

Teachers' Barriers to ICT Integration in English Language Teaching

(A Case Study at an Inclusive Junior High School)

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Abstract: The integration of Information and Communication Technology (ICT) in English Language Teaching (ELT) has become essential in modern education. Despite the benefits, many teachers still face significant barriers when using technology in classroom instruction, particularly in inclusive school settings. This study aimed to investigate the barriers that English teachers face in integrating ICT at SMP N 10 Pekalongan, an inclusive junior high school where technology use remains minimal. A qualitative case study design was employed. Data were collected through semi-structured interviews with two English teachers, non-participant classroom observations, and document analysis of lesson plans. The data were analyzed using thematic analysis, guided by Ertmer's and Bingimlas's barrier frameworks, TPACK, and SAMR. The findings revealed that the main barriers were first-order, particularly limited devices, an unstable internet connection and a lack of ICT training for one of the teachers. Second-order barriers were minimal, as both teachers displayed positive attitudes and high levels of confidence. The level of ICT implementation reached the 'Modification' level of the SAMR model. Technical issues, for example video buffering due to an unstable internet connection, disrupted the flow of the classroom, and some students appeared not to take the lessons seriously. This study concludes that inclusive schools with low technology adoption should prioritise addressing first-order barriers before expecting transformative technology integration at the Redefinition level of SAMR.

Keywords: Barriers; Case Study; English Language Teaching; ICT Integration; Inclusive School.

1. Introduction

Education is defined as a conscious and planned effort to guide and develop the potential of individuals through teaching and training (Syofiyanti, 2025). Nowadays, the integration of Information and Communication Technology (ICT) in education has become an important part of improving the quality of teaching and learning, especially in English Language Teaching (ELT). Wati et al. (2025) found that integrating ICT media into language learning has a positive and significant impact, delivering materials more precisely. Nogaibayeva et al. (2024) also found that technology can motivate students and increase their engagement by creating interactive learning environments. ICT provides new ways of delivering learning materials and giving feedback that align with students' learning habits in the digital era (Agustini et al., 2024).

Kumar and Gautam (2023) stated that ICT tools and interactive learning platforms play a crucial role in increasing student participation by transforming passive learning into active engagement. Technology-enhanced teaching has been shown to increase student engagement and create more opportunities for developing communication skills (Wiranata et al., 2024). ICT also changes the role of teachers, transforming them from the main source of information to support for independent learning (Wulandari & Viratama, 2025). Despite these benefits, difficulties are still faced by many teachers when technology is tried to be used in their classrooms. Khan and Kuddus (2020) found that teachers in Bangladesh face

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challenges, including unstable internet connections, a lack of training and limited time. Bhattarai (2021) revealed that English teachers in Nepal encounter similar challenges, including limited access to technology, unfamiliarity with ICT and insufficient training. Hashemi and Kew (2021) conducted a systematic review of 33 studies and found that the three most common barriers worldwide are teachers lacking confidence, not getting enough training, and not having enough time. Pitaloka (2024) also found problems like lack of support from the school, low confidence among teachers, and poor infrastructure in junior high schools.

To gain a more deeper understanding of these barriers, several theoretical frameworks have been developed. Ertmer (1999, as cited in Abedi & Ackah-jnr, 2023) distinguishes between first-order barriers (external factors like limited access to technology and lack of training) and second-order barriers (internal factors like teachers' beliefs and attitudes). According to Bingimlas (2009, as cited in Eryansyah & Erlina, 2023), barriers can be classified into three categories: lack of confidence, lack of ICT skills, and lack of access. The TPACK framework, which Mishra and Koehler introduced in 2006 as cited in Humaera et al. (2025), explains that effective teaching with technology requires teachers to combine Content Knowledge (CK), Pedagogical Knowledge (PK), and Technological Knowledge (TK). Puentedura (2006, as cited in Vancova, 2025) developed the SAMR framework to measure how deeply technology integrates into classroom tasks, ranging from Substitution to Redefinition.

