

LAPORAN PENELITIAN



TECHNOLOGY INTEGRATION IN ENGLISH LEARNING MATERIALS DEVELOPMENT: DO STUDENTS MEET CHALLENGES?

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FOREWORD

The rapid advancement of technology has irrevocably transformed the landscape of education. This transformation demands a corresponding evolution in the methods of teaching and learning, particularly in the development of educational materials. Universitas PGRI Yogyakarta recognizes this paradigm shift and is committed to staying at the forefront of educational innovation.

This research report on integrating technology into material development is a significant step towards realizing our vision of a technologically empowered learning environment. By investigating the challenges and opportunities presented by technology integration, this study offers valuable insights into enhancing the quality and effectiveness of our educational programs.

We believe that the findings of this research will not only contribute to the academic discourse but also provide practical recommendations for improving our curriculum and teaching methodologies. It is our hope that this research will serve as a catalyst for further exploration and experimentation in technology-enhanced education at Universitas PGRI Yogyakarta.

We extend our sincere gratitude to the research team for their dedication and hard work in conducting this study. Their efforts are a testament to our institution's commitment to academic excellence and innovation. The researchers express high appreciation to Rector of Universitas PGRI Yogyakarta through the Head of Research Institution and Community Service of Universitas PGRI Yogyakarta for providing grant to run this research process.

ABSTRAK

Hasil belajar mata kuliah sumber belajar yang ditempuh calon guru jurusan pendidikan bahasa Inggris adalah kemampuan menerapkan pemikiran logis, kritis, sistematis, dan inovatif dalam rangka pengembangan atau penerapan ilmu pengetahuan dan teknologi yang memperhatikan dan menerapkan nilai-nilai kemanusiaan yang sesuai dengan bidang keahliannya. Integrasi teknologi dalam pengembangan materi pembelajaran diperlukan untuk meningkatkan kemampuan mahasiswa jurusan pendidikan bahasa. Hal ini tidak hanya merangsang siswa untuk berpartisipasi dalam kegiatan kelas, tetapi juga meningkatkan hasil belajarnya. Tujuan langsung penelitian ini adalah untuk mengidentifikasi tantangan yang dihadapi oleh guru EFL pra-jabatan ketika mengembangkan materi bahasa Inggris yang terintegrasi dengan teknologi. Metode yang digunakan adalah survei dengan menggunakan kuesioner sebagai instrumen pengumpulan data. Sebanyak 43 mahasiswa EFL departemen pendidikan bahasa Inggris berpartisipasi dalam bagian kuantitatif penelitian ini. Survei online menggunakan Google Form telah dilakukan. Kuesioner terdiri dari tiga bagian, yaitu kekurangan infrastruktur, kekurangan teknologi baru, dan kekurangan pengetahuan siswa. Terdiri dari 17 item dan menggunakan poin skala Likert 1 – 4 sebagai pengambilan data utama. Hasil penelitian menunjukkan bahwa skor tertinggi adalah pada ketidakcukupan infrastruktur ($M=2,79$; $SD=0,341$). Hal ini menunjukkan bahwa calon guru menghadapi tantangan terkait dengan infrastruktur yang tidak memadai ketika memasukkan teknologi ke dalam pengembangan bahan ajar.

ABSTRACT

The learning outcome of the learning resources course taken by pre-service teachers of the English language education department is the ability to apply logical, critical, systematic, and innovative thinking in the context of developing or implementing science and technology that takes into account and applies humanities values appropriate to their field of expertise. Technology integration in learning material development is required to improve students' language education department abilities. It does not only stimulate students to participate in classroom activities, but also improve their learning results. The research's immediate goal is to identify the challenges that pre-service EFL teachers confront when developing technology-integrated English materials. A survey method was employed using a questionnaire as an instrument for data collection. A total of 43 EFL students of English language education department participated in the quantitative part of the study. Online survey using Google Form was conducted. Three sections made up the questionnaire namely insufficiency of infrastructure, insufficiency of new technology, and insufficiency of student's knowledge. It consisted of 17 items and used Likert scale points from 1 - 4 as the main data retrieval. The results show that the highest score is for insufficiency of infrastructure ($M=2,79$; $SD=0,341$). This indicates that pre-service teachers face challenges relating to inadequate infrastructure when incorporating technology into the development of instructional materials.

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CHAPTER I

INTRODUCTION

A. Background of the Research

The ability to apply logical, critical, systematic, and innovative thinking in the context of developing or implementing science and technology that takes into account and applies humanities values appropriate to their field of expertise is the learning outcome of the learning resources subject taken by pre-service teachers of the English language education department. Pre-service EFL teachers gain experience in creating instructional materials, which helps them to develop logical, systematic, and creative thinking skills. The goal of the faculty of teaching and educational sciences, which is to develop professional teacher candidates, is aligned with this learning outcome.

