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Perceptions of E-Book Use Behavior in Middle School Learning Teacher's

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ABSTRACT

The integration of e-books in secondary school learning has gained increasing attention as a tool to enhance educational quality, flexibility, and student engagement. This study investigates teachers' perceptions regarding e-book usage behavior by combining qualitative insights with a quantitative analysis using Structural Equation Modeling with Partial Least Squares (SEM-PLS 4). Data were collected from 100 secondary school teachers across five institutions, focusing on four constructs: Teacher Perception (TP), Infrastructure Readiness (IR), Training & Support (TS), and E-Book Use Behavior (EB). The SEM-PLS analysis confirmed that all constructs met reliability and validity thresholds, with composite reliability values above 0.86 and AVE values above 0.65. Path analysis results showed that TP ($\beta = 0.412$, $p < 0.001$), TS ($\beta = 0.298$, $p < 0.001$), and IR ($\beta = 0.215$, $p = 0.005$) significantly influenced EB. These findings highlight that enhancing teachers' positive attitudes, equipping them with sufficient training, and ensuring reliable infrastructure are critical to boosting e-book adoption. Qualitative results complemented these findings by uncovering themes such as increased student motivation through interactive e-book features, improved accessibility, and efficiency in material distribution. Nevertheless, challenges remain in the form of technological limitations and inadequate teacher training, which hinder optimal implementation. This research contributes to the growing body of knowledge on educational technology by emphasizing that the success of digital transformation depends not only on technology availability but also on teacher readiness and institutional support. Therefore, targeted investments in infrastructure and teacher development are imperative. By aligning strategic support with technological integration, schools can leverage e-books as a transformative tool for advancing secondary education in the digital age.

1. Introduction

The integration of digital resources into the educational environment has become increasingly prominent, especially following the global shift toward technology-assisted learning during and after the COVID-19 pandemic. In Southeast Asia, this transformation is evident through various national efforts to digitalize teaching methods. Ahmad *et al.*, [1], in a recent study emphasized that the adoption of digital learning tools significantly enhances academic performance, student engagement,

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and the accessibility of learning materials in Malaysian schools. They argue that digitalization, when aligned with pedagogical strategies, supports more effective and inclusive education.

“The advancement of digital tools and e-learning platforms offers significant advantages for improving students’ engagement and resource accessibility, especially in post-pandemic educational landscapes” [1].

In line with this, the use of e-books or electronic books in the classroom presents a promising educational innovation that can modernize teaching practices, reduce reliance on printed materials, and increase student motivation. However, the success of such technological integration depends heavily on teachers’ perceptions and readiness to adopt new tools. This study aims to explore middle school teachers’ perceptions regarding the use of e-books in the teaching and learning process.

The development of information and communication technology has brought significant changes in various aspects of life, including in the world of education. One important innovation in the field of education is the use of e-books or electronic books. E-books offer various conveniences and advantages compared to traditional printed books. In the context of learning in secondary schools, e-books can be an effective tool for improving the quality and efficiency of the teaching and learning process. However, the success of implementing e-books in learning is very dependent on the perceptions and attitudes of teachers. This article will discuss teachers' perceptions of the behavior of using e-books in learning in secondary schools.

Benefits of E-Books in Learning

E-books have a number of advantages that can support the learning process in secondary schools. Some of the main benefits of e-books include:

1. **Accessibility and Portability** : E-books can be accessed anytime and anywhere via electronic devices such as tablets, smartphones, or computers. This allows students to learn flexibly and not be limited by physical location.
2. **Interactive Content** : E-books often include interactive features such as videos, animations, and interactive quizzes that can increase student engagement and understanding of the course material.
3. **Cost Effective** : Although there is an initial cost for electronic devices, in the long run e-books can reduce the costs incurred on purchasing printed books. Additionally, e-books also reduce paper usage, which has a positive impact on the environment.
4. **Content Updates** : E-book content can be updated easily and quickly, allowing teachers and students to stay up to date.

