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THE CURRENT SITUATION OF INFORMATION AND COMMUNICATION TECHNOLOGY APPLICATION IN MATHEMATICS TEACHING IN PRIMARY EDUCATION: A SURVEY AT TAM THUAN PRIMARY SCHOOL

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ABSTRACT

This article presents the current situation of information and communication technology (ICT) application in mathematics teaching in primary education through a survey conducted with teachers at Tam Thuan Primary School. The study focuses on clarifying teachers' awareness, competence, confidence, frequency of ICT use, ability to develop digital learning materials, and their evaluation of the role of ICT in mathematics teaching. The survey results show that most teachers have a positive awareness of ICT, frequently apply ICT in teaching, and highly appreciate its role in creating a vivid and visual learning environment for students. However, the level of ICT application among teachers is not yet uniform; some teachers still use ICT only at a basic level or do not frequently design digital learning materials. Based on these findings, the article suggests strengthening teachers' ICT competence, improving technological infrastructure, and developing digital learning materials suitable for mathematics teaching in primary education.

KEYWORDS: information and communication technology, mathematics teaching, primary education, current situation, Tam Thuan Primary School.

1. INTRODUCTION

The context of educational innovation and digital transformation, the application of information and communication technology (ICT) in teaching has become an important requirement for improving the quality of education. In mathematics teaching in primary education, ICT not only supports teachers in presenting knowledge in a vivid and visual way but also contributes to creating a positive learning environment in which students can actively participate in the process of acquiring knowledge. Mathematics in primary education plays a fundamental role in developing logical thinking, problem-solving competence, and the ability to apply knowledge to real-life situations. However, many mathematical contents, especially abstract topics such as decimal numbers, fractions, measurement units, and arithmetic operations, often cause difficulties for students if they are taught only through

traditional teaching methods. Therefore, the application of ICT through images, videos, electronic presentations, learning games, and interactive platforms can help students approach mathematical knowledge in a more concrete, vivid, and understandable way.

However, the effectiveness of ICT application in teaching does not depend solely on the availability of technological devices. It is also influenced by various factors, such as teachers' awareness, lesson design competence, confidence in using technology, technological infrastructure, ability to develop digital learning materials, and the alignment between technology, lesson objectives, and students' learning characteristics. Therefore, surveying the current situation of ICT application in mathematics teaching in primary education is necessary to identify strengths, limitations, and support needs in the process of teaching innovation.

This article analyzes the current situation of ICT application in mathematics teaching at Tam Thuan Primary School, thereby proposing several orientations to enhance the effectiveness of ICT application in mathematics teaching in primary education.

2. RESEARCH METHODS

2.1. Methodological Framework

This study employed a descriptive survey approach to investigate the current situation of ICT application in mathematics teaching in primary education. The participants were 26 teachers at Tam Thuan Primary School, Hat Mon Commune, Hanoi. The data collection instrument was a questionnaire designed for teachers. The questionnaire aimed to examine key aspects related to ICT application in mathematics teaching. The collected data were analyzed using descriptive statistics, mainly frequencies and percentages.

In this study, the factors that may influence ICT application in mathematics teaching include teachers' years of teaching experience, their level of understanding of ICT, their ability to design and organize lessons using ICT, their confidence in using ICT in teaching, the frequency of ICT use, their ability to develop exercises, tests, and digital learning materials, changes in ICT application compared with the previous school year, the convenience of using ICT, teachers' awareness of the role of ICT in creating a positive learning environment, and teachers' evaluation of the role of ICT in improving the effectiveness of mathematics teaching.

These factors were selected because they reflect both subjective and objective dimensions of ICT application. Subjectively, teachers' awareness, competence, confidence, and habits of using technology directly influence how they select and implement technological tools in lessons. Objectively, the conditions for using ICT, the level of convenience, the ability to develop digital learning materials, and the requirements of teaching innovation also affect the frequency and effectiveness of ICT application in classroom practice.