The development of learning materials must incorporate technology in accordance with the goals and learning outcomes of English language learning. It is impossible to avoid technological advancements in any aspect of life. Creating instructional materials that incorporate technology can enhance student learning outcomes and support psychological aspects of the learner (Yeung et al., 2021). Using technology into instructional materials is one way to improve student learning outcomes. Additionally, incorporating technology into the creation of instructional materials encourages participation and interaction among students in the language classroom (Kawinkoonlasate, 2019). EFL pre-service teachers gain experience developing English teaching materials for school students based on these advantages.

Preliminary studies conducted to reveal how pre-service teachers integrate technology in their teaching practice (Admiraal et al., 2017; Batane & Ngwako, 2017; Kuru Gönen, 2019). The integration of technology in the EFL context is concentrated on the creation of instructional models and the classroom learning process (Boonmoh & Kulavichian, 2023; Harmandaoğlu Baz et al., 2018). EFL pre-service teachers perception on technology integration in teaching practices supports this issue (Cukur, 2023; Fernández-Batanero et al., 2020; Prastikawati, 2021). According to (Wulandari, 2019), since technology is utilized in the context of technological pedagogical content knowledge, teaching material development process participants perceive themselves more favorably (Wulandari, 2019). Benefits gained from technology integration in

teaching and learning English in Indonesia were such as improving scores in English tests as well as listening, speaking, reading or writing activities, encouraging autonomous learning, and engaging collaborative activities (Rintaningrum, 2023).

Nevertheless, there have been challenges with incorporating technology into English language instruction. The expense, time, and proficiency with the technology present some challenges when attempting to incorporate it into English language instruction (Liang, 2021; Rintaningrum, 2023). Obtaining sufficient infrastructure is another issue with using learning technology (Singh, 2019). Due to financial constraints, not all educational institutions are able to provide technology-based infrastructure. It is underlined that main factors of barriers in integrating technology in teaching process are students, teachers, educational system and policy makers, and environment (Emre, 2019; Khodabandelou; et al., 2016).

Teachers can select technology that is suitable for the environment to get around these challenges (Gunuç & Babacan, 2018). Other efforts are offered to solve the problems raised in the technological integration of teaching such as enhancing the quality of pre-service and in-service training; (b) freeing up more time for teachers by streamlining and cutting down on the number of courses in the curricula; and (c) providing technology incentives, excellent instructional materials, support services, and IT solutions to educators (Atabek, 2020). Learning materials play a crucial part in the process of learning. Integration of technology is essential in the process of creating educational resources. Prior studies concentrated on identifying obstacles to the use of technology in the classroom, but they did not address obstacles to the development of English learning resources. This study **therefore** focuses on identifying challenges to the technological integration in the development of English learning materials.

B. Identification of the Problem

Several problems related to the development of English language learning materials that are integrated with technology can be summarized in the following paragraph. The first issue with creating English learning resources is the short time teachers have available to create content. Since they are accustomed to using the ministry's learning resources, educators believe that creating their own materials is a waste of time. Instructors concentrate more on their assigned administrative and instructional tasks. Completing administrative tasks and teaching demands a significant

amount of time.

Secondly, educators believe they lack the skills necessary to create resources for teaching English. The availability of learning resources that meet students' requirements is hampered by teachers' constraints when it comes to creating English language learning materials, particularly when it comes to integrating technology. Third, one of the challenges facing educators is the accessibility of technology-related infrastructure. It is well recognized that having sufficient infrastructure and facilities is a major support for the incorporation of technology into the creation of instructional materials.

C. Scope of the Research

Prior studies concentrated on identifying obstacles to the use of technology in the classroom, but they did not address obstacles to the development of English learning resources. This study therefore focuses on identifying challenges to the technological integration in the development of English learning materials.

D. Formulation of the Research

What are the challenges in English materials development integrated with technology met by students of English language education department?

E. Aims of the Research

This study aims at revealing the aspects of challenges of technology integration in English materials development met by students of English language education department.

F. Significance of the Research

The Significance of Research on Technology Integration in English Learning Materials Development is crucial for several reasons:

1. For Students

a. Enhancing Learning Outcomes

- 1) Improved Engagement: Technology-rich materials can make learning more interactive, stimulating student interest, and leading to better retention of information.

- 2) Personalized Learning: Technology allows for tailored learning experiences based on individual student needs and paces, potentially improving learning outcomes.
- 3) Developing 21st Century Skills: Integrating technology can help students develop critical thinking, problem-solving, and digital literacy skills essential for success in the modern world.

2. For Teachers

a. Identifying Challenges and Finding Solutions

- 1) Addressing Student Needs: Understanding the challenges students face in utilizing technology-integrated materials can inform the development of more effective and accessible resources.
- 2) Optimizing Resource Allocation: Identifying areas where technology integration is most beneficial can help institutions prioritize investments and allocate resources efficiently.
- 3) Improving Teacher Training: By pinpointing the difficulties students encounter, teacher training programs can be tailored to equip educators with the necessary skills to support students effectively.