This condition is reflected in the English language teaching practices at SMP N 10 Pekalongan, an inclusive junior high school in Pekalongan City, Central Java. Based on preliminary observations, the integration of ICT at this school is limited and rarely included in daily instructional activities. The integration of ICT is made more complex by the fact that the school accommodates both regular students and students with special needs (Bindhani & Gopinath, 2024; Pramesti et al., 2023).

Research shows that most previous studies have focused on general or partially digitalised settings (Pitaloka, 2024; Maghfirah, 2023; Rintaningrum, 2023), leaving a gap in understanding how ICT barriers are manifested in inclusive junior high schools where technology use remains minimal. Guided by Ertmer's first and second-order barriers, Bingimlas's classification of lack of confidence, skills, and access, as the TPACK and SAMR frameworks, this study aims to answer three research questions: (1) What are the barriers that English teachers face in integrating ICT at SMP N 10 Pekalongan? (2) How do these barriers affect the implementation of ICT-based English teaching in the classroom? (3) What factors contribute to the limited use of ICT at SMP N 10 Pekalongan?

2. Method

This study used a qualitative case study design. According to Creswell & Poth (2018), this design is suitable for exploring a specific phenomenon in the real world in depth. This design was chosen because the study aimed to explore the complex, contextual phenomenon of barriers to ICT integration at SMP N 10 Pekalongan. The study was conducted at SMP N 10 Pekalongan, a state junior high school in Pekalongan City, Central Java. The school was chosen for two reasons. Firstly, it is an inclusive school that teaches both regular students and those with diverse learning needs. Secondly, preliminary observations indicated that ICT integration in English teaching at this school was limited and underdeveloped. The data consisted of both primary and secondary sources. Primary data were gathered through semi-structured interviews with the two English teachers at the school, as well as through non-participant observations of English lessons. Secondary data included the teachers' lesson plans (RPP or modul).

Data were collected through semi-structured interviews with the two English teachers, non-participant classroom observations and analysis of lesson plans. All interviews were audio-recorded with prior consent and transcribed for analysis. The data were then analysed using thematic analysis, a process that is repeated, involving the repeated reading of the transcripts, the initial coding to identify key ideas and challenges, the grouping of codes into categories based on their similarities, and the development of broader themes. To ensure trustworthiness, member checking was employed by sharing emerging interpretations with the participating teachers for validation, as well as triangulation across interviews, observations, and documents.

3. Results

This section presents the results organized around the three research questions. The results are interpreted in relation to the theoretical frameworks and previous studies.

The Barriers That English Teachers Face in Integrating ICT in English Language Teaching at SMP N 10 Pekalongan

The results revealed that both teachers faced several barriers when integrating ICT into their English teaching. Using Ertmer's framework, these barriers were categorized into first-order (external) and second-order (internal) barriers.

First-Order Barriers (External Factors)

First-order barriers were identified as the main obstacles. Both teachers reported having limited access to technology. The school only has one government-provided Interactive Flat Panel (IFP). One teachers stated:

"The number is not enough and there are not many other supporting facilities either."

The other teacher added:

"For junior high school level, we should provide a language laboratory with adequate facilities."

An unstable internet connection was also mentioned as a major challenge. This barrier was confirmed during classroom observation when a video buffered, causing students to wait for a while.

Regarding training, one teacher had attended ICT training and found it beneficial. However, the other teacher stated:

"I have never attended any ICT training in my working life. In elementary school before, the teacher group is not active and there has been no ICT training."

For one of the teachers, this lack of training represents a significant first-order barrier.

Second-Order Barriers (Internal Factors)

Second-order barriers were found to be minimal. Both teachers had positive attitudes towards technology and were highly confident in their ability to use it. One teacher said:

"Technology is very important because it allows us to embrace modern times. It helps teachers to work."

The other teacher stated:

"As long as we master the technology, I am quite confident and feel supported in the learning process."

This finding contrasts with previous studies, such as Hashemi and Kew (2021) and Pitaloka (2024), which identified a lack of confidence as a major barrier. This difference may be because the teachers involved in this study had adequate basic technological skills and had developed positive attitudes towards ICT through experience.

