



**PROCESS: Journal of Professional
Communication and English Studies**
International Conference on Vocational English Language
(ICOVEL) Edition

journal homepage: <https://ejournal1.pnp.ac.id/process/index.php/files/index>



From Substitution to Transformation: Novice English Teachers' Practices in Technology Integration Using the SAMR Model

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article info

Article history:
Received: 09 04 2026
Accepted: 17 04 2026
Available online: 22 06 2026

Keywords:
Novice English Teachers
Technology Integratio
SAMR Model

abstract

This study investigates how novice English teachers integrate educational technology into classroom instruction using the SAMR model as an analytical framework. While previous studies have highlighted teachers' use of digital tools, limited research has examined the depth of pedagogical integration among early-career teachers in Indonesian contexts. This qualitative study involved semi-structured interviews and classroom observations with novice English teachers at the secondary school level. The findings reveal that commonly used technologies include WhatsApp, YouTube, Canva, Quizizz, and Jamboard, primarily utilized for communication, content delivery, and student engagement. However, most practices remain at the Substitution and Augmentation levels, indicating limited pedagogical transformation. The study highlights that novice teachers' technology integration is constrained by insufficient pedagogical training, limited confidence, and lack of institutional support. This research contributes to the understanding of early-career teachers' digital practices and emphasizes the need for targeted professional development to promote transformative technology integration in language classrooms.

Keyword: Novice English Teacher, Technology Integration, SAMR Model

1. Introduction

The rapid development of digital technologies has significantly transformed educational practices, particularly in the field of language learning. Educational technology is defined as the study and ethical practice of facilitating learning and improving performance by creating, using, and managing appropriate technological processes and resources (Januszewski & Molenda, 2008). In contemporary classrooms, technology has become an essential component of instruction, ranging from digital presentation tools and learning management systems to interactive applications and online multimedia resources. These tools have the potential to enhance instructional quality and foster more engaging, student-centered learning environments (Koehler et al., 2014; Tondeur et al., 2017).

In this digital era, teachers are not only expected to possess basic digital literacy but also to integrate technology meaningfully into classroom instruction. Classroom instruction refers to the structured process of delivering planned content, engaging learners, and managing learning activities to achieve instructional objectives (Gage & Berliner, 1992; Marzano, 2007). Effective technology integration requires alignment between pedagogical goals and the selected digital tools to ensure that technology

supports, rather than distracts from, intended learning outcomes (Ertmer & Ottenbreit-Leftwich, 2010).

Despite these expectations, novice teachers often face challenges in integrating technology effectively. Novice teachers, typically defined as those within the first five to seven years of their teaching careers (Feiman-Nemser, 2001; Farrell, 2012), usually enter the profession with relatively strong digital familiarity but limited pedagogical experience. Their instructional practices are influenced by multiple factors, including teacher education programs, institutional policies, available infrastructure, and personal teaching beliefs (Tondeur et al., 2012). As a result, many novice teachers struggle to align technological tools with language teaching methodologies and students' learning needs.

Previous studies have shown that novice teachers tend to use technology primarily for content delivery and classroom management rather than for facilitating interactive or collaborative learning (Hamilton et al., 2016; Howard et al., 2021). This indicates that technology is often used at a surface level, without significantly transforming instructional practices. However, limited research has examined how novice English teachers integrate technology in specific local contexts using structured analytical frameworks such as the SAMR model.

Preliminary observations conducted at SMA Negeri 3 Panyabungan, a public senior high school in Mandailing Natal, North Sumatra, reveal a similar pattern. Novice English teachers actively use digital tools such as PowerPoint, Google Forms, and YouTube in their classrooms. However, the depth of pedagogical integration varies considerably. Informal interviews with three teachers indicated that technology is predominantly used for content delivery rather than for promoting interaction or higher-order thinking. For instance, one teacher used YouTube videos for narrative texts without follow-up activities to support comprehension or language production, while another relied solely on multiple-choice quizzes in Google Forms without providing feedback or reflection opportunities.

These practices raise critical concerns regarding the effectiveness of technology integration in language classrooms. It remains unclear whether novice teachers are using technology to genuinely enhance learning or merely substituting traditional methods with digital formats. Furthermore, questions arise regarding the alignment between instructional objectives and the use of technological tools. Addressing these issues is essential for understanding how novice teachers develop their instructional practices and how teacher education programs can better support meaningful technology integration.