3. RESEARCH RESULTS AND DISCUSSION

3.1. Characteristics of the surveyed teachers

To provide an overview of the participants, the study first examined the teachers' years of teaching experience. This information helps identify the professional background of the surveyed teachers and provides a basis for interpreting their level of ICT application in mathematics teaching. The results are presented in Table 3.1

Table 3.1 Teachers' years of teaching experience

Years of teaching experience	Number	Percentage (%)
Less than 5 years	7	26.9
From 5 to 10 years	11	42.3
From 10 to 20 years	3	11.5
More than 20 years	5	19.2
Total	26	100

The results in Table 1 show that the surveyed teachers had relatively diverse teaching experience. The group with 5 to 10 years of teaching experience accounted for the highest proportion, at 42.3%. This group has acquired a certain level of teaching experience while still being able to adapt to new teaching methods and technological tools. Teachers with less than 5 years of experience accounted for 26.9%, reflecting the presence of young teachers who may have a strong ability to access technology quickly. Meanwhile, teachers with more than 20 years of experience accounted for 19.2%, indicating that the school also has a group of teachers with extensive professional experience. The combination of young teachers and experienced teachers creates favorable conditions for teaching innovation and ICT application in mathematics teaching.

3.2. Teachers' awareness and competence in ICT application

In order to, clarify teachers' readiness for ICT application, the study investigated their level of understanding of ICT and their ability to design and organize ICT-integrated lessons. The results are presented in Table 3.2.

Table 3.2 Teachers' level of ICT understanding and ability to design ICT-integrated lessons

Survey content	Level	Number	Percentage (%)
Level of understanding of ICT application	Very good	4	15.4
	Good	13	50.0
	Average	7	26.9
	Limited	2	7.7
	Very limited	0	0
Ability to design and organize ICT-integrated lessons	Very proficient	4	15.4
	Proficient	12	46.2
	Average	9	34.6
	Not proficient	1	3.8
	Unable	0	0

Table 3.2 shows that most teachers had a relatively positive awareness of ICT application in mathematics teaching. A total of 65.4% of teachers rated their level of ICT understanding as good or very good. This indicates that ICT is no longer unfamiliar to primary school teachers but has become a familiar tool in the teaching process.

However, 26.9% of teachers rated their understanding as average, and 7.7% considered it limited. This suggests that ICT competence among teachers is not yet uniform. Some teachers may be able to use basic devices and software, but they may not be fully active in selecting, designing, and integrating technology into lessons in a way that supports the development of students' competence.

Regarding the ability to design and organize ICT-integrated lessons, 61.6% of teachers rated themselves as proficient or very proficient. This is a positive sign, showing that many teachers are able to develop electronic presentations, use images and videos, or exploit technological tools to support mathematics teaching. Nevertheless, the proportion of teachers at the average level remained quite high, at 34.6%. This indicates that training in digital lesson design and organizing ICT-integrated learning activities remains necessary.

3.3. Teachers' confidence and frequency of ICT use in mathematics teaching

Teachers' confidence and frequency of ICT use are important factors affecting the actual implementation of technology in classroom practice. Therefore, the survey explored how confident teachers were when using ICT and how often they applied ICT in mathematics teaching.

Table 3.3 Teachers' confidence and frequency of ICT use

Survey content	Level	Number	Percentage (%)
Confidence in using ICT	Very confident	3	11.5
	Confident	14	53.8
	Average	8	30.8
	Not confident	1	3.9
	Very unconfident	0	0
Frequency of ICT use in mathematics teaching	Very frequently	6	23.1
	Frequently	11	42.3
	Occasionally	7	26.9
	Rarely	2	7.7
	Never	0	0

A comparison of Tables 3.3.1 and 3.3.2 shows that all criteria measuring lesson effectiveness with AI have higher mean scores than those without AI. Specifically, the criterion students are interested in learning increased from 3.7 to 3.9; students actively participate in learning activities increased from 3.8 to 3.9; students understand the lesson quickly increased from 3.7 to 3.8; students actively find ways to solve problems increased from 3.6 to 3.8; and students solve mathematical problems accurately increased from 3.7 to 3.9. These results indicate that AI application has a positive impact on several aspects of students' learning, especially learning interest, participation, and problem-solving accuracy. In Grade 3 Mathematics Teaching, AI tools such as ChatGPT, Canva, and Quizizz can support teachers in designing visual situations, learning games, interactive questions, and practice tasks suited to students' levels. As a result, lessons become more engaging and students have more opportunities to participate in learning activities.

