this research in three major schools in Malaysia: public schools, Chinese schools, and Indian schools. This is due to the fact that certain schools may have more funding, making ICT deployment much quicker and easier. It is beneficial if comparisons can be made between different schools so that the positive aspects may be used as examples and changes can be made to the problems discovered. Aside from that, comparative studies of ICT integration in teaching and learning between public and private schools are highly encouraged. This is because most private schools allow students to bring their own devices to class, and the teaching and learning process is conducted through ICT. It would be fascinating to compare and contrast the results of ICT integration in public and private schools.

5. AUTHORS' NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. The authors confirmed that the paper was free of plagiarism.

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