

An Analysis of Current Status of Information Technology Training for Rural Primary School Teachers in China

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ABSTRACT

Despite significant advancements in rural education in China, challenges like diverse IT skill requirements, limited class interactions, and inconsistent teaching approaches persist. While teachers feel more confident in their IT skills, classroom use remains limited due to inadequate training, particularly in rural primary schools. This study investigates IT integration through surveys in three rural primary schools in Jianly City, involving 56 teachers who completed detailed questionnaires. The methodical data collection ensures reliable findings, revealing significant disparities in IT adoption between urban and rural schools. Despite growing teacher confidence in IT skills, classroom use is low due to inadequate training, heavy workloads, and limited application time. The research shows that while effective training methods like expert lectures, online education, and video materials are popular, there is a lack of collaborative inquiry, reflecting a gap between educational theory and practice. The content often emphasizes basic IT skills without integrating them into teaching practices. The study calls for tailored training programs that address practical and theoretical needs, accommodate teachers' schedules, and include robust support and feedback systems to bridge the digital divide and promote inclusive learning environments. This research aids in training designers to create more effective courses and helps primary schools reduce the educational gap in developed areas.

Keywords: *Primary School Teacher; Information Technology Training*

INTRODUCTION

"There can be no education reform without teacher education reform." The 19th Party Congress report proposes building "fair and quality education". The 19th CPC National Congress Report proposes to build "fair and quality education", and the promotion of teachers' professional competence is an essential focus for improving the quality of education and promoting equity in education (Kong, 2009). Promoting teachers' professional competence is an essential focus for improving the quality and equity of education. Over the years of reform and opening up, primary education in China's rural areas has achieved great results but also faces many difficulties. Education informatization is an essential pillar for the modernization of education and an important measure for solving the problems of financial difficulties in the development of rural primary and secondary schools and the serious lack of teachers' competence (Hu & McGrath, 2011; Pearson, 2001). The difficulty and focus of modernizing education lie in the countryside.

Teachers' adoption of information technology (IT) has been a subject of considerable discussion and interest in recent times. According to recent surveys, teachers are becoming increasingly confident in using IT. However, despite this increased confidence, teachers' active use of IT remains limited and is often used sparingly (Kong, 2009; Liu et al., 2017).

Numerous studies have been conducted to identify the reasons for this slow integration of IT into the teaching process. While some of these studies focus on identifying the potential barriers that prevent the effective use of IT in the classroom, others aim to understand the reasons behind this slow rate of integration (Williams et al., 2000; Winter et al., 2021).

One significant factor that has been identified as influencing the use of IT is the level of IT training teachers receive. It has been observed that the quality and extent of IT training teachers receive can significantly influence their ability to use IT effectively.

Despite the importance of IT training, few studies have included this aspect in their technology-adoption models, particularly in the context of primary rural schools. These models often fail to consider the specific academic areas of the teachers, even though these areas can significantly influence the uptake of technology.

The research motivation of this study stems primarily from the recognition of the profound impact that technology integration has had on the learning process. The rapid advancements in information and communication technology have transformed educational landscapes, enabling both teachers and students to engage in learning in ways that are faster, more efficient, and tailored to individual needs.

In rural areas, however, the pace of technological integration in education often lags behind urban centers. This gap can create significant disparities in educational opportunities and outcomes for rural students. Therefore, it is crucial to understand the current state of technology training for teachers in rural primary schools and identify the challenges they face in this process.

Furthermore, the research aims to explore the potential of technology to enhance teaching and learning in rural schools. By doing so, it hopes to contribute to developing more effective and inclusive educational strategies that can bridge the digital divide and ensure that all students, regardless of their geographical location, have access to quality education.

In short, this research aims to understand better the challenges and opportunities in technology training for rural primary school teachers. It also seeks to develop innovative educational practices for more equitable and inclusive learning environments. The research question is: What is the current status of IT training for rural primary school teachers in Jianly City?

LITERATURE REVIEW

The Core Concept of Information Technology

Knowledge and information are vital today for productivity and wealth. Countries focus on improving education quality. It is crucial to check if our education keeps pace with our rapidly changing world. Despite advancements in various fields, classrooms remain unchanged from the last century. Students still sit in rows, taking notes for tests. While science and technology have evolved, teaching methods have not. The technology in Education stresses that teachers should prepare to offer technology-based learning. Since 1990, the biggest leap globally has been the use of IT in education (Hamidi et al., 2011; Mikre, 2011).

Information technology is often referred to as information and communication technology. This research starts with education and teaching, specifically computer and multimedia technologies

related to teaching and learning. Modern classrooms resemble those from the last century, with students taking notes for tests. Despite advancements in science and technology, teaching methods have not changed. The technology in education insists that teachers should be prepared to offer technology-based learning. The most significant global advancement since 1990 has been the use of IT in higher education (Bayne, 2015; Kovalik et al., 2013).

Information Technology (IT) refers to the methods of processing and transferring information. It involves collecting, organizing, storing, and using information in various forms using computers and telecommunication tools. IT has led to significant classroom changes by enabling students to access information outside of class, increasing their motivation to learn (Crawford, 2000). IT is seen as a tool for promoting international understanding, peace, and democracy. However, developing countries face challenges in accessing and implementing technology. The effectiveness of these technologies depends on various factors, including politics, culture, economy, and the level of software development.