Therefore, this study aims to explore the practices of novice English language teachers in integrating educational technology into classroom instruction. Specifically, it seeks to identify the types of technologies used, examine how these technologies are implemented during instructional processes, and analyze the extent to which such practices align with pedagogical goals. By employing the SAMR model as an analytical framework, this study is expected to contribute to the understanding of novice teachers' technology integration and provide insights for improving professional development programs and educational policies.

Novice teachers, commonly defined as educators within their first five years of teaching, face significant challenges as they transition from preservice education to real classroom practice (Fantilli & McDougall, 2009). In language education contexts, novice English teachers often struggle with classroom management, curriculum implementation, and the development of professional identity (Farrell, 2012). Their limited experience in adapting instruction to diverse student needs can affect the effectiveness of language

learning, particularly in classrooms that require communicative and student-centered approaches. As noted by Farrell (2016), novice teachers benefit from structured reflection and mentoring to develop pedagogical competence and confidence. These challenges influence how novice teachers design and deliver instruction, including their use of educational technology.

Classroom instruction involves the systematic design and implementation of teaching strategies to achieve specific learning objectives (Gage & Berliner, 1992; Marzano, 2007). In the 21st-century classroom, instructional practices increasingly incorporate digital technologies to support interaction, engagement, and access to learning resources (Graham, 2006). However, effective integration of technology requires not only the use of digital tools but also the ability to align these tools with pedagogical goals. For novice teachers, this alignment can be difficult due to limited teaching experience and insufficient training in technology-integrated instruction (Tondeur et al., 2012). As a result, their instructional practices often remain teacher-centered, even when digital tools are available.

To examine how technology is integrated into classroom instruction, the SAMR model proposed by Puentedura (2006) provides a widely used analytical framework. The model consists of four levels: Substitution, Augmentation, Modification, and Redefinition. At the Substitution level, technology replaces traditional tools without changing the task, while Augmentation introduces functional improvements. At higher levels, Modification allows significant redesign of learning activities, and Redefinition enables the creation of new tasks that would be impossible without technology. These levels represent a progression from basic enhancement to transformative use of technology in teaching and learning.

Previous studies indicate that novice teachers tend to operate primarily at the Substitution and Augmentation levels of the SAMR model (Hamilton et al., 2016). This suggests that technology is often used to replicate traditional teaching practices rather than to transform learning experiences. For example, novice teachers commonly use presentation tools such as PowerPoint or video platforms like YouTube to deliver content, as well as digital quiz applications such as Quizizz or Kahoot for assessment activities. While these tools can enhance engagement, they do not necessarily promote deeper learning or student-centered interaction.

The selection and use of technology by novice teachers are influenced by factors such as ease of use, accessibility, institutional support, and teaching experience (Howard et al., 2021). As a result, commonly used technologies include presentation tools, learning management systems, video platforms, and online assessment tools. These technologies are primarily utilized for content delivery, classroom communication, and basic student engagement (Wang & Vásquez, 2012). However, their use often remains at the enhancement level, with limited evidence of task redesign or transformative learning.

More advanced uses of technology, such as collaborative learning platforms or student-generated digital content, are less frequently observed among novice teachers. This limitation is often associated with a lack of pedagogical knowledge, limited confidence, and insufficient professional development opportunities (Tondeur et al., 2012; Uerz et al., 2018). Additionally, some novice teachers tend to use technology as an add-on rather than integrating it meaningfully into instructional design (Howard et al., 2021).

Teachers' beliefs and attitudes also play a crucial role in shaping technology integration practices. Teachers who view technology as merely a supporting tool are more

likely to use it at a basic level, such as replacing traditional media with digital formats (Ertmer & Ottenbreit-Leftwich, 2010). In contrast, those who adopt more student-centered approaches are more likely to explore interactive and innovative uses of technology. However, such transformative practices are still relatively uncommon among novice teachers.

Overall, the literature suggests that novice language teachers tend to use educational technology at a basic level, focusing on efficiency and engagement rather than pedagogical transformation. Although the SAMR model provides a useful framework for analyzing levels of technology integration, there is still limited research examining how novice teachers apply this model in specific local contexts, particularly in Indonesian secondary schools.