2. Policy Maker

a. Inform Policy and Practice

- 1) Evidence-Based Decision Making: Research findings can inform the development of educational policies that promote the effective use of technology in language learning.
- 2) Curriculum Development: Understanding student experiences with technology-integrated materials can help educators create more relevant and engaging curricula.

CHAPTER II

LITERATURE REVIEW

A. The Notion of English Learning Materials Development

The availability of instructional materials is one of the processes that makes teaching efficient. Anything that teachers and students use to help with language learning is considered a material (Mishan & Timmis, 2015). According to Tomlinson, study and practical initiatives fall under the category of materials development. In practical terms, materials development refers to any activity carried out by authors, educators, or students to offer language input sources, to utilize those sources in ways that optimize the possibility of intake, and to inspire intentional output; in other words, the provision of language knowledge and/or experiences in ways that support language acquisition. As a field, it examines the guidelines and practices involved in creating, implementing, and assessing language instruction materials (Tomlinson, 211 C.E.). Learning tools aid students in comprehending the subject matter being taught. The ability of students to produce the target language both orally and in writing can also be enhanced by instructional materials.

There are various methods used in the development of instructional materials. The ADDIE model, which includes analysis, design, development, implementation, and evaluation, is one method for creating instructional materials. (Iswati, 2019). The ADDIE model's systematic and ordered the natural world has led to its widespread adoption by developers of educational materials. ASSURE is a different model that has been adopted by a number of companies that create instructional materials. The ASSURE model includes several stages, namely Analyzing learners, Stating the objectives, Selecting the media and materials, Utilizing the media and technology, Requiring learner participation, and Evaluating & revising (Almelhi, 2021). This model includes elements of using technology to produce teaching materials. Each learning material developer can determine what model is referred to as guidance in carrying out this process.

Basically, when creating educational materials, one must keep in mind the guidelines for doing so; (1) materials should achieve impact; (2) materials should help learners to feel at ease, (3) materials should help learners to develop confidence, (4) what is being taught should be perceived by learners as relevant and useful, (5) materials should require and facilitate learners self-investment, (6) learners must be ready to acquire the points being taught, (7) materials should expose the learners to language in authentic use, (8) the learners' attention

should be drawn to linguistic features of the input, (9) materials should provide the learners with opportunities to use the target language to achieve communicative purposes, (10) materials should take into account that learners differ in learning styles, (11) materials should take into account that learners differ in affective attitudes, (12) materials should permit silent period at the beginning of instruction, (13) materials should maximize learning potential by encouraging intellectual, aesthetic and emotional involvement which stimulates both right- and left-brain activities, (14) practices of learning materials development materials should not rely too much on controlled practice, and (15) materials should provide opportunities for outcomes feedback (Tomlinson, 2011). Therefore, it is advised that technology be incorporated into the creation of instructional materials.

The process of creating English teaching resources has numerous advantages. Teachers create their lesson plans based on the goals outlined in the learning outcomes. As a result, the curriculum and this instructional material are closely related. Curriculum developers make reference to the government-determined policies and curriculum content. It has been demonstrated that developing materials can significantly enhance students' learning outcomes. The use of teaching materials has many benefits; students can practice coding, take online tests or quizzes, get faster at answering questions, improve their English test scores, learn a foreign language, work in teams or independently, engage in online learning, obtain online references, use a variety of computer applications, continue up to date on current events, translate, and employ multimedia presentations in addition to showcasing innovative teaching techniques (Rintaningrum, 2023).

B. Practices of English Learning Materials Integrated with Technology

English is advised to incorporate technology when creating instructional materials. The ASSURE model places technology's role in the fourth stage, which is technology use. The goal of incorporating technology into language instruction is to enhance students' reading, writing, speaking, and listening abilities (Rintaningrum, 2018). She continued by saying that task-based learning, media for teaching and learning, and multitasking are real ways that technology is used in language instruction.

In settings where English is being used as a foreign or second language, teachers have been increasingly implementing flip-classroom and mobile assisted learning in recent years (Başar & Şahin, 2022). The use of multimedia technology, such as radio and TV shows, may boost language learners' listening comprehension. Learners enhance their reading and writing

skills by using electronic dictionaries, computer reading programs, and online newspapers. Artificial intelligence (AI) technology has been adopted by practitioners recently to enhance learners' speaking abilities (Gunuç & Babacan, 2018).

C. Challenges of English Learning Materials Development Integrated Technology

A number of factors, including students, teachers, educational systems and policy makers, and the environment, contribute to the obstacles encountered when integrating the development of teaching materials and technology (Khlaif, 2018; Khodabandelou; et al., 2016). The students basically have different characteristics or learning styles. They need different sources and activities of learning.

Teacher is key factor in technology integration in learning process, but teachers have low ability in operating technology (Fütterer et al., 2023). Then, it is related with the third factor, the government as policy maker. Because teacher found difficulty in operating technology, government should provide field trainers to monitor and help teachers operating technological aids. The lack of supporting media and tools causes limited technology adoption. This justification relates to obstacles to the use of technology in English language instruction.