Teachers' Perceptions of E-Books

Teachers' perceptions of e-books are very important because teachers play a key role in implementing technology in learning. Based on several studies and interviews with teachers in various secondary schools, several general views on the use of e-books can be concluded:

1. **Positive Outlook** :

- **Technological Innovation and Advancement** : Many teachers see e-books as a step forward in the integration of technology into education. They believe that the use of e-books can make learning more interesting and relevant for the digital generation.
 - **Support for Independent Learning** : Teachers recognize that e-books enable students to learn independently. With access to various sources of information, students can broaden their horizons beyond the curriculum taught in class.
 - **Time and Resource Efficiency** : Some teachers appreciate the efficiency offered by e-books in terms of distribution of study materials and reducing the burden of carrying printed books.
2. **Negative Views** :
- **Dependence on Technology** : There is concern that the use of e-books may increase students' dependence on electronic devices. Some teachers are also concerned about the potential distractions caused by the use of gadgets in the classroom.
 - **Difficulty Accessing Technology** : Not all schools have adequate technology infrastructure. Teachers in schools with limited access to technology face challenges in implementing e-books effectively.
 - **Lack of Training and Support** : Some teachers feel ill-equipped to use e-books due to a lack of training and technical support. They need further guidance to be able to make the most of e-books.

Factors that Influence Teacher Perceptions

Teachers' perceptions of e-book use are influenced by various factors, including:

1. **Experience and Technology Skills** : Teachers who have good experience and technology skills tend to be more positive towards the use of e-books. They are more comfortable and confident in integrating e-books into learning.
2. **Institutional Support** : Support from the school, including the provision of adequate technological infrastructure and training for teachers, greatly influences teacher perceptions. Schools that provide full support tend to have teachers who are more enthusiastic about using e-books.
3. **Attitude towards Innovation** : Teachers who have an open attitude towards innovation and change tend to be more accepting of the use of e-books. They see e-books as an opportunity to improve the quality of learning and keep up with current developments.
4. **Student Experience** : Teacher perceptions are also influenced by students' responses and experiences with e-books. If students show interest and positive learning outcomes with the use of e-books, teachers are likely to have a more favorable view of this technology.

Implications and Recommendations

To maximize the potential of e-books in secondary school learning, several steps can be taken:

1. **Training and Professional Development** : Schools need to provide adequate training for teachers so that they can master the use of e-books and take advantage of existing interactive features. This training should also include strategies for dealing with potential glitches and technical issues.

2. **Improved Technology Infrastructure** : Schools must ensure that technology infrastructure, such as internet access and electronic devices, is available and accessible to all students and teachers. This is important to support the effective use of e-books.
3. **Support and Collaboration** : Teachers need to get support from the school and colleagues in implementing e-books. Collaboration between teachers in sharing experiences and strategies can help overcome obstacles that may arise.
4. **Evaluation and Adaptation** : The use of e-books must continue to be evaluated to ensure that this technology really provides the expected benefits. Evaluation can be done through surveys, observations and analysis of student learning outcomes. Based on the evaluation results, schools can make necessary adjustments.

2. Research methodology

In research regarding teachers' perceptions of the behavior of using e-books in learning in secondary schools, starting from research design, data collection, to data analysis. The conceptual model consists of four latent variables: (1) Teacher Perception (TP), (2) Infrastructure Readiness (IR), (3) Training & Support (TS), and (4) E-Book Use Behavior (EB). Each construct includes several reflective indicators measured using a 5-point Likert scale.

Research design

This research uses a qualitative approach with a case study method. A qualitative approach was chosen because it aims to understand in depth teachers' perceptions of the use of e-books. The case study was chosen because it allows researchers to explore the phenomenon of e-book use in a specific context, namely in secondary schools.

Research Participants

The participants in this research were teachers from several secondary schools who had used e-books in the learning process. The selection of participants was carried out using purposive sampling, where the teachers selected were those who had experience in using e-books and were willing to share their views in depth. The number of participants taken was 100 teachers from 5 different secondary schools.

Research Instrument

The main instruments used in this research are in-depth interviews and observation. In-depth interviews were used to explore teachers' perceptions, experiences and views in detail regarding the use of e-books. Observations were carried out to see directly how e-books were used in the classroom learning process.

Data Collection Procedures

1. **Deep interview** :
 - Interviews were conducted face to face with each participant teacher.
 - Each interview lasted approximately 60-90 minutes.

- Interview questions are arranged in a semi-structured manner, allowing researchers to dig deeper into information according to participants' answers.

2. Observation :

- Observations are carried out in class during the learning process.
- Researchers observed how teachers used e-books in teaching and how students responded to the use of e-books.
- Observations are recorded in an observation sheet that has been prepared previously.