Therefore, this study aims to fill this gap by analyzing how novice English teachers integrate educational technology into their classroom instruction using the SAMR model. This study focuses on both the types of technologies used and the level of their integration to better understand novice teachers' instructional practices. Based on the background above, the research problem as follows:

1. What types of educational technologies are most commonly used by novice language teachers in their classroom instruction?
2. How do novice language teachers integrate educational technology into their classroom practices?

2. Method

Research Design

This study employed a qualitative research design to explore how novice English language teachers integrate educational technology into classroom instruction. A qualitative approach was selected to obtain an in-depth understanding of teachers' experiences, perceptions, and instructional practices in using digital tools in language teaching. This design is appropriate for investigating complex educational phenomena and capturing participants' perspectives within their natural teaching contexts.

Participants and Research Context

The participants of this study were novice English language teachers with less than five years of teaching experience. They were recruited from a public secondary school in Mandailing Natal, North Sumatra, Indonesia. A total of [ISI: jumlah, misalnya 3–5] teachers participated in this study.

Participants were selected using purposive sampling based on the following criteria:

- (1) having less than five years of teaching experience,
- (2) actively teaching English at the secondary level, and
- (3) having experience in using educational technology in classroom instruction.

This sampling strategy ensured that participants could provide relevant and information-rich data aligned with the research objectives.

Data Sources

The primary data sources in this study were semi-structured interviews and classroom observations. Interviews were conducted to explore teachers' experiences, beliefs, and perspectives regarding the use of educational technology. Meanwhile, classroom observations were carried out to capture actual teaching practices and to verify the consistency between reported and observed practices.

Data Collection Techniques

Data were collected through semi-structured interviews and non-participant classroom observations. The interviews used open-ended questions to allow participants to elaborate on their experiences and instructional practices. Each interview lasted approximately 30–45 minutes and was audio-recorded with participants' consent.

In addition, non-participant observations were conducted to document how educational technology was integrated during classroom instruction. Observation data were recorded using field notes and observation checklists, focusing on the types of technology used, instructional activities, and student engagement.

Data Analysis

The data were analyzed using thematic analysis following the procedures proposed by Braun and Clarke (2006), including data familiarization, initial coding, theme identification, theme review, and reporting.

To strengthen the analytical framework, the SAMR model (Puentedura, 2006) was employed to categorize the level of technology integration into four stages: Substitution, Augmentation, Modification, and Redefinition. This framework enabled the researcher to systematically interpret how technology was used in instructional practices, particularly in distinguishing between enhancement and transformation levels.