Information Technology in Education

For over a century, the field of education has been leveraging technology to expand and develop its various processes. This has been a continuous journey, and with the arrival of new technology, there has been a sparked interest in exploring various methods of presenting knowledge. Today, technology-based education has become a reality and is readily available in universities across developed countries (Mumtaz, 2000; Yusuf, 2005).

The advent of information technology, particularly tools such as computers, has revolutionized how information is disseminated, significantly improving the quality of learning. These tools offer flexible structures, allowing for a more tailored approach to learning. They also provide searchable information, making it easier for students to find what they need. Furthermore, they facilitate metacognitive understanding, which involves awareness and understanding of one's thought processes, enhancing the learning experience (Fisher, 2000).

Technology integration into the learning process has increased both the speed and quality of learning. It has also introduced a level of flexibility in the way students and teachers perform their duties, allowing them to adapt their schedules and methods to suit their individual needs.

In today's world, we live in an informational society heavily dependent on information and communication technology. This reliance on technology has numerous benefits. It enriches leisure time, providing individuals with many ways to engage and entertain themselves (Frese et al., 1991; Givens & McShea, 2000; Russell et al., 2000). It enables teleworking, allowing people to work from virtually anywhere, thereby reducing commuting time and increasing work-life balance. It also boosts national productivity, as tasks can be completed more efficiently and effectively. Furthermore, it has increased employment opportunities, as new roles and jobs are created to keep up with technological advancements. Lastly, it supports lifelong education, providing individuals with the resources and tools to continue learning and developing their skills.

In addition to this, the concept of smart schools has made significant advancements in the realm of virtual learning. This has led to the emergence of online learning and remote training as new forms of education in the 21st century. As these learning environments evolve, societies worldwide are placing greater responsibility on educational institutions to adapt and keep pace with these changes (Kirkwood & Price, 2014; McKnight et al., 2016).

Various technologies have been instrumental in facilitating the education process. There is substantial evidence to suggest that information technologies offer effective methods for the professional development of teachers. Despite the limited access to technology in some areas, high school students have been found to enjoy science courses due to the efforts put forth by their teachers.

In the context of modern education, the focus has shifted from acquiring all information to understanding and mastering essential knowledge. Teachers play a crucial role in this process as they assist students in obtaining, evaluating, and storing information from various sources. The traditional reliance on printed materials has been replaced by online resources, thanks to the advancements in technology and IT. The use of technology and IT in education has several advantages, including increased accessibility, improved engagement, and the ability to personalize learning experiences. These benefits highlight the importance and potential of integrating technology into the educational landscape.

Information Technology for Primary Teacher and Training

The teaching experiences of IT teachers in primary schools tend to vary significantly. This variation often creates uncertainty when these teachers discuss their experiences (Upadhayaya, 2023; Varank, 2007). There is often confusion surrounding the curriculum models and the adopted teaching styles.

Several issues have been identified in this context. These include a lack of continuity in the teaching process, low attainment levels among students, and insufficient IT resources available for teaching. Additionally, there is a varying understanding of teachers' IT capabilities, which can lead to inconsistencies in the teaching process. Assessment methods have also been identified as a problem area, with many teachers finding them inadequate (Williams et al., 2000; Winter et al., 2021).

Interestingly, most teachers in this field lack the necessary qualifications. This lack of qualifications can further exacerbate the issues identified. However, it is essential to note that these issues are inconsistent across all schools. Many schools have successfully addressed some of these problems, albeit with differing approaches. This variation in approaches further underscores the complexity of the issues and the need for a more standardized approach to IT education in primary schools.

Teachers who incorporate information technology (IT) in primary schools face various challenges. One of the main challenges is the different curriculum models that are currently in use. In some instances, teachers may be required to teach using IT as a separate subject, while in other cases, they may be asked to assist other teachers in integrating IT into their teaching. This diversity in roles necessitates a wide range of IT skills (Hu & McGrath, 2011; Liu et al., 2017).

Another challenge is the frequency and duration of contact with classes. Teachers may only have brief and infrequent interactions with their classes, which can impact the development of teacher-student relationships and hinder the progression of the student's learning.

Furthermore, the approaches to teaching and learning can vary greatly from school to school and within the same school. This lack of consistency can lead to confusion and uncertainty. Teachers may even find that younger students are more advanced in IT skills than their older counterparts.

The hardware and software used in different schools can also pose a challenge. Teachers may be required to use unfamiliar or outdated technology, making them feel de-skilled and less confident in their ability to teach using IT effectively.

In addition to these challenges, teachers must adapt to using IT in various contexts (Frese et al., 1991; Hu & McGrath, 2011; Liu et al., 2017). This requires flexibility and a willingness to learn and update their skills continually.

Assessment strategies also vary widely and may not always be satisfactory. Despite being better qualified in IT, some teachers may lower their expectations due to observing less qualified teachers using IT in their teaching. This can lead to lowering standards and a reluctance to push for more effective use of IT in teaching (Pearson, 2001; Winter et al., 2021).

Despite having advanced Information Technology (IT) qualifications, teachers may lack basic IT skills. This could be due to the rapidly evolving nature of the field, requiring them to constantly relearn and adapt as they use IT in various contexts.

Assessment strategies in IT education can vary greatly, and in some cases, they may not be satisfactory. This inconsistency can challenge teachers striving to evaluate their students' progress effectively.