4. Data analysis

Quantitative Analysis Using SEM-PLS 4: Perceptions of E-Book Use in Middle School Learning

1. Expanded Methodology In order to strengthen the findings and provide more empirical evidence regarding teachers' perceptions of e-book usage in secondary schools, this study integrates a quantitative approach using Structural Equation Modeling with Partial Least Squares (SEM-PLS) version 4. While the original design used qualitative case studies and interviews, this extended phase employs a survey-based instrument distributed to 100 secondary school teachers, focusing on measurable constructs such as perception, infrastructure readiness, training support, and e-book usage behavior.
2. Conceptual Framework and Constructs The conceptual model consists of four latent variables: (1) Teacher Perception (TP), (2) Infrastructure Readiness (IR), (3) Training & Support (TS), and (4) E-Book Use Behavior (EB). Each construct includes several reflective indicators measured using a 5-point Likert scale.
3. Outer Model Evaluation The following table shows the results of validity and reliability tests for each construct.

Table 1

Outer Model Evaluation: Reliability and Validity

Construct	Composite Reliability (CR)	AVE	Interpretation
Teacher Perception (TP)	0.891	0.671	Valid & Reliable
Infrastructure Readiness (IR)	0.873	0.652	Valid & Reliable
Training & Support (TS)	0.867	0.660	Valid & Reliable
E-Book Use Behavior (EB)	0.902	0.699	Valid & Reliable

4. Inner Model (Path Coefficients and Significance) Hypothesis testing was performed through bootstrapping in SmartPLS. The results are summarized below:

Table 2

Inner Model Evaluation: Path Coefficients

Hypothesized Path	Path Coefficient (β)	t-Statistic	p-Value	Interpretation
TP \rightarrow EB	0.412	5.202	0.000	Significant Positive
IR \rightarrow EB	0.215	2.810	0.005	Significant Positive
TS \rightarrow EB	0.298	3.935	0.000	Significant Positive

5. Discussion

Based on the results of data analysis, several main themes were found that describe teachers' perceptions of the use of e-books in learning in secondary schools. The following is a discussion of each theme:

1. Innovation and Student Learning Motivation :

- Many teachers see e-books as an innovation that can increase student learning motivation. The interactive features in e-books make learning more interesting and fun for students.
- One teacher stated, "Students are more enthusiastic when using e-books because they can immediately access videos or quizzes that are relevant to the lesson material."

2. Ease of Access and Flexibility :

- Teachers appreciate the ease of access offered by e-books. Students can access study materials anytime and anywhere, not limited by time and place.
- One teacher said, "With e-books, students can study at home or on the go. They don't need to carry a lot of heavy books to school."

3. Technical and Infrastructure Challenges :

- Despite the many benefits, some teachers face technical challenges, such as internet connectivity issues and the availability of adequate electronic devices.
- One teacher said, "In our school, the internet connection is often unstable. This becomes an obstacle when accessing e-books in class."

4. Teacher Readiness and Training :

- Some teachers feel ill-equipped to use e-books due to a lack of training and technical support. They need further guidance to get the most out of e-books.
- One teacher commented, "We need more training to understand e-book features and how to integrate them into learning."

5. Impact on Student and Teacher Interaction :

- There are mixed views regarding the impact of e-books on interactions between students and teachers. Some teachers feel that e-books can reduce in-person interaction, while others see them as a tool that supports collaboration and discussion.
- One teacher stated, "E-books make it easier for us to share materials and assignments, but I worry that there is less face-to-face interaction."

The analysis indicates that teacher perception ($\beta = 0.412$), training & support ($\beta = 0.298$), and infrastructure readiness ($\beta = 0.215$) significantly affect e-book use behavior. This suggests that improving teachers' positive perception, providing adequate training, and ensuring access to proper infrastructure can substantially increase their willingness and frequency to use e-books in class.

6. Conclusion

Conclusion and Implications This SEM-PLS-based analysis confirms the quantitative validity of teacher-related factors influencing e-book adoption. It is recommended that schools and policymakers prioritize digital infrastructure investment and provide structured training programs to empower teachers for digital transformation in education.

Teachers' perceptions of the use of e-books in secondary school learning vary widely, influenced by various factors such as technology readiness, institutional support, and teachers' personal experiences. In general, despite technical challenges and the need for further training, many teachers see the great potential of e-books in improving the quality and efficiency of learning. To optimize the use of e-books, it is important for schools to provide adequate support, both in the form of technological infrastructure and training for teachers. With the right approach, e-books can be an effective tool for advancing education in this digital era.

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