3. Results and Discussions

3.1. Results

1. Types of Educational Technologies Commonly Used by Novice Language Teachers

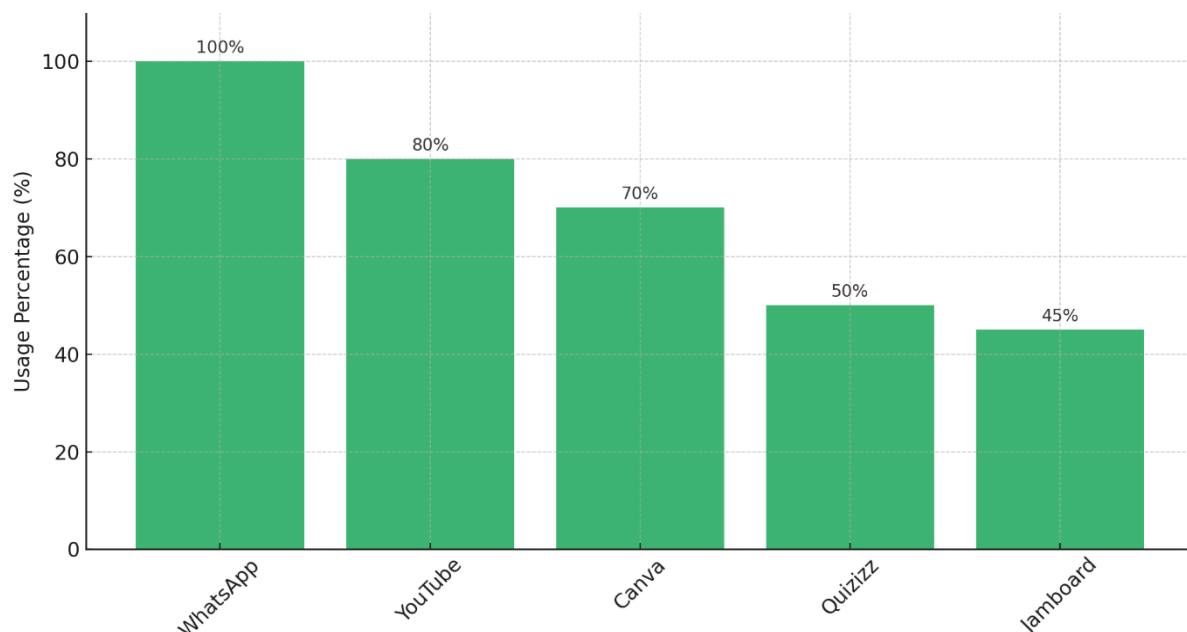


Figure 1. Types of Educational Technologies Used by Novice Teachers

The findings from the interviews and classroom observations show that novice English teachers relied on a limited but practical set of educational technologies to support their classroom instruction. The technologies most frequently used were WhatsApp (100%), YouTube (80%), Canva (70%), Quizizz (50%), and Jamboard (45%). These tools were selected primarily because they were easy to access, simple to operate, and directly useful for classroom communication, material delivery, and student engagement.

Among all the tools identified, WhatsApp emerged as the most dominant platform. All participants reported that they used WhatsApp to communicate with students outside class, distribute lesson materials, send reminders, collect assignments, and provide short instructions. In classroom practice, WhatsApp functioned as an extension of classroom communication rather than as a tool for interactive learning. One participant explained that WhatsApp was the fastest way to reach students and was especially useful because students checked it regularly. This shows that novice teachers viewed WhatsApp as a practical and immediate communication channel that helped them maintain instructional continuity beyond formal class time.

YouTube was the second most frequently used tool. Most participants used YouTube to present listening materials, show examples of texts, or provide visual and auditory input related to the lesson topic. For instance, teachers often played short videos to introduce narrative texts, explain grammar points, or give students exposure to authentic English pronunciation. Based on the observations, YouTube was mainly used as a source of input rather than as a platform for interactive tasks. In other words, students watched the videos and then answered questions, but the activity rarely moved beyond comprehension checks. This indicates that YouTube served as a supportive instructional medium that helped teachers make the lesson more interesting and more concrete for students.

Canva was widely used to create visually appealing teaching materials such as posters, vocabulary charts, presentation slides, and infographics. Teachers reported that Canva helped them present information more clearly and attractively than handwritten materials or plain text slides. The interviews suggest that novice teachers appreciated Canva not only because of its design features but also because it allowed them to prepare professional-looking instructional materials quickly. In classroom practice, Canva was used to improve the appearance of learning content, making it more readable, colorful, and engaging for students. This indicates that Canva played an important role in helping teachers improve the visual quality of instruction.

Quizizz was used mainly for quizzes, review sessions, and formative assessment. Teachers used it to check students' understanding after a lesson, especially in vocabulary review and short comprehension tests. The platform was valued because it offered immediate scoring, automatic feedback, and a game-like format that encouraged student participation. During the observations, students appeared more active when using Quizizz because the activity felt competitive and enjoyable. However, the use of Quizizz was still limited to short-answer or multiple-choice tasks, which suggests that it was primarily used as a digital assessment tool rather than as a tool for deeper learning tasks.

Jamboard was the least used technology in the study, although some teachers used it for brainstorming, collaborative writing, and group responses. Teachers who used Jamboard generally found it useful for encouraging student participation in shared tasks. However, several participants also admitted that they were not fully confident in managing live collaborative work through the platform. Some reported difficulties in monitoring student contributions or guiding students during the activity. This suggests that while Jamboard had the potential to support interactive and collaborative learning, novice teachers were not yet using it to its full instructional capacity.

Overall, the pattern of technology use shows that novice teachers preferred tools that were practical, familiar, and easy to implement. Their choices were largely driven by immediate classroom needs such as communication, material presentation, and assessment. The findings suggest that novice teachers were not selecting technologies

based on how transformative the tools could be pedagogically, but rather on how efficiently the tools could help them carry out routine teaching tasks.