Interestingly, it is often the case that teachers are better qualified than their mentors in IT. This discrepancy can lower their expectations and cause them to disregard valuable advice from experienced educators.

The planning of teacher training programs demands a thorough understanding of the needs and expectations of schools. Decisions regarding the curriculum and assessment methods must be carefully made, as this can be complex. Achieving consistency across schools can significantly simplify the planning process. However, this is often challenging due to each school's unique circumstances and requirements. By the end of their training, teachers are expected to meet all established standards, which can be daunting, particularly given the unresolved challenges in IT education. Before starting their training, teachers must clearly understand these issues. This knowledge equips them to handle the challenges they may face during their training and ultimately helps them become more effective educators.

Strategy Training for Teachers in IT

The strategies employed for teacher training need more rigorous and formal research to ascertain their effectiveness. It is crucial for teachers to be prepared for a variety of experiences during their training and to exhibit flexibility in their approach to learning and teaching (Hu & McGrath, 2011; Kong, 2009; Pearson, 2001; Winter et al., 2021).

Learning strategies should be designed to assist teachers in dealing with unfamiliar situations and rapid changes in the educational landscape. This will equip them with the necessary skills to adapt and thrive in a dynamic environment.

Active participation from teachers during their training is a key factor in their professional development (Fisher, 2000; Mumtaz, 2000). It allows for a more immersive and hands-on learning experience, which can lead to better outcomes.

While current practices in schools should be acknowledged and accepted, it is essential to recognize that training programs should be tailored to each teacher's needs. This could involve arranging complementary placements in different educational settings or providing targeted support in specific areas of need.

Teachers should be encouraged to profile their experiences throughout their training. This will allow for better adjustments to their training program, ensuring it remains relevant and effective.

Providing individual, informal support for teachers throughout their training is also essential. This can help promptly address concerns or issues, enhancing their training experience.

Finally, mentors play a crucial role in teacher training. They should be aware of the various issues teachers may face during their training and should anticipate discussions around them. This will enable them to provide valuable guidance and support to the teachers throughout their training journey.

Studies have been conducted that have partially explored the challenges faced by teacher training institutions in integrating Information Technology (IT) into their curriculum. Only a handful of these institutions have successfully addressed these issues, directly impacting trainee teachers (Crawford, 2000; Frese et al., 1991; Williams et al., 2000; Winter et al., 2021).

These trainee teachers may come across various curriculum models during their training. The limited interaction time with the trainees could create obstacles in building strong relationships and maintaining discipline. Furthermore, they might be exposed to various teaching methodologies and face challenges in continuity, progression, and maintaining educational standards.

In some instances, the trainees might have more experience with IT than their mentors. However, if the hardware and software used in the school are different from what they are accustomed to, they might appear to lack basic knowledge.

Several strategies can be implemented (Crawford, 2000; Frese et al., 1991; Mikre, 2011; Williams et al., 2000; Winter et al., 2021). Firstly, it is important to raise awareness about the diverse teaching experiences at the beginning of the course. Secondly, students should be encouraged to be reflective and proactive learners. Thirdly, active participation in seminars and workshops should be promoted. Fourthly, while promoting good practice models is essential, it is equally crucial to accept alternative approaches.

Fifthly, profiling each student's experiences and adjusting the training program can be beneficial. Sixthly, providing individual support through tutorials and email can help address specific concerns or difficulties. Lastly, including time for discussion in mentor training about different IT delivery approaches in schools can help ensure a more comprehensive and effective training program.

METHODS

This study adopts a quantitative research method. The aim was to gain an in-depth understanding of the empirical research on the training of teachers and their challenges in Information Technology (IT) in rural primary schools at the municipal and county levels in Hubei Province. The researcher meticulously examined the data from the questionnaire, taking into account the actual circumstances and conditions on the ground.

The researcher employed a descriptive quantitative approach to analyze the data. This involved the collection of documents and the distribution of questionnaires to teachers in rural areas. Additionally, the researchers scrutinized questionnaire data, particularly concerning the challenges associated with contemporary educational pedagogy.

Consequently, the study provides valuable insights into the use of contemporary educational technology in rural schools, highlighting its potential benefits and the challenges encountered in its implementation.

Samples and Sample Size

This in-depth research study was carefully conducted in a specific rural area of Jianly City, focusing on three purposefully selected rural primary schools. Fifty-six teachers, including male and female educators, were chosen to participate in this study and were invited to complete the questionnaires. The data regarding implementing Information Technology (IT) training was systematically collected using a combination of closed and open-ended questionnaires, allowing for a diverse range of responses and enriching the data collection. This comprehensive and systematic approach ensured a deep understanding of the topic, enhancing the research study's significance and value.

For example, in the selected rural area, there may be a total of X teachers, and 56 were selected as samples for the study. The sample size 56 was determined based on statistical considerations to ensure sufficient representation and statistical power.

Data Collation

This rigorous academic investigation systematically gathered data through a questionnaire methodology, encompassing closed and open-ended questions. The questionnaire was meticulously crafted to evaluate the extent of Information Technology (IT) training implementation for teachers.

The data were sourced from schools in rural areas, providing a unique perspective on applying modern educational technology in less urbanized environments. The data collection occurred during the academic year of 2023-2024, ensuring the contemporaneity and relevance of the procured information.