Barriers Based on Bingimlas's Classification

Using Bingimlas's classification, lack of access was identified as the main barrier, which is consistent with the first-order barriers that were identified. Lack of confidence was not a significant factor. Lack of ICT skills was a minor issue, with one teacher mentioning difficulty with creating interactive CDs and the other struggling with the interactive whiteboard due to unfamiliarity rather than inability.

Table 1. Summary of Barriers Based on Ertmer and Bingimlas Frameworks.

Framework	Barrier Category	Specific Findings
Ertmer	a. First-Order Barrier (External)	1. Limited devices (only one IFP)
		2. Unstable internet access

Bingimlas	b. Second-Order Barrier (Internal)	3. No language laboratory
		4. Lack of training for one teacher
	a. Lack of Access	Minimal (positive beliefs, high confidence, adaptive creativity)
	b. Lack of Confidence	Main barrier (consistent with first-order)
	c. Lack of ICT Skills	Not significant (teachers reported confidence) Minor (difficulty with interactive CD and IFP)

The result that first-order barriers remain the main obstacles confirms Abedi & Ackah-jnr (2023) who argued that first-order barriers still matter in teachers' use of technology. The study also aligns with the findings of Bhattarai (2021) and Khan & Kuddus (2020), who identified unstable internet connections and a lack of devices as common barriers in developing countries. However, unlike Pitaloka (2024), who identified low teacher confidence as a major barrier, this study found that second-order barriers were minimal. This suggests that, in contexts where teachers already have a positive attitude towards technology, the main focus of any intervention should be on addressing the first-order barriers.

Impact of Barriers on ICT Implementation in the Classroom

The teachers observed and reported that the barriers affected the implementation of teaching in many ways.

Impact on Classroom Flow and Student Engagement

The unstable internet connection caused video buffering during the observed lesson. Students had to wait for a while, which disrupted the flow of the lesson slightly. However, once the video started playing, the students were enthusiastic and engaged well with the content. This suggests that, while technical issues can disrupt the timing of lessons, they do not necessarily destroy student motivation if teachers manage the situation well.

Impact on Teaching Methods and Task Design

When technology was limited or unavailable, teachers switched to alternative methods. One teacher used self-made games or the school environment as learning resources, while the other returned to textbooks, student worksheets or flashcards. The other teacher relied on textbooks, student worksheets and flashcards. One teacher explained:

"We don't always rely on digital technology. We can use the school environment as a learning medium, or create manual learning resources to make teaching and learning activities more interesting."

Impact on the Level of ICT Implementation (SAMR)

Despite the barriers, both teachers achieved the 'Modification' level of the SAMR framework. Rather than simply watching or listening, students created presentations (with one teacher) or practised speaking after watching videos (with the other teacher). The lesson plans also showed that, as an enrichment activity, students made posters and published them on social media. But the Redefinition level was not achieved through regular classroom teaching. One teacher mentioned that global collaboration activities, such as Zoom sessions with Japanese students, were attempted as extracurricular activities, but were hindered by a lack of supporting facilities. This corroborates Vancova's (2025) observation that higher SAMR levels are less common due to the additional time, training and resourcing they require.

Impact on Student Attitude

Both teachers mentioned that some students were not taking lessons seriously. One teacher stated:

"The challenge also comes from student attitude. If we only focus on student attitude, the material will not be delivered properly."

During the observation, it was indeed seen that some students were not paying full attention. This finding is particularly relevant in an inclusive school context. Pramesti et al. (2023) found that teaching English in such classrooms requires teachers to overcome challenges such as a lack of focus. This study confirms that poor student attitude remains a challenge even when teachers are well-prepared and motivated.

Table 2. Impact of Barriers on ICT Implementation

Barrier	Impact on Teaching	SAMR Level Affected
Unstable Internet	Video buffering, students wait, lesson flow disrupted	Substitution, Augmentation

Limited Devices	Cannot use technology for all students simultaneously	All levels
Lack of Training (one teacher)	Less familiar with some tools, slower to adopt new technology	Augmentation, Modification
Student Attitude	Disrupts lesson flow, reduces effectiveness	Engagement aspect, not SAMR

The finding that teachers reached the Modification level despite limited facilities is noteworthy. This suggests that teacher competence (TPACK) can compensate to some extent for infrastructure limitations. Both teachers demonstrated adequate TPACK, integrating technology with pedagogy and content using various methods. This aligns with the work of Humaera et al. (2025), who emphasised that effective TPACK development requires hands-on training and opportunities for teachers to collaborate. While this is encouraging, the absence of the Redefinition level indicates that infrastructure and resources remain critical for achieving transformative technology integration.