2. How Novice English Teachers Integrate Educational Technology into Classroom Practice Based on SAMR

The second finding concerns the level of pedagogical integration shown by novice English teachers when using educational technology. Based on the SAMR framework, most of the observed practices were located at the Substitution and Augmentation levels. Very limited evidence was found at the Modification level, and no consistent example of Redefinition was identified.

At the Substitution level, technology was used to replace traditional tools without changing the nature of the task. A clear example was the use of YouTube videos instead of audio CDs or textbook recordings for listening activities. In this case, the format of the input changed, but the learning task remained the same: students listened and answered questions. The teacher did not redesign the activity or add a new layer of interaction. This shows that technology served mainly as a replacement medium rather than as a tool for changing the learning process.

At the Augmentation level, technology was used to improve the quality of existing teaching materials or tasks. Canva was the clearest example of this level. Teachers used it to create more attractive visual materials, such as grammar charts, vocabulary posters, and slide presentations. The task itself did not change substantially, but the quality of presentation improved. Students could understand the lesson more easily because the materials were more colorful, structured, and visually engaging. This means that the technology enhanced the instructional format, even though it did not fundamentally alter the teaching approach.

Some use of Quizizz also reflected Augmentation. Teachers used the platform to give quizzes that were more interactive than paper-based exercises because the system provided automatic scoring and instant feedback. However, the activity still functioned as a short check of understanding, so the pedagogical task remained relatively simple. In this sense, Quizizz improved the assessment process, but did not move the instruction toward higher-order transformation.

The few cases that approached the Modification level involved collaborative work through Jamboard. Teachers occasionally asked students to brainstorm ideas or write answers together on a shared digital board. In these situations, students could contribute simultaneously, and the teacher could see the responses in real time. This created a more interactive learning experience than a traditional individual worksheet. However, these activities were not implemented consistently, and they were often limited by the teachers' uncertainty about how to manage student participation effectively. Because of this, Jamboard was used only occasionally for partially redesigned tasks, not for fully transformed learning experiences.

No evidence was found at the Redefinition level. None of the teachers designed tasks that required technology to create entirely new learning experiences that would otherwise be impossible. For example, there were no tasks involving student-produced multimedia projects, online collaboration with learners from other schools, or technology-based language production activities that extended beyond the classroom. This suggests that novice teachers were still working within familiar teaching patterns and had not yet reached a level of technology integration that fundamentally changed classroom learning.

Taken together, the findings show that novice English teachers used educational technology mostly for practical support rather than pedagogical transformation. Their technology use remained concentrated in the lower levels of the SAMR model, especially Substitution and Augmentation.

3.2. Discussion

The findings of this study indicate that novice English teachers are using educational technology in ways that are useful, practical, and accessible, but still limited in terms of pedagogical transformation. This pattern aligns closely with the SAMR model, which distinguishes between technology as a replacement tool and technology as a tool for redesigning learning. In this study, most technology use remained at the enhancement level, especially Substitution and Augmentation. This means that technology helped teachers perform familiar tasks more efficiently or attractively, but did not substantially change the structure of classroom learning.

The dominance of WhatsApp, YouTube, and Canva shows that novice teachers prioritize tools that are easy to use and directly useful for everyday teaching. WhatsApp was used to maintain communication and manage assignments, which reflects a functional and time-saving use of technology. This finding is consistent with Bouhnik and Deshen (2014), who noted that messaging applications are often used in educational settings because they allow teachers and students to stay connected in flexible and immediate ways. In this study, WhatsApp supported instructional continuity, but its use remained limited to communication and did not extend into richer forms of collaborative learning.

Similarly, the use of YouTube reflects a common practice in language teaching, where video content is employed to provide authentic input and make lessons more engaging. Kelsen (2009) also found that YouTube can support language learning by offering audiovisual materials that appeal to students and make lessons more interesting. In this study, YouTube helped teachers present listening input and illustrate lesson content. However, the activity usually ended at watching and answering questions, which means the pedagogical task did not move beyond basic comprehension. This supports the argument that novice teachers often use technology to support existing lesson formats rather than to redesign instruction.