Following distributing the questionnaire, the researcher transcribed the accumulated data into a written document. This transcription process, combined with presenting quantitative data (such as percentages and other quantitative descriptive data), was crucial in facilitating a more streamlined data analysis.

We follow a series of steps to recycle and clean the above data. Firstly, we assess the data's quality and integrity, identifying potential errors or inconsistencies. Next, we remove duplicates and handle missing values. Then, we employ data-cleaning techniques such as spell-checking and standardization to ensure consistency. After that, we validate and verify the data, cross-referencing with external sources when necessary. Finally, we store the cleaned data in a secure and accessible repository for future analysis. These processes help ensure the accuracy and reliability of the data.

Research Instrument

The primary purpose of the online questionnaire survey was to find out the basic information about computer-trained teachers and the actual operation of IT training in the three rural primary schools in the city and to find out more about the current status of the implementation of IT training for teachers in rural primary schools in the city and the problems that may exist.

Content Validity and Reliability

To ensure the validity and reliability of the data, a set of measures need to be implemented. Firstly, selecting proper data collection methods is crucial to obtain accurate and comprehensive data. This may involve using multiple data sources for cross-validation. Secondly, strict data quality control processes, such as data validation, cleaning, and error checking, are necessary to identify and rectify any errors or inconsistencies. In addition, appropriate data analysis techniques and tools are essential

for processing and analyzing the data. Statistical methods and visualization tools can help identify patterns and trends. Regular data monitoring and review are also essential to maintain consistency and validity. Any unusual patterns or deviations should be investigated and addressed promptly.

Furthermore, the involvement of subject matter experts in the review process can provide valuable insights and validate the data, especially in specialized areas. Detailed documentation of the data collection, processing, and analysis steps is critical, as it allows for reproducibility and transparency. Additionally, data security and privacy measures should be in place to protect the integrity and confidentiality of the data. By taking these comprehensive measures, the validity and reliability of the data can be significantly improved, facilitating more informed and accurate decision-making and resulting in better outcomes.

Data Analysis

Upon the successful data collection, the ensuing phase necessitates a systematic analysis. This analysis is carried out through a sequence of carefully orchestrated steps, each designed to ensure the integrity and validity of the research process.

The initial step, aptly termed 'preparing data analysis', provides a crucial opportunity to verify the sufficiency and appropriateness of the collected data. This preparatory stage is paramount as it lays the groundwork for the subsequent stages of data analysis, thereby ensuring a robust and reliable research process.

The second step, 'describing the data quantitatively and reading the data', involves presenting the data obtained from the closed and open-ended questionnaires in a quantitative format. The information is meticulously read to ascertain its adequacy in addressing the research questions. This step ensures the data's integrity, relevance, and alignment with the research objectives.

The final step, 'Reporting the Findings', comprehensively presents the data in various formats such as tables, narrations, and descriptions. The findings are then discussed about the relevant theoretical framework. This step provides a detailed account of the research findings and situates them within the broader academic discourse, significantly contributing to IT training for teachers in primarily rural areas.

FINDINGS

Basic Information of Respondents

The sample of this research was teachers of three rural primary schools in Jianli City, Hubei Province. The author distributed the questionnaires online and recovered 56 valid questionnaires. The specific basic information of the survey respondents is as follows:**Error! Reference source not found..**

TABLE 1: Basic information of the respondents

Completion of the questionnaire Teacher Basic Information Form			
title	options computer settings)	(as in softwarequorum	percentage
distinguishing	male	19	33.9 %
between the sexes	women	37	66.0 %
(a person's) age	20-30 years	11	19.6 %

An Analysis of Current Status of Information Technology Training for Rural Primary School Teachers in China

length of teaching experience	30-40 years old	23	41.0 %
	40-50 years	16	28.5 %
	Over 50 years old	6	10.7 %
	1-5 years	8	14.2 %
	6-10 years	9	16.0 %
	11-15 years	16	28.5 %
	16-20 years	17	30.3 %
	More than 20 years	6	10.7 %
academic qualifications	vocational secondary school	4	7.1%
	three-year college	9	16.0 %
	undergraduate (adjective)	39	69.6 %
	Master's degree or above	4	7.1%
title	high level	11	19.6 %
	middle level (in a hierarchy)	24	42.8 %
	junior ranking	15	26.7 %
	ungraded	6	10.7 %

The questionnaire gathered demographic and professional information about teachers, providing a snapshot of the teaching community. Most teachers are women (66.0%), with men representing 33.9%. In terms of age, the largest group is aged 30-40 years old (41.0%), followed by those aged 40-50 years old (28.5%), 20-30 years old (19.6%), and over 50 years old (10.7%).

Teaching experience also varies, with the largest group having 16-20 years of experience (30.3%), followed by those with 11-15 years (28.5%), 6-10 years (16.0%), 1-5 years (14.2%), and over 20 years (10.7%). Most teachers hold an undergraduate degree (69.6%), with others having a three-year college education (16.0%), vocational secondary school education (7.1%), or a Master's degree or above (7.1%). Professional titles range from middle-level (42.8%), high-level (19.6%), junior-ranking (26.7%) to ungraded (10.7%). This diversity highlights the broad range of expertise and backgrounds in teaching.

