

# The Effectiveness Of Artificial Intelligence (AI) Technology In Teaching Form 5 Information And Communication Technology (ICT) Teachers In The Bachok District

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**Abstract-** The aim of this study is to assess the effectiveness of using Artificial Intelligence (AI) technology in the teaching of Form 5 Information and Communication Technology (ICT) teachers in the Bachok district. This research employs a quantitative approach where data is collected through questionnaires distributed to ICT teachers in secondary schools within the district. The purpose of this questionnaire is to evaluate teachers' perceptions of the effectiveness of AI in teaching, covering aspects such as student engagement, teaching efficiency, and academic performance. The collected data is analyzed using descriptive and inferential statistics to determine the level of AI effectiveness in ICT teaching. The findings suggest that the use of AI technology significantly improves student engagement and teaching efficiency. Teachers report that AI supports the delivery of more interactive and personalized learning tailored to students' individual needs. Additionally, there is an improvement in the academic achievement of students taught using AI technology. However, the study also identifies some challenges, such as teachers' lack of skills in handling AI and the high cost of implementation. Overall, the study confirms the significant potential of AI technology to enhance the quality of ICT teaching at the secondary school level. It is recommended that training programs and support be provided to teachers to maximize the use of AI in teaching.

**Keywords-** Artificial Intelligence (AI), AI Technology, Information Technology, Teaching Effectiveness

## I. INTRODUCTION

In an increasingly sophisticated digital world, Artificial Intelligence (AI) has emerged as a transformative tool across various sectors, including education. The integration of AI technology in education offers numerous applications that can enhance the quality of teaching and learning, especially in subjects such as Information and Communication Technology (ICT). The teaching and learning of ICT requires a dynamic and innovative approach to ensure students not only understand the foundational concepts but are also able to apply the knowledge in real-world scenarios.

The aim of this study is to evaluate the effectiveness of using AI technology in the teaching of Form 5 ICT teachers in the Bachok district. AI in education can provide more personalized and interactive learning experiences, assess student performance continuously, and assist teachers in identifying individual learning needs. Through machine learning algorithms and data analytics, AI can adapt teaching materials to suit the progress and learning styles of students.

The application of AI technology in ICT teaching offers various benefits, including :

- Enhanced Student Engagement: AI can create more interactive and engaging learning environments
- Improved Teaching Efficiency: AI can assist teachers in better managing their time through the automation of administrative tasks and assessments.
- Personalized Learning: AI can tailor teaching content based on individual student needs and performance

However, challenges also exist, such as the high cost of implementation, lack of technological skills among teachers, and student data security issues. Thus, this study aims not only to explore the benefits but also to examine the challenges involved in using AI in ICT teaching. The research adopts a quantitative approach by collecting data via questionnaires distributed to ICT teachers in

secondary schools in the Bachok district. These questionnaires are designed to gauge teachers' perceptions regarding the effectiveness of AI in their teaching. The data obtained will be analyzed to determine the extent to which AI can improve the quality of ICT teaching.

It is hoped that the findings of this study will offer comprehensive insights into the potential and challenges of AI use in ICT teaching, and provide useful recommendations for policymakers and stakeholders in designing more effective and innovative future education strategies.

## II. PROBLEM STATEMENT

In the era of globalization and the Fourth Industrial Revolution (IR 4.0), education plays a crucial role in shaping a knowledgeable and highly skilled generation. ICT is one of the critical components of the secondary school curriculum, as it equips students with essential skills needed to thrive in the increasingly complex digital world. However, ICT teaching often faces challenges such as lack of resources, ineffective teaching approaches, and low student engagement.

One innovative approach to address these issues is to examine the effectiveness of AI technology based on teachers' experiences in using AI in teaching and learning. AI can support teachers by offering interactive learning experiences, customizing learning content to individual needs, and providing real-time feedback on student performance. Nevertheless, the effectiveness of AI use in ICT teaching has not been fully explored, particularly within the context of secondary schools in Malaysia, especially in the Bachok district.

ICT teachers in Bachok, like in many other places, struggle to increase student engagement and ensure a deep understanding of the subject. The lack of training and technological skills among teachers adds to this challenge. Moreover, there are concerns regarding implementation costs and student data security associated with AI use, particularly due to limited AI knowledge and skills among ICT teachers.

The growing reliance on data collection and analysis through AI—including students' personal and academic information—raises privacy and data security concerns, including how data is stored, used, and protected from unauthorized access.

Therefore, this study is conducted to evaluate the effectiveness of using AI technology in ICT teaching among Form 5 teachers in the Bachok district. It seeks to investigate how effective AI can be in improving teaching and learning quality, as well as identifying the challenges teachers face during implementation. The study's findings are expected to provide guidance for teachers, school administrators, and policymakers in planning and implementing more effective, technology-driven educational strategies.

## III. RESEARCH OBJECTIVE

The aim of this study is to evaluate the effectiveness of using artificial intelligence (AI) technology in the teaching of Information and Communication Technology (ICT) teachers for Form 5 students in the Bachok district. The specific objectives of the study are:

1. To examine the basic knowledge level of teachers regarding AI technology in teaching and learning.
2. To identify the level of teachers' skills in AI technology, such as their ability to use available AI software and tools.
3. To identify the implications faced by teachers in implementing AI technology in the teaching and learning of ICT for Form 5 students.