However, the differences between the two groups of results are not very large, mainly ranging from 0.1 to 0.2 points. In addition, the variance and standard deviation in lessons with AI are higher than those without AI. For example, the standard deviation for students are interested in learning was 0.87 without AI, while it increased to 1.30 with AI. This indicates that the impact of AI on students is not entirely uniform; some students may be highly interested in technology-supported activities, while others still need direct teacher guidance. Therefore, AI should be regarded as a supporting tool rather than a replacement for traditional teaching methods.

3.4. Teachers' Training Needs for Using AI in Designing Teaching Activities

To clarify teachers' support needs in the process of applying AI, the research team investigated teachers' training needs. The results are presented in Table 3.4

Table 3.4. Training needs for using AI in designing teaching activities.

No.	Evaluation content	Options	Frequency	Percentage (%)	Rank
1	Need for training on using AI in designing teaching activities	Yes	10	100	1
		No	0	0	2
	Total		10	100	
2	Desired training content	Applying AI in designing teaching activities	9	90	1
		Applying AI in designing questions and exercises	8	80	2
		Applying AI in student assessment	7	70	3
		Guidance on safe and effective AI use	9	90	1

The results in Table 3.4 show that 100% of the surveyed teachers expressed a need for training on using AI in designing teaching activities. This is a noteworthy finding, reflecting teachers' clear practical needs in a context where AI is receiving increasing attention but has not yet been systematically introduced or guided in teaching practice. Regarding desired training content, 90% of teachers selected applying AI in designing teaching activities, and 90% selected guidance on safe and effective AI use. In addition, 80% of teachers wanted training on designing questions and exercises with AI, while 70% wished to receive support in applying AI to student assessment. These results show that teachers need not only technical instructions on how to use AI tools, but also pedagogical guidance, principles for safe use, methods for checking AI-generated content, and ways to apply AI appropriately to primary school students.

The findings suggest that developing teachers' AI application competence is necessary. Training programs should focus on the process of designing AI-supported teaching activities, writing effective prompts, checking the accuracy of AI-generated content, designing visual learning materials, and using AI in formative assessment. In Grade 3 Mathematics Teaching, teachers especially need guidance on how to use AI to help students understand the nature of operations, analyze word problems, and develop problem-solving competence.

4. RESEARCH RESULTS AND DISCUSSION

The study shows that ICT application in mathematics teaching at Tam Thuan Primary School has received attention from teachers and has been implemented relatively actively. Most teachers have good awareness of the role of ICT, frequently use ICT in teaching, and highly appreciate its effect in creating a vivid and visual learning environment for students.

However, the survey also shows that ICT application still has certain limitations. Teachers' ICT competence is not yet uniform; some teachers do not frequently develop digital learning materials; and ICT use sometimes remains at the level of supporting presentation rather than being deeply connected with learning activities and the development of students' competence.

Based on the findings, several orientations can be proposed to enhance the effectiveness of ICT application in mathematics teaching in primary education. Schools should continue to invest in technological infrastructure, teaching devices, and stable Internet connections. At the same time, professional development activities should be organized for teachers in electronic lesson design, digital learning material development, and the use of online learning platforms. Teachers also need to actively engage in self-learning, share experiences, and select technological tools that are appropriate to lesson objectives, mathematical content, and students' characteristics.

In conclusion, ICT application in mathematics teaching in primary education is a necessary direction that aligns with the requirements of educational innovation. When implemented appropriately, ICT can contribute to improving teaching quality, developing students' competence, and making mathematics more visual, accessible, and engaging.

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