In a slightly different context from the last explanation, interpersonal conflict is one of the challenges that arise when creating instructional resources which are integrated with technology. A mismatch in the goals and interests of the parties involved in creating the instructional materials may be the cause of this. Generally, the lack of infrastructure and other facilities, interpersonal conflict among stakeholders, particularly teachers and material developers, a lack of motivation, and learners' inadequate background knowledge are the main obstacles to integrating technology into the development of materials (Islam et al., 2020).

The challenges of pre-service teachers face when developing instructional materials have previously not received much attention. The previous study focuses on the difficulties of teachers encounter when implementing technology in English language instruction. Therefore, this study focuses on the difficulties of pre-service teachers face when creating technologically integrated learning resources. Through examination of 34 participants who completed daily logbook reports, researchers discovered the approaches they taken to address these issues.

CHAPTER III

RESEARH METHOD

A. Research Method

This study employed surveys as its approach, which was quantitative in character. The quantitative method of research, analyzes a concept by creating particular hypotheses and employing data collection to either support or contradict the assumptions (Creswell, J.W. and Creswell, 2018). Quantitative methods are used in this research since the data came from a wide number of populations that required quantifying. A quantitative approach using a survey to collect data from participants.

An individual or population is asked to characterize the attitudes, beliefs, actions, or traits of the sample or population in a survey (Creswell, J.W. and Creswell, 2018). It was thought that surveys typically provided clear, comprehensive data, making them suitable for use as tools for statistical analysis (descriptive statistics A questionnaire is a tool for gathering survey data in a structured or ordered manner, according to (Cohen et al., 2018). A questionnaire typically took the form of numerical data, was flexible when the researcher was present, and could typically be completed all the way up to data analysis.

B. Research Instruments

A research in challenge in integrating technology into education that created a questionnaire that was used to collect the data was conducted (Atabek, 2019). There are five categories that were extracted in the questionnaire i.e. Undersupply, insufficiency of resources, insufficiency of infrastructure, negative psychological state and difficulty of newer technology. In this research study, rather than determining all categories in integrating technology in education broadly, some categories were adapted to get description about students challenging in developing learning material integrated technology that consist of 3 categories such as students' insufficiency knowledge (8 items), insufficiency infrastructure/institution (5 items) and insufficiency of new technology development (4 items).The following table is the list of the questions.

Table 1. Questionnaire form

No	Questions
Q1	Lack of knowledge in technology.
Q2	Lack of knowledge about how to operate technology for developing teaching materials.
Q3	Lack of Communication between me and other students in the discussion group.

Q4	Lack of materials in the form of soft files that can be input for developing teaching materials.
Q5	Lack of time to look for sources or materials from technology-based devices.
Q6	Lack of Facilities and infrastructure for devices such as laptops and PC computers.
Q7	Lack of Facilities and infrastructure supporting technological operations, namely internet signals.
Q8	Lack of knowledge how to edit, output and input materials for developing teaching materials.
Q9	Lack of time in the process of editing, layout and inputting learning materials.
Q10	Difficulty in collaborating with fellow students to find materials, process and complete the development of teaching materials from software.
Q11	Limited information technology facilities and infrastructure in the form of laptops and PC computers provided by institutions for student academic activities.
Q12	The technological supporting facilities and infrastructure in the form of internet provided by the institution are inadequate.
Q13	Guidance and training on information technology from the campus community to students is inadequate.
Q14	Latest technology is more complicated compared with old one.
Q15	Lack of understanding in the latest technology problems operating new technology features.
Q16	Lack of in understanding new technology because of limited time.
Q17	Lack in using new technology because it requires a lot of time and money.

The survey consisted Likert-type scale items that addressed students' Technology Integration Challenges (a Likert scale from 1 - Strongly Disagree to 4 - Strongly Agree). The questionnaires were constructed in Google form (<https://forms.gle/phVui9LRgdWdZdRX8>), distributed online and accessible. The participant's national language, Bahasa Indonesia, was employed to ensure proper knowledge of the instrument. The replies of the participants were processed to generate and analyze percentages using descriptive statistics.

A total of 43 EFL students of English Language Study Program in Universitas PGRI Yogyakarta participated in the quantitative part of the study with online survey. These 43 students were enrolled in the learning resources course or learning media, 9 male and 34 female. Some of them have joined microteaching and pre service teacher in some schools. Most were referred to students based on their use of the technology as a learning tool. The participants were contacted by the researcher out of interest in the research because they were invited to participate in the survey.

To verify the result of the survey, the researchers also conducted the interview to the participants. The interview was conducted to 10 participants. They were the students of English language education study program who took learning resources subjects. The learning outcome for this subject is creating learning materials for secondary school learners. The interview was held in structured-interview in which the items of the questions directed to the participants were same. It is on purpose to make the researcher easier analyzed the result. The aspects to be interviewed with the participants are the following.