Canva was mainly used to improve the visual presentation of lesson materials. This finding is in line with Chen (2021), who observed that digital design tools are often valued because they help teachers produce attractive teaching materials quickly. In this study, Canva was especially useful for making posters, slides, and visual explanations clearer for students. This is a clear example of Augmentation because the instructional materials became more effective in appearance and clarity, even though the underlying teaching method remained the same. The use of Canva suggests that novice teachers are willing to invest effort in improving lesson quality, but they are still focused on presentation rather than deeper instructional redesign.

Quizizz was used as a formative assessment tool that provided immediate scoring and feedback. This made the quiz process more efficient and more engaging than paper-based tests. The result is consistent with Wang (2015), who noted that digital quiz platforms can increase student motivation and participation through game-like features. However, the use of Quizizz in this study was still relatively narrow. It was used to check understanding, not to promote extended reflection, peer interaction, or problem-solving.

Therefore, even though Quizizz improved the assessment experience, it did not move instruction toward higher levels of transformation.

The limited use of Jamboard for collaboration is also important. Jamboard has the potential to support real-time interaction, brainstorming, and shared writing, which would place it closer to the Modification level of SAMR. However, the findings show that novice teachers lacked confidence in managing this kind of collaborative digital activity. This supports Tondeur et al. (2012), who argued that limited preparation in technology-rich pedagogy often prevents teachers from using digital tools in more advanced ways. It also reflects the findings of Tondeur et al. (2017), who emphasized that teachers' pedagogical knowledge strongly shapes whether technology is used creatively or simply as an add-on.

The absence of Redefinition-level practices is particularly significant. According to Puentedura (2006), Redefinition occurs when technology enables tasks that would not be possible without it. In this study, no teacher consistently used technology to create such learning experiences. There were no examples of digital storytelling projects, virtual collaboration with external peers, online publication of student work, or other technology-mediated tasks that changed the learning structure in a fundamental way. This suggests that novice teachers are still operating within a traditional instructional mindset, even when digital tools are available.

This pattern can also be explained by teacher beliefs and self-efficacy. Ertmer and Ottenbreit-Leftwich (2010) stated that teachers' beliefs about technology, confidence in using it, and willingness to change instruction are key factors in determining the depth of integration. In the present study, several teachers expressed interest in using more interactive tools, but they also reported uncertainty about how to use them effectively. This indicates that the barrier is not simply technical access but also pedagogical confidence. Novice teachers may know how to operate the tools, but they may not yet know how to design meaningful tasks around them.

Institutional context also matters. The findings suggest that some teachers face limitations related to school infrastructure, student digital readiness, and the availability of support. These contextual factors reduce the likelihood that teachers will experiment with more advanced tools or task designs. When students are not fully prepared to participate in more complex digital activities, teachers may prefer safer and simpler tools that minimize classroom disruption. This explains why teachers tend to rely on familiar applications such as WhatsApp and YouTube rather than moving toward more complex platforms.

Overall, the discussion shows that novice English teachers are willing to integrate technology, but their practices are still dominated by efficiency, convenience, and surface-level enhancement. Their use of technology supports communication, presentation, and simple assessment, but rarely leads to redesigned or transformed learning experiences. This finding confirms previous research that beginning teachers often remain at the lower levels of SAMR because they are still developing the confidence, experience, and pedagogical vision needed for more innovative use of technology (Hamilton et al., 2016; Howard et al., 2021).

2. Conclusion

This study reveals that novice English teachers primarily use practical and accessible technologies such as WhatsApp, YouTube, Canva, Quizizz, and Jamboard to support communication, content delivery, and assessment. Their selection of tools is

largely driven by ease of use rather than pedagogical considerations. In terms of integration, most practices are situated at the Substitution and Augmentation levels of the SAMR model, indicating that technology is mainly used to support existing instructional practices rather than to transform learning. This suggests that novice teachers require further pedagogical development to achieve more meaningful and transformative use of educational technology in classroom instruction.

Acknowledgements

The author would like to express sincere gratitude to the participants who generously shared their time and experiences for this study. Appreciation is also extended to the school for granting permission to conduct the research. Special thanks are given to the lecturer for valuable guidance and constructive feedback throughout the research process.

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