Factors Contributing to the Limited Use of ICT in ELT

The triangulation of interview, observation, and document analysis was used to identify several factors contributing to limited ICT use.

Factor 1: Limited Access to Adequate Technology (First-Order Barrier)

The school only has one IFP, and there is no language laboratory. One teacher explicitly stated:

"I think the number is not enough and there are not enough other supporting facilities either."

This factor directly limits how frequently and extensively teachers can use ICT, particularly when several classes require the same limited resources.

Factor 2: Unstable Internet Connection

Both teachers mentioned this as a major challenge. During observation, the unstable connection caused video buffering. This not only limits the types of activities that teachers can carry out (e.g. streaming videos becomes difficult), but also disrupts the flow of lessons and student engagement.

Factor 3: Lack of ICT Training for One Teacher

While one teacher had received ICT training, the other which is new teacher there had never attended any during her time at the school before. She stated:

"The teacher group in my school before is inactive and there has been no ICT training."

This is one of the reasons why there is a difference between the two teachers in terms of how familiar they are with certain tools, especially the interactive flat panel.

Factor 4: Absence of a Language Laboratory

One teacher specifically mentioned this as something that is needed. Opportunities for students to practise listening and speaking using technology in a structured environment are limited by the absence of a dedicated language lab.

Factor 5: Student Attitude Problems

Both teachers mentioned that some students showed lack of seriousness. This was confirmed during observation. This factor may be more pronounced in an inclusive school setting because of the diverse learning needs in the classroom.

Factor 6: Gap Between Lesson Plans and Classroom Reality

The analysis of the documents revealed the assumption in the lesson plans of full ICT availability. The modules included activities involving videos, PowerPoint presentations and online quizzes, but did not anticipate technical issues or provide backup plans. For example, one teacher's module included a Wordwall quiz that assumed the internet would work properly. When technical issues arose, teachers had to improvise, sometimes reverting to manual methods.

Table 3. Factors Contributing to Limited ICT Use

Factor	Type	Evidence
Limited Access to Technology	First-Order Barrier	Interview, Observation
Unstable Internet Connection	First-Order Barrier	Interview, Observation
Lack of Training (one teacher)	First-Order Barrier	Interview
No Language Laboratory	First-Order Barrier	Interview
Student Attitude Problems	Contextual Factor	Interview, Observation
Gap Between Lesson Plans and Reality	Systemic Factor	Document Analysis

The above factors are interconnected. Limited access and unstable internet (factors 1 and 2) make it difficult for teachers to consistently use ICT. Combined with a lack of training (factor 3), this means teachers cannot fully develop their skills. The absence of a language laboratory (factor 4) further restricts the range of possible ICT-based activities. Student attitude problems (factor 5) present an additional challenge, particularly in an inclusive school context. Finally, the gap between lesson plans and what is possible in reality (factor 6) suggests that curriculum documents need to be more realistic about the available infrastructure.

These findings have implications for our understanding of the integration of ICT in inclusive junior high schools with low technology adoption. Unlike previous studies that focused on mainstream schools (Pitaloka, 2024; Maghfirah, 2023), this study demonstrates that, in inclusive settings, student behavioural issues may interact with technological barriers in distinctive ways. When technology malfunctions or buffers, students with diverse learning needs may become more easily distracted or lose focus, which makes classroom management more challenging for teachers.

4. Discussion

This research was conducted at SMP N 10 Pekalongan, an inclusive junior high school in Pekalongan City, Central Java, and involved two English teachers as participants. Data were collected through semi-structured interviews, non-participant classroom observations and analysis of lesson plans. Through the interviews, the researcher explored the teachers' experiences and the challenges they faced in using technology. Through classroom observations, the researcher directly observed how teachers implemented ICT in daily teaching practices, including technical issues such as video buffering due to unstable internet. The researcher examined how ICT was planned in the modules by analysing documents, and identified the gap between planning and reality. The findings were analysed using thematic analysis guided by Ertmer's and Bingimlas's frameworks, TPACK, and SAMR, to provide a comprehensive understanding of the barriers to ICT integration in this inclusive junior high school.