Table 2. Interview guideline

No.	Aspects	Questions
1	The significance of technology integration in learning materials development	Technology integration in the development of English language learning materials is necessary. What do you think about this?
2	The challenges of technology integration in learning materials development	There are obstacles in integrating technology in developing teaching materials. What obstacles have you encountered regarding the integration of technology in the development of English teaching materials?
3	The internal & external factors of technology integration in learning materials development	Suppose there are two constraining factors, namely internal and external. Internal constraints are constraints within you as a developer of teaching materials and external factors are constraints from outside. In your opinion, which are the most prominent obstacles? Internal or external?
4	The availability of infrastructure by institution	What do you feel regarding the support for technological facilities and infrastructure provided by the institution (campus)?
5	The strategies to solve the challenges of the availability of infrastructure	How do you solve problems related to the institution's lack of technological infrastructure?
6	The strategies to enhance student's new technology knowledge	What efforts are you making to increase understanding of new technology?

CHAPTER IV

RESULT & DISCUSSION

A. Result

1. Result of Survey

The total number of participants who joined in the research was 43 students of English department of UPY who took English material development subject in the previous semester. There were 34 female participants and 9 male participants. So, the female students dominated in this survey.

The research study has to investigate the students challenge in integrated technology in developing English learning materials. Therefore, the questionnaire survey was distributed to participants through online using Google Form. The result of questionnaire was analyzed using descriptive statistics to get the result. The analysis aims to measure the average score of the items.

The ratio of overall categories

Table 1 shows the order of categories from the highest mean to the lowest. The highest mean score is presented by the Insufficiency of infrastructure with a mean score of 2,79 and a standard deviation of 0,341, while the lowest mean score is showed by the Insufficiency of students' knowledge with mean score of 2,30 and standard deviation of 0,165.

The result of each categories

In this section, the result of each category is explained in detail with the focus on the average and standard deviation dealing with the challenge of students in integrating technology in developing learning material.

a. Insufficiency of infrastructure

Based on the results, the insufficiency infrastructure has got the highest average mean, the item of questionnaire is presented in the following table (table 3).

Table 3. Rank of the three categories of challenge in integrating technolgy in developing material

Rank	Categories	Mean	Standard Deviation
1	Insufficiency infrastructure	2,79	0,341
2	Insufficiency new technology	2,39	0, 101
3	Insufficiency students' knowlegde	2,30	0,165

*Table footnote.

Table 3 describes the insufficiency of infrastructure categories that consists of 5 item questions. The highest mean of this item “Limited information technology facilities and infrastructure in the form of laptops and PC computers provided by institutions for student academic activities” with mean score 2,79 and standard deviation 0,341.

b. Insufficiency of New Technology Knowledge

Based on the results, the insufficiency new technology knowledge has got the medium average mean, the item of questionnaire is presented in the following table.

Table 4. Insufficiency of New Technology Knowledge

No	Items	Mean	Standard Deviation
1	Lack of understandingand using new or latest technology	2,26	0,707
2	Lack of understanding in the latest technology problems operating new technology features.	2.36	0, 622
3	Lack of in understanding new technology because of limited time.	2,41	0,669
4	Lack in using new technology because it requires a lot of time and money	2,51	0,675

^aTable footnote.

The highest items score for the insufficiency of new technology knowledge category is lack in using new technology because it requires a lot of time and money with mean score 2,51 and standard deviation 0,675.

c. Insufficiency of Student’s Knowledge

Based on the results, the insufficiency students’ knowledge covered the lowest average mean, the item of questionnaire is presented in the following table (table 5).

Table 5. Insufficiency of students' knowledge

No	Items	Mean	Standard Deviation
1	Lack of knowledge in technology in general	2,36	0,581
2	Lack of knowledge about how to operate technology for developing teaching materials.	2.39	0, 542
3	Lack of Communication between me and other students in the discussion group.	2	0,5
4	Lack of materials in the form of soft files that can be input for developing teaching materials.	2,24	0,662
5	Lack of time to look for sources or materials from technology-based devices	2,92	0,679
6	Lack of knowledge how to edit, output and input materials for developing teaching materials	2,46	0,636
7	Lack of time in the process of editing, layout and inputting learning materials.	2,48	0,711
8	Difficulty in collaborating with fellow students to find materials, process and complete the development of teaching materials from software.	2,14	0,691

The highest items score for the insufficiency students' knowledge category is Lack of time to look for sources or materials from technology-based devices with mean score 2,92 and standard deviation 0,679.