Results of the Current Status of IT Training for Rural Primary School Teachers

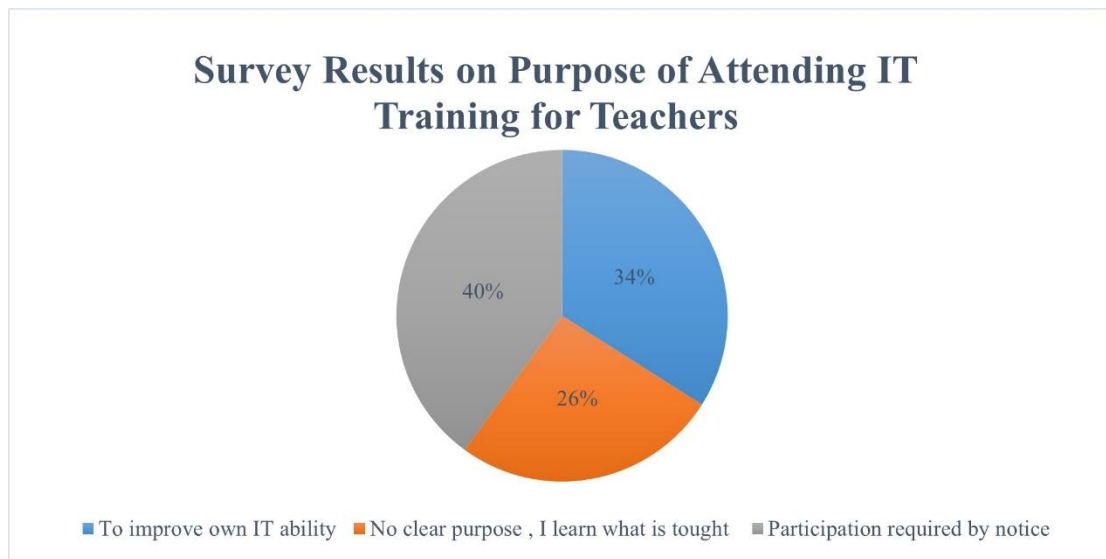
The questionnaire, divided into two sections, gathered demographic details and information on teachers' IT training. Conducted online over a month with 56 in-service teachers from three rural primary schools in Jiali City, Hubei Province, it included 5 questions on basic information and 14 on IT training. To deepen the research, the author interviewed some participants for insights and suggestions on IT training. With ongoing advancements in information technology in education, these schools are now equipped with the necessary IT infrastructure and teaching conditions.

Training Objectives and Attitudes

The analysis of the questionnaire data shows that only 34.0 % of the trained teachers, or less than half, were trained for "improving their IT skills", indicating that most of the teachers interviewed received training mainly based on arrangements made by their schools and that they did not have a

strong sense of autonomy in receiving training.

FIGURE 4.1: Survey Results on Purpose of Attending IT Training for Teachers



Teachers' attitudes affect the effectiveness of training. The following Figure 4.1 shows the teachers' attitudes toward training. Among them, the attitude of indifference and expressed willingness were almost equal. However, some teachers who were unwilling to participate in the training were still interviewed.

From "Question 2: Do you think information technology is important to teachers?" It is known that 55.2 % of teachers value information technology. This half-support may be due to the rapid development of information technology, which allows rural teachers to recognize the importance of information technology. However, while half of the teachers valued IT, 60.6 % were not actively engaged in learning-related technologies. This paradoxical phenomenon suggests that the teachers interviewed still lack knowledge of IT, and their understanding of IT remains unclear.

TABLE 2. Attitudes Towards Training

Training Attitude Scale				
Question 1: Do you usually research about information technology?	Everyday Learning 9 (16.0 %)	Regular research 13 (23.2 %)	Occasional research 23 (41.0 %)	Almost no research 6 (10.7 %)
Question 2: Do you think IT is very important for teachers?	Very important 8 (14.2 %)	significant 23 (41.0 %)	not essential 17 (30.3 %)	unimportant 6 (10.7 %)
Question 4: What are your views on participating in teacher IT training?	very willing 11 (19.6 %)	willing (do sth.) 14 (25.0 %)	cannot be said to be 27 (48.2 %)	unwilling 2 (3.5 %)
				Very reluctant 2 (3.5 %)

The Training Attitude Scale questionnaire reveals a range of teacher perspectives on the role of information technology (IT) in their profession. Responses indicate diverse engagement levels with IT research: 16.0% of teachers engage daily, 23.2% regularly, 41.0% occasionally, 10.7% rarely, and

8.9% not at all. This highlights the need for more consistent IT engagement among teachers. When asked about the importance of IT in their teaching roles, 14.2% of teachers viewed IT as very important, 41.0% as significant, 30.3% as not essential, 10.7% as unimportant, and 3.5% as very unimportant, indicating varied perceptions.

Additionally, the questionnaire explores teachers' willingness to participate in IT training. It shows that 19.6% are very willing, 25.0% willing, and 48.2% neutral, while 3.5% are unwilling and another 3.5% are very reluctant. This ambivalence suggests an area for further exploration and encouragement. Given the mixed interest levels and perceived importance, the data underscores the need for consistent IT engagement and the potential to encourage further IT training among teachers.

Content and Form of Training

The questionnaire survey aimed to identify the areas of training content that are of interest or necessity to the respondents. The data is organized in frequency, and the percentage of respondents who expressed interest in each area is ranked in order of interest. Office Production emerged as the most sought-after training content, with 51 respondents (91.0%) expressing interest. The Basic Theory of Educational Technology was the second most preferred area, chosen by 46 respondents (82.1%). The third area of interest was the Integration of Information Technology and the Curriculum, attracting the attention of 43 respondents (76.7%). Courseware Production was selected by 36 respondents (64.2%), and Image Processing was chosen by 32 respondents (57.1%). This was closely followed by How to Use Multimedia Equipment, selected by 31 respondents (55.3%). Web Authoring was chosen by 23 respondents (41.0%), Maintenance of Teaching Equipment by 13 respondents (23.2%), Information Security Knowledge by 9 respondents (16.0%), and Web-based Information Retrieval received the slightest interest, with only 8 respondents (14.2%).

This data provides a comprehensive understanding of the training needs and preferences of the respondents, which can be instrumental in designing and prioritizing future training programs. The insights gained from the survey highlight the importance of tailored training programs in areas such as Office Production and Educational Technology, which the respondents highly sought after. Additionally, the lower interest in areas like Information Security Knowledge and Web-based Information Retrieval suggests a need for further awareness and engagement in these critical topics. Overall, the findings underscore the necessity of aligning training content with educators' specific needs and interests to enhance their professional development and improve educational outcomes.

TABLE 4.3. Training Content Questionnaire

Training content questionnaire			
Training content	frequency	percentage	arrange in order
Office Production	51	91.0 %	1
image processing	32	57.1%	5
web authoring	23	41.0 %	7
How to use multimedia equipment	31	55.3 %	6
Courseware production	36	64.2 %	4
Maintenance of teaching equipment	13	23.2 %	8
Basic Theory of Educational Technology	46	82.1%	2
Integration of information technology and the curriculum	43	76.7 %	3
Web-based information retrieval	8	14.2 %	10

Information security knowledge	9	16.0 %	9
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In summary, the content of teachers' IT training focuses mainly on computer office production (91.0 %), basic theories of educational technology (82.1 %), and the integration of IT with the curriculum (76.7 %). In comparison, knowledge of information security (16.0 %) and information retrieval on the Internet (14.2 %) are less frequently covered. This shows that the content of the training is based on theory and basic application operations and that the training is not sufficiently innovative and security-conscious.

TABLE 4. Training Format Questionnaire

Questionnaire on forms of training			
Forms of training	frequencypercentage		arrange in order
Expert Lectures	56	100.0 %	1
collaborative inquiry	17	30.3 %	6
online education	56	100.0 %	1
Viewing of video materials	56	100.0 %	1
Teaching Observation	35	62.5 %	3
Case Studies	27	48.2 %	5
hands-on	37	66.0 %	2
model	33	58.9 %	4

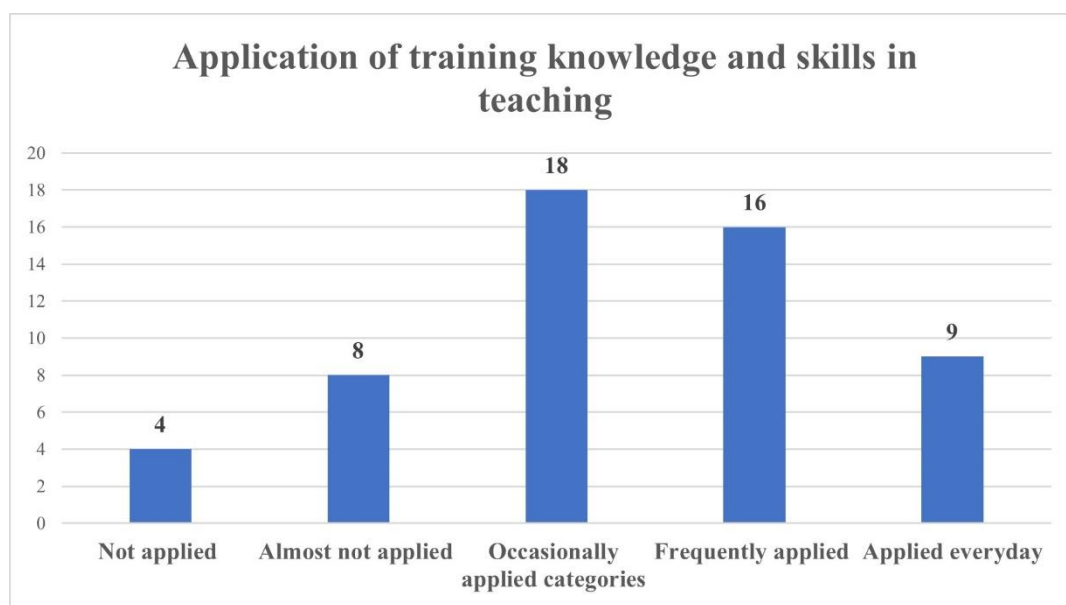
Teachers' IT training is predominantly focused on theoretical methods such as expert lectures (100%), online education (100%), and viewing video materials (100%), with practical methods like teaching observation (62.5%), hands-on training (66.0%), and demonstration (58.9%) being less common. This imbalance between theory and practice could be influenced by factors such as the availability of IT equipment in rural primary schools or the effects of the pandemic.

The questionnaire data (Table 4) shows teachers' preferences for different training methods. Expert lectures, online education, and viewing video materials were the top choices, each with 100% interest. Hands-on training (66.0%) and teaching observation (62.5%) were popular, offering practical skills and strategies. Training through models (58.9%) and case studies (48.2%) followed, while collaborative inquiry was the least preferred method, with only 30.3% interest. These insights are crucial for designing effective future training programs.

Training Effectiveness and Feedback

The practical developmental application of training learning outcomes determines the success of training. From the data in Figure 2 from the questionnaire survey, 44.2 % of the teachers had better application after training, and the overall Figure reached half of the total number, which still has room for improvement. However, 21.4 % of teachers' training results are not satisfactory.

FIGURE 4.2 Survey Results on Whether Training is Applied to Instruction

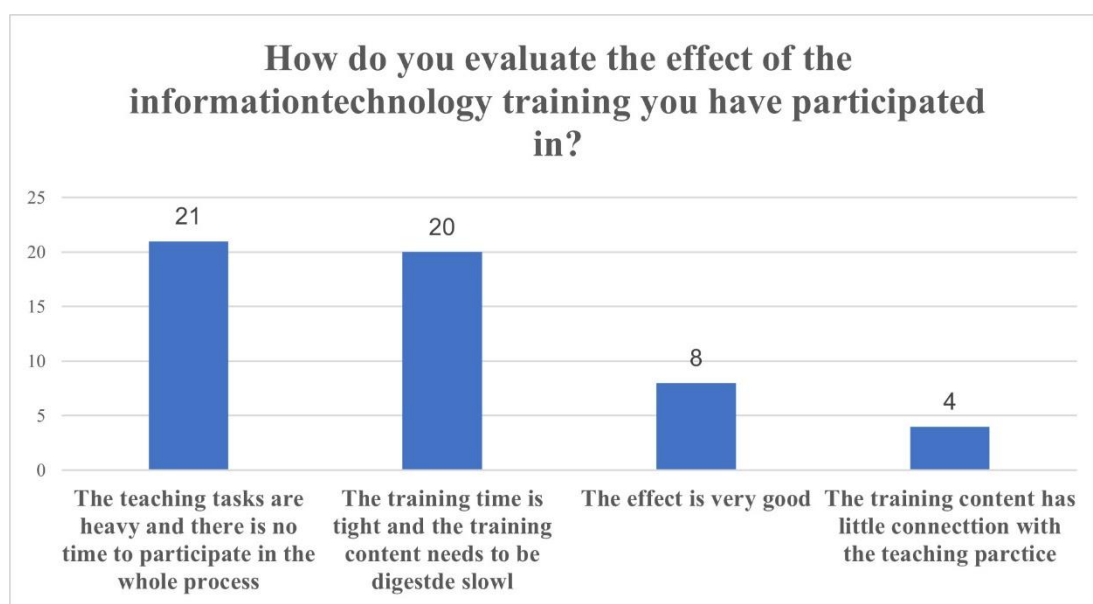


The success of any training program is ultimately determined by how well the acquired knowledge is applied in a practical, developmental context. According to Figure 2, derived from a questionnaire survey, 44.2% of teachers effectively applied what they learned from the training, indicating a positive trend in applying training outcomes. However, this also suggests room for improvement, as enhancing the effectiveness of the training could enable more teachers to apply their learning outcomes more effectively. Additionally, 21.4% of teachers were dissatisfied with the training results, indicating that the training did not meet their expectations or needs due to relevance, delivery method, or lack of support. In conclusion, while there is a positive trend in the application of training outcomes, continuous evaluation and refinement of the training program are necessary to ensure it meets the needs of all teachers and yields satisfactory results.

Training evaluation and needs

A variety of internal and external factors influence teacher participation in training programs. Externally, the heavy workload is a significant constraint, with 39.2% of teachers reporting insufficient time to attend courses due to demanding teaching duties, highlighting the need for better planning and support mechanisms. Another major factor is the tight scheduling of training sessions; 37.2% of teachers felt they did not have enough time to absorb and apply the content, indicating that follow-up instructional practices require improvement. These insights underscore the necessity of designing training programs that accommodate teachers' schedules and workloads, allowing them to engage and effectively integrate new knowledge into their teaching fully.

FIGURE 3: Results of teachers' evaluation of training effectiveness



Factors constraining teachers' participation in training include their reasons and external reasons, such as heavy workloads and conflicting training schedules. As shown in Figure 39.2%, teachers think they have heavy teaching duties and do not have time to attend the course. This indicates that the training-related guarantees are not good enough. 37.2% of the teachers thought that the training was tightly scheduled and that the content of the training work needed to be digested slowly, which indicates that the training's follow-up instructional practice teaching needs to be further improved.

In conclusion, providing teacher training is commendable, but it is essential to consider internal and external factors affecting teachers' participation and benefit. Addressing these issues can create a more conducive environment for effective teacher training, leading to better teaching and learning outcomes. The data from Table 5 identifies respondents' training needs, organized into Training Content and Forms of Training categories. The highest demand in Training Content was for Courseware Production (73.2%), followed by How to Use Multimedia Equipment (67.8%), Web-based Information Retrieval (64.2%), and Web Authoring (62.5%). The least demanded were Office Software and Basic Theory of Educational Technology (37.5%).

In the Forms of Training category, Hands-on training was most preferred (75.0%), followed by Model training (71.4%). Other forms, like Expert Lectures and Teaching Observation, had moderate interest (48.2%), as did Online Education and Case Studies (50.0%). Viewing of Video Materials had 41.0% interest, while Collaborative Enquiry was the least preferred (33.9%). This data is crucial for designing tailored training programs that meet teachers' needs and preferences, ensuring effective professional development.

TABLE 5. Training Needs Questionnaire

Training needs questionnaire			
Training needs	Categorization	Quorum	Percentage
Training content	office software	21	37.5 %
	image processing	32	57.1%
	web authoring	35	62.5 %
	Courseware production	41	73.2 %
	How to use multimedia equipment	38	67.8 %
	Maintenance of teaching equipment	28	50.0 %
	Basic Theory of Educational Technology	21	37.5 %
	Integration of information technology and the curriculum	33	58.9 %
	Web-based information retrieval	36	64.2 %
	Information security knowledge	28	49.5 %
	Expert Lectures	27	48.2 %
	collaborative enquiry	19	33.9 %
	online education	28	50.0 %
	Viewing of video materials	23	41.0 %
	Teaching Observation	27	48.2 %
Forms of training	Case Studies	28	49.5 %
	hands-on	42	75.0 %
	model	40	71.4 %

Teachers have different requirements for training due to their subjective thinking about school facilities, as shown in Table 4.5. Therefore, it is indispensable to conduct a demand survey before the training. Regarding the training contents of this course, teachers surveyed by the questionnaire reflected that the demand for the "office software" course was lowered, and the demand for the "teaching equipment maintenance" course and the "network information retrieval" course was increased, the demand for the "Information Security Knowledge" course has increased.

DISCUSSION

The study on IT training for rural primary school teachers highlighted significant gaps and needs in training programs. Only 34.0% of teachers were trained to improve IT skills, indicating a lack of autonomy and a need for more personalized training. While 55.2% acknowledged the importance of IT, 60.6% were not actively engaged with learning-related technologies, indicating a gap in IT knowledge. The Training Attitude Scale showed varied engagement levels, with many teachers having a neutral stance towards IT training, suggesting the need for consistent IT engagement and more encouragement. Specific training needs were identified, with high demand for Office Production, Basic Theory of Educational Technology, and integration of IT with the curriculum. Practical training methods like hands-on training and teaching observation were preferred, but theoretical methods dominated. The study emphasized the importance of balancing theory and practice in IT training and highlighted the necessity of tailored training programs.

Additionally, 44.2% of teachers effectively applied their training, but 21.4% were dissatisfied, indicating room for improvement. Internal and external factors, such as heavy workloads and tight schedules, influenced teacher participation, highlighting the need for better planning and support mechanisms. The data underscored the importance of designing tailored training programs to meet

teachers' needs, ensuring effective professional development, and conducting demand surveys before training to improve efficacy.

The study on IT training for rural primary school teachers identified significant gaps and needs, particularly highlighting the lack of autonomy and the necessity for more personalized training. These findings align with previous research emphasizing the importance of tailored training programs for rural educators (Maja, 2023; Pappa et al., 2024). Additionally, the study revealed that rural teachers' innovative behavior in integrating technology remains unsatisfactory due to various barriers. The Training Attitude Scale showed varied engagement levels, with many teachers displaying a neutral stance toward IT training, underscoring the need for more consistent IT engagement and encouragement (Yi, 2023). Furthermore, the lack of confidence among teachers in teaching STEM and technology subjects further stresses the need for targeted support and development programs to enhance their competencies and effectively integrate technology into their teaching practices (Wu et al., 2022).

While practical training methods like hands-on activities and teaching observation were favored, theoretical methods still predominated in the study. This underscores the need to balance theory and practice in IT training (Maja, 2023; Yi, 2023). Unlike other studies, this research uniquely highlights the critical impact of internal and external factors, such as heavy workloads and tight schedules, on teacher participation in training programs. By emphasizing the necessity for better planning and support mechanisms, this study contributes positively by offering actionable insights for creating more effective and balanced training programs that cater to teachers' real-world constraints.

CONCLUSION

The study on IT training for rural primary school teachers revealed significant gaps and needs, particularly highlighting the lack of autonomy and the necessity for more personalized training. Practical training methods like hands-on activities and teaching observation were favored, but theoretical methods still predominated. This underscores the need to balance theory and practice in IT training. Unlike other studies, this research uniquely highlights the critical impact of internal and external factors, such as heavy workloads and tight schedules, on teacher participation in training programs. By emphasizing the necessity for better planning and support mechanisms, this study contributes positively by offering actionable insights for creating more effective and balanced training programs that cater to teachers' real-world constraints.

The study yielded insightful findings, leading to theoretical and practical recommendations for enhancing teacher training programs. Theoretical insights emphasize the need for attitude adjustment, content relevance, format flexibility, and effectiveness evaluation. Teachers' attitudes toward IT varied, highlighting the need to influence their perspectives positively. Popular training content like Office Production should be prioritized, and preferred formats such as Expert Lectures, Online Education, and Video Materials should be emphasized. Practical recommendations include workload management, improved scheduling, support mechanisms, and continuous feedback to ensure effective training. These strategies aim to create a more conducive environment for teacher training, ultimately improving teaching and learning outcomes.

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