Interpretation of Results in Relation to Theoretical Frameworks

The findings of this study provide several theoretical frameworks with empirical support for understanding ICT integration in ELT. The results confirmed Ertmer's theory that external factors significantly impact technology integration, as the study found that the main barriers were first-order barriers such as limited devices, unstable internet, lack of training and no language laboratory. This study found that second-order barriers were minimal, as both teachers demonstrated positive attitudes, high levels of confidence and adaptable creativity. This is in contrast to earlier studies, such as those by Hashemi & Kew (2021) and Pitaloka (2024), which identified a lack of confidence as a major barrier. This difference may be explained by the fact that the teachers in this study already possessed basic technological skills and had developed positive attitudes towards ICT through experience. This suggests that, in contexts where teachers already have positive attitudes, the primary focus of interventions should be on addressing first-order barriers rather than changing teachers' beliefs.

Using Bingimlas's classification, the study found that a lack of access was the main barrier, while a lack of confidence was insignificant and a lack of ICT skills was a minor issue. While this partially supports Bingimlas's classification, it also suggests that his three categories are interconnected. When teachers lack access to technology, they cannot practise and develop their skills, which may affect their confidence. In this study, however, the teachers remained confident despite the limitations of their access, possibly because they had developed alternative strategies over time, such as using self-made games or environmental learning when technology failed. Even confident teachers may struggle with specific tools, as shown by the minor difficulty with ICT skills. This difficulty can be seen in the creation of interactive CDs for one teacher and the use of interactive flat panels for another. This highlights the importance of targeted, hands-on training.

Both teachers demonstrated adequate TPACK, with the ability to apply their knowledge of technology in the classroom setting. One teacher used a variety of methods, such as lecture-based learning, games and group presentations. The other teacher used the Communicative Language Teaching (CLT) method, incorporating games from websites and video-based speaking practice. These findings support those of Humaera et al. (2025), who emphasised that effective TPACK development requires hands-on training and opportunities for teachers to collaborate. However, one teacher's lack of training resulted in her being less familiar with certain tools, particularly the interactive flat panel. This suggests that TPACK development

cannot rely entirely on individual teacher motivation or self-learning, and that systematic, school-wide training programmes are necessary.

The achievement of the Modification level of the SAMR framework by both teachers is notable given the limited facilities at the school. At this level, students were actively involved in creating presentations and practising speaking after watching videos. This suggests that teacher competence and creativity can compensate for infrastructure limitations to some extent. However, the Redefinition level was not achieved in regular classroom teaching. While the extracurricular Zoom activity with Japanese students showed potential for redefinition, it was limited by a lack of supporting facilities, such as headphones. More importantly, it was not part of regular classroom teaching. This confirms Vancova's (2025) observation that higher SAMR levels are less common because they require more time, training and resources.

The Inclusive School Context

The student attitude problems that were identified in this study are particularly relevant to the inclusive school context. During lessons, some students showed a lack of seriousness, as mentioned by both teachers and confirmed during classroom observation. Pramesti et al. (2023) found that teaching English in inclusive classrooms requires teachers to manage issues such as tantrums, mood swings and a lack of focus among students. This study confirms that student attitude remains a challenge even when teachers are well-prepared and motivated.

In inclusive settings where students have diverse learning needs, technical issues such as video buffering can have a more significant impact on those who already struggle to focus and pay attention. When the video stops loading, these students may become distracted and find it difficult to concentrate again once the video starts again. The combination of technical barriers and student diversity creates a unique challenge that may not be as present in regular schools. Teachers in inclusive schools need to have not only technical skills but also classroom management strategies specifically designed for technology-based lessons.

Another important finding of this study is the gap between lesson plans and classroom reality. Although the modules included activities involving videos, PowerPoint presentations and online quizzes such as *Wordwall*, they did not anticipate technical issues or provide backup plans. When technology failed or the internet connection was unstable, teachers had to improvise. This suggests that curriculum documents should be more realistic about the available infrastructure and include backup plans for common technical issues.

Implications, Limitations, and Future Research

This study has several practical implications for schools, teachers, curriculum developers and, in particular, policymakers at government level. Regarding ICT infrastructure, collaboration between schools and the government is needed to improve internet stability and device availability, as these are important for technology integration. Regarding teacher training, the study revealed that one teacher had never received any ICT training, neither at her current junior high school nor at her previous elementary school. She was also quite new to the junior high school environment. This indicates that ICT training opportunities are not yet consistently available across all school levels, which is an issue that needs to be addressed. So, the government should make sure that all teachers get the same training in ICT. This training should be hands-on and focus on specific tools, covering not only basic technical skills, but also how to integrate technology with teaching methods and anticipate common technical challenges. Additionally, lesson plans should include backup plans for when technology fails, and curriculum developers should collaborate with teachers to create realistic modules that address common technical issues. Inclusive school settings should develop strategies for managing student attitude and engagement during technology use, as technical issues may impact students with diverse learning needs unequally.

However, this study has several limitations that should be acknowledged, and further research is needed to explore these in more detail. Firstly, it was conducted in only one school with two English teachers, so the findings cannot be generalised to all inclusive junior high schools. The study did not include student perspectives in depth, and students' views on ICT integration and their learning experiences were only observed indirectly. The observations were conducted over a limited period, so the full range of ICT integration practices across different topics, times of day, or conditions may not have been captured by the findings. The study also did not examine how regular students and students with special needs respond differently to ICT use. The interpretation of the findings of this qualitative case study is influenced by the researcher's perspective. To address this, member checking was employed by sharing emerging interpretations with participating teachers for validation, and

triangulation across interviews, observations, and documents was used to strengthen the findings' validity.

For future research, it is recommended to include more schools and more teachers. This would allow for comparison across different contexts. Studies could compare inclusive and non-inclusive schools, or schools in urban and rural areas, to identify how context affects barriers to ICT integration. Incorporating the perspectives of students, particularly those with special educational needs, would provide a more comprehensive understanding of ICT integration in inclusive schools. Furthermore, longitudinal studies could examine how ICT integration develops over time as infrastructure improves. Intervention studies could investigate whether providing specific types of training or resources results in higher levels of SAMR implementation, which would help to determine the most effective methods of promoting this implementation. Finally, future research could focus specifically on student attitudes and engagement during ICT use in inclusive classrooms.

5. Conclusions

This study investigated the barriers to the integration of Information and Communication Technology (ICT) in English Language Teaching at SMP N 10 Pekalongan, an inclusive junior high school where technology use remains very limited. The results showed that the main barriers were first-order, including limited devices (only one interactive flat panel), an unstable internet connection, the lack of a language laboratory and a lack of ICT training for a teacher new to the junior high school environment who had never received training at her previous elementary school. Second-order barriers were minor, as both teachers demonstrated positive attitudes, high levels of confidence and adaptable creativity. Despite these barriers, both teachers achieved the 'Modification' level of the SAMR framework, in which students created presentations and practised speaking after watching videos. However, the 'Redefinition' level was not achieved in regular classroom teaching. Six factors contributed to limited ICT use, which included limited access to technology, unstable internet, lack of training, no language laboratory, student attitude problems and a gap between lesson plans and classroom reality. This study has several limitations, including the fact that it was conducted in only one school with two teachers, which means the findings cannot be generalised. Theoretically, this study confirms that first-order barriers remain the main barrier in inclusive junior high schools with low technology adoption, in contrast to previous studies which identified a lack of confidence as a major barrier. In practice, schools and the government need to collaborate to improve ICT infrastructure, provide ongoing training for all teachers at all levels, develop lesson plans with backup plans for technical issues and devise strategies for managing student attitudes during the use of technology in inclusive classrooms. For future research, it is recommended to include more schools, incorporate student perspectives, conduct longitudinal studies, and investigate the effectiveness of specific training programs.

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