## IV. RESEARCH QUESTIONS

To achieve the research objectives, the following research questions will guide the study and determine the effectiveness of AI technology in teaching:

1. Does the level of knowledge about artificial intelligence (AI) help teachers in teaching and learning?
2. Does the level of AI technology skill help teachers use AI learning platforms in their teaching and learning?
3. What are the implications faced by teachers in using AI technology in teaching?

## V. METHODOLOGY

This study was conducted to identify the effectiveness level of using AI technology in teaching Form 5 ICT teachers in the Bachok district. The respondents comprised ICT teachers from the Bachok district who teach Form 5 Computer Science. The respondents were selected using simple random sampling. Data collection was done using Google Form-based questionnaires involving 25 respondents. The questionnaire contained five Likert scale options.

The question structure consisted of four sections: respondents' demographics, knowledge level, skill level, and implications of using AI technology in ICT teaching and learning.

The Likert scale was as follows

Scale 1 – Strongly Disagree (SD)

Scale 2 – Disagree (D)

Scale 3 – Somewhat Agree (SA)

Scale 4 – Agree (A)

Scale 5 – Strongly Agree (SA)

The researcher analyzed the responses using Microsoft Excel to calculate percentages, means, and standard deviations. The findings were discussed to address the research questions and provide suggestions for improvement in this study.

## VI. FINDINGS AND DISCUSSION

The findings of this study are divided into four main parts: respondent demographics, knowledge level, skill level, and implications of using AI technology in the teaching and learning of ICT among teachers.

### (A) Respondent Demographics

Category	Details
Gender	Female: 84% Male: 16%
Educational Qualification	Bachelor's Degree: 92%
Teaching Experience	More than 16 years: 48% 11–15 years: 32% 6–10 years: 16% 1–5 years: 14%
Awareness of AI	100% of respondents were aware of AI technology
Use of AI Technology	92% of respondents had used AI technology

### (B) Teachers' Knowledge Level

Category	Details
Gender	Female: 84% Male: 16%
Educational Qualification	Bachelor's Degree: 92%
Teaching Experience	More than 16 years: 48% 11–15 years: 32% 6–10 years: 16% 1–5 years: 14%
Awareness of AI	100% of respondents were aware of AI technology

Use of AI Technology	92% of respondents had used AI technology
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**(C) Teachers’ Skills**

Category	Details
Confidence in Using AI	60% were confident in using AI
Sufficiency of Training	40% felt training was sufficient
Engagement in Learning	76% agreed AI made learning more engaging
Usefulness in Lesson Preparation	80% found AI useful in lesson preparation
School Support	56% said school support was adequate
Motivation to Improve AI Skills	92% were motivated to improve AI skills
Importance of AI for Education’s Future	100% agreed AI is important for education's future

**(D) Implications Faced**

Category	Details
Need for Additional Training	88% agreed additional training is required
Technical Issues	60% faced technical issues
School Support	84% felt school support was insufficient
Increased Workload	40% said AI increased workload
Difficulty Integrating AI	48% had difficulty integrating AI into the curriculum
Major Teaching Changes Required	60% felt AI required major teaching changes
Student Adaptation Time	72% said students needed time to adapt
Reduction in Direct Interaction	56% agreed it reduced direct interaction

**VII. RECOMMENDATIONS AND CONCLUSION**

Overall, the respondents provided positive feedback regarding the study's questions. The findings suggest that most teachers are aware of AI technology, although at times they face time constraints and lack sufficient skills, despite their interest in this technology. The study demonstrates that AI holds great potential for enhancing teaching and learning quality.

AI technology can help provide more interactive learning experiences tailored to students’ needs and simplify assessment processes. However, to achieve optimal effectiveness, several aspects must be addressed, including:

- Teachers' level of knowledge and skills.
- The need for continuous training and professional development.
- Provision of adequate technological infrastructure.
- Effective curriculum integration.

Additionally, continuous evaluation and feedback from users (teachers and students) are essential to ensure that the use of AI yields the desired outcomes.

By implementing these recommendations, ICT teachers in the Bachok district can utilize AI technology more effectively, thus improving the quality of education and equipping students with relevant skills for a technology-driven future

## VIII. CLOSING

This study has investigated the effectiveness of artificial intelligence (AI) technology in teaching Form 5 ICT by teachers in the Bachok district. Through in-depth analysis and fieldwork, the results indicate that the use of AI in teaching brings both significant benefits and notable challenges. AI can enrich the learning process by offering more interactive, customized, and efficient approaches. It enables teachers to focus more on personal interactions with students, increase student motivation and engagement, and support effective assessment and data management. However, its effectiveness depends on various supporting factors such as continuous teacher training, sufficient technological infrastructure, and strategic curriculum integration.

The recommendations proposed in this study provide practical guidance for enhancing the effectiveness of AI implementation in ICT teaching. Continuous professional development, robust infrastructure, and regular evaluations are key to ensuring the successful adoption of this technology.

In conclusion, the study affirms that with careful planning and comprehensive support, AI technology has the potential to become a highly valuable tool in enhancing the quality of education in Malaysia. The findings and suggestions presented in this research are expected to serve as a reference for schools, educational administrators, and policymakers to optimize the use of AI in the education system—particularly in ICT teaching. With consistent efforts, Malaysia's education system can be empowered to meet the demands of an increasingly advanced and technology-driven future.

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