2. Result of Interview

The following table is the result of the interview conducted to the participants. (Not all the responses are written in the table)

Table 6. Interview Result

No.	Questions	Responses
a.	Technology integration in the development of English language learning materials is necessary. What do you think about this?	<ol style="list-style-type: none"> 1. Because it's easier, before we used technology we had to make it ourselves, if we use AI technology now we just type what we want in a letter, what the purpose is, then what the structure is like, now in the letter we will explain more later. again with AI. 2. Make it more interesting by using Canva. Integrating technology needs to be used because currently books are left out if their function is only for reading, if there are video, audio, barcode elements... that means they can't just be read, they can be scanned and listened to. 3. Integrating technology.. Firstly, so that it can be

	completed more quickly, secondly, to get more interesting results for the audience, then also now what it means to do it, the materials are on websites on the internet like that, so whether you like it or not, you have to do it by using digital technology.
b. There are obstacles in integrating technology in developing teaching materials. What obstacles have you encountered regarding the integration of technology in the development of English teaching materials?	<ol style="list-style-type: none"> 1. The problem is that the (physical) textbook isn't there when you want to make it... Maybe the problem is that on campus, ma'am, sometimes the signal doesn't want to connect, sometimes it doesn't want to, that's what affects the AI diary, sometimes the search is fast, sometimes it's slow, so the prompt appears slowly. We have to wait patiently...more often than not the internet is unstable during the day. 2. The first obstacle was in dividing the groups, dividing the chapters because each of them got a chapter, each of them was responsible for designing each one, so the difficulty was determining the theme first, what kind of theme, color, design, and then because several of my group were boarding school children, it was a little difficult to access the internet because if you use data it takes a long time so like it or not we go to my house to do it, like it or not there are time sacrifices. 3. There is a problem, for the general public, the internet is a miss, sometimes the internet is slow, sometimes for example, like searching on Canva, it takes a really long time to appear and then when searching for an image it sometimes doesn't work because it's slow. If you make text to speech, the words are limited. My dialogue is long, so I'm only limited to how many words... for long sentences, I have to use premium.
c. Suppose there are two constraining factors, namely internal and external. Internal constraints are constraints within you as a developer of teaching materials and external factors are constraints from outside. In your opinion, which are the most prominent obstacles? Internal or external?	<ol style="list-style-type: none"> 1. Of myself, the ones that stand out the most, those are the ones that are really detrimental, procrastination, feeling overwhelmed on deadline nights, insecure about being in a group, how come he's more creative, really good, why do mine have such standards...too pushy if you don't meet me, it's sad. 2. Internally, maybe sometimes there's a lot of work to do and then when I want to make a teaching module I feel really tired, I want to rest first, whether I'm scrolling on TikTok or watching a drama.
d. What do you feel regarding the support for technological facilities and infrastructure provided by the institution (campus)?	<ol style="list-style-type: none"> 1. If the infrastructure is sufficient. What is needed when working is using a connection, quota, on campus where the WiFi is not very smooth. Usually, I hang out somewhere where it's quiet.. 2. When you're on campus, there's no inspiration because it's busy, there's a lot of talk from friends, so it's up to you which one is right. 3. The wifi on campus is slow if you work with a group on campus. Actually, it's already good, miss, but maybe the internet could be further improved, so if we're making speakers, in room 310, the speakers are a bit difficult to miss, whereas if we're making presentations, sometimes we still need audio.
e. How do you solve problems related to the institution's lack	<ol style="list-style-type: none"> 1. The first time I brought the material package book, I immediately recorded it in Microsoft 360 to make

	of technological infrastructure?	<p>teaching materials. It was very helpful. Later, I could share the model link like Canva so I could collaborate with friends in the group in sharing learning materials.</p> <p>2. I can only file a complaint, if there are lots of protests but the campus has no intention, that's fine. If there's no campus, it's better to just go home. If I'm on campus, I use a personal quota.</p>
f.	What efforts are you making to increase understanding of new technology?	<p>1. Ask a friend, then look for it on social media, there are lots of tutorials on TikTok and what kind of application it has pluses and minuses. Tiktok is really useful, I look for information there. YouTube usually has more complete information.</p> <p>2. I can also share with the lecturer, I asked the lecturer, to find out how to do this, and to be more confident too.</p> <p>3. I usually scroll Instagram reels. Usually there is an algorithm, for example, if I search for something about making this, a lot of information about that usually appears.</p> <p>4. I also looked for information from lecturers and from campus friends too.</p>

B. Discussion

Based on the result of the research presented previously, there are three categories of students' challenge in integrating technology in developing materials i.e.: insufficiency of infrastructure, students' knowledge and insufficiency of new technology.

The insufficiency of infrastructure was the top-ranked categories when it was completed ranked. The mean ($M=2,79$) and standard deviation ($SD=0,341$) was presented. The next category was the insufficiency of new technology with mean ($M=2,39$) and standard deviation ($SD=1,101$). The last category was insufficiency of students' knowledge with mean ($M=2,30$) and standard deviation ($SD=0,165$). The students agreed with the assertions made about the students challenge in technology integration.

1. Insufficiency of Infrastructure

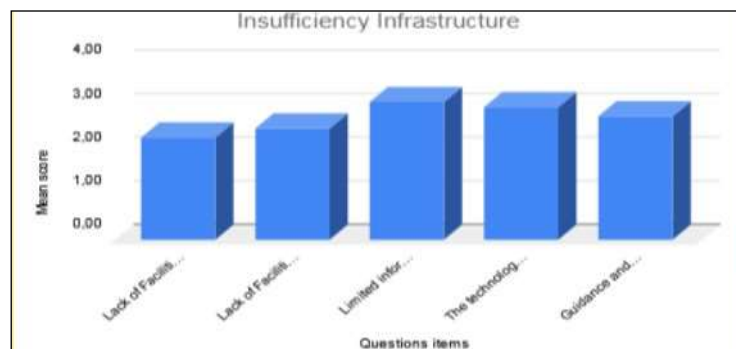


Figure 1. The graph of infrastructure insufficiency

The data in figure 1 paints a clear picture of the significant challenge students face due to insufficient infrastructure when developing technology-integrated learning materials. There are three categories which need to be considered:

- a. Inadequate IT Infrastructure and Support (Item 3): emerges as a major obstacle. The highest mean score (3,17) Limited information technology facilities and infrastructure in the form of laptops and PC computers provided by institutions for student academic activities. Hence, the role of institution become the most important in facilitating students in developing technology-integrated materials that often requires specific skills in using software, online platforms, and digital tools. Without proper training and support, students may lack the necessary of know-how to utilize technology effectively.
- b. Unreliable Internet Connectivity. Insufficient internet access presents another significant challenge. Developing technology-integrated materials often requires access to online resources, collaboration tools, and platforms for sharing and publishing. Unreliable internet hinders students' ability to leverage these technological resources.
- c. Limited Device Availability. A lack of laptops and computers. Without access to these fundamental tools, students are unable to develop and utilize technology in their learning materials.

Some challenges happened in technology as infrastructural issues such as lack of technology in the classroom, problems with hardware, internet, technology outdated quickly and power outages (Vatanartiran & Karadeniz, 2015). Teachers mentioned that they had either no technology or lack of technology in their classroom. Such infrastructural problems exist in similar technology integration projects. Another infrastructural problem is that there is either no internet or slow internet connection in the classroom.

The issues of challenge of technology use for teaching and learning also found in some previous research findings (Butarbutar & Leba, 2023; Fauzan & Pimada, 2018; Habeahan et al., 2022) and (Gai Mali et al., 2023). Those results were lack of supporting technological facilities (i.e., related to the poor internet connection and electricity) as the main issues that hinder the full integration of technology in schools.

Reviewing those previous research findings, this study expands a similar result of challenge in technology that is insufficiency infrastructure such as Inadequate IT Infrastructure and Support, Unreliable Internet Connect and Limited Device Availability.

The Implications of the challenges need for a multi-pronged approach to ensure students have the infrastructure needed for technology-integrated learning materials development:

- a. Increased Resource Allocation: Institutions should prioritize allocating resources towards acquiring a sufficient number of laptops and computers for student use.
- b. Improved Internet Infrastructure: Investments in strengthening internet connectivity and ensuring reliable access for all students are crucial.
- c. Enhanced IT Training and Support: Providing regular training workshops and dedicated support services can equip students with the necessary skills and knowledge to leverage technology effectively.
- d. Alternative Strategies: Developing resource kits with offline tools and activities can provide fallback options when internet access is limited.

By addressing these infrastructure challenges, institutions can empower students to explore the full potential of technology in their learning materials, leading to a more engaging and effective learning experience.

2. Insufficiency of New Technology

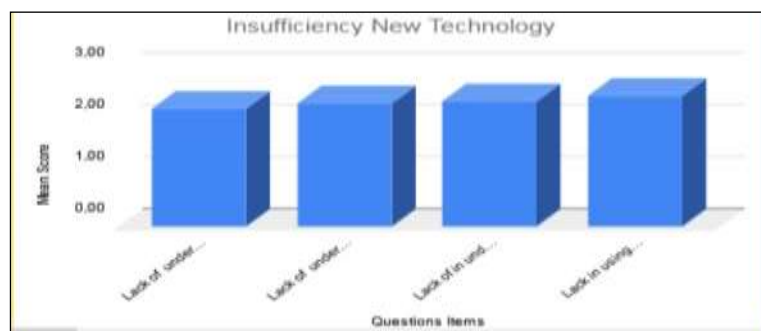


Figure 2. The graph of new technology insufficiency

The bar graph titled "Insufficiency New Technology" suggests that students perceive a lack of new technology as a challenge when integrating technology into their learning materials. While a low mean score might indicate this is a less

significant obstacle compared to others. The potential challenges that can be identified i.e.:

- a. Limited Access to Cutting-Edge Tools: Students might not have access to the latest software, hardware, or online platforms that could enhance their learning materials. This could limit the creativity, functionality, and overall quality of the materials they develop.
- b. Incompatibility Issues: Even if students have some technology available, it might not be compatible with the requirements of the learning materials they want to create. This can lead to frustration and hinder the development process.
- c. Steeper Learning Curve: New technology often comes with a steeper learning curve.

Students might struggle to learn and master new tools effectively within the timeframe they have for developing the materials. The unequal access to technology and resources across different socioeconomic backgrounds. Students from disadvantaged backgrounds might be more likely to lack access to the latest technology, putting them at a disadvantage when it comes to developing technology-integrated learning material.

Viewing new technology solely as a means of accessing knowledge limits chances for beneficial educational reform and can even lead to negative outcomes. To achieve meaningful and cost-effective transformation, we must prioritize addressing the types of new knowledge made available by technology and how it aligns with the requirements of modern citizens.

3. Insufficiency of student's knowledge

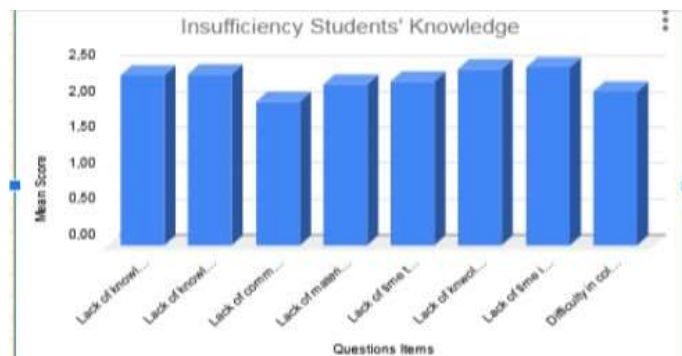


Figure 3. The graph of insufficiency of student's knowledge

The image appears to be a bar graph titled "Insufficiency of Student's Knowledge". The X axis lists various reasons students lack the knowledge to integrate technology into learning materials, and the Y axis shows the mean score for each reason. The graph highlights several areas where students might struggle with the technological aspects of developing learning materials. Some top three challenges that need to be underlined such as:

- a. Difficulty in Applying Knowledge (Lack of knowledge application): This could indicate a gap between students' theoretical understanding of technology and their ability to use it for a specific purpose, like creating educational materials.
- b. Difficulties with Collaboration Tools (Lack of communication): This suggests students might lack the skills required to use software or online platforms for collaborative learning material development.
- c. Time Constraints (Lack of time). This could be due to various factors, but it highlights the potential challenge students face in managing the time needed to develop technology-integrated materials alongside other academic commitment.

Overall, the data suggests that student knowledge is a key factor when it comes to integrating technology into learning materials development. By addressing the specific knowledge gaps identified and providing targeted support, educators can empower students to leverage technology more effectively in creating engaging learning experiences.

Teachers are aware that competence in technology integration requires specific knowledge and skills. Moreover, those knowledge and skills are strongly believed to be considerably sophisticated and demanding in a way that acquiring them necessitates a higher authority like universities or institutions providing in-service training (Atabek, 2019).

1. Student's strategies to cope with the challenges

Table 7. Student's strategies to cope with the challenges

No.	Questions	Responses
a.	How do you solve problems related to the institution's lack of technological infrastructure?	<ol style="list-style-type: none"> 1. The first time I brought the material package book, I immediately recorded it in Microsoft 360 to make teaching materials. It was very helpful. Later, I could share the model link like Canva so I could collaborate with friends in the group in sharing learning materials. 2. I can only file a complaint, if there are lots of protests but the campus has no intention, that's fine. If there's no campus, it's better to just go home. If I'm on campus, I

		use a personal quota.
b.	What efforts are you making to increase understanding of new technology?	<ol style="list-style-type: none"> 1. Ask a friend, then look for it on social media, there are lots of tutorials on TikTok and what kind of application it has pluses and minuses. Tiktok is really useful, I look for information there. YouTube usually has more complete information. 2. I can also share with the lecturer, I asked the lecturer, to find out how to do this, and to be more confident too. 3. I usually scroll Instagram reels. Usually there is an algorithm, for example, if I search for something about making this, a lot of information about that usually appears. 4. I also looked for information from lecturers and from campus friends too.

Based on the findings from interviews conducted with these participants, it can be concluded that students make several efforts, including preparing their needs according to their own abilities, such as providing material that is not accessible on campus because the availability of Wi-Fi on campus is not compatible. Furthermore, students also collaborate with their discussion group friends to make the task easier together. Here, collaboration between friends becomes very important. Apart from that, we also try to coordinate with lecturers in the lean ring resources course for data completeness so that students feel more confident because they have received input from lecturers.

CHAPTER V

CONCLUSION, IMPLICATION & SUGGESTION

A. Conclusion

This research has investigated students who took learning material development subject to explore challenges in integrated technology to support teaching and learning. The lack of insufficiency of infrastructure is the main challenge for students in developing learning material to integrate technology into their teaching and learning practices in the next semester. The challenges of insufficiency of infrastructure category consist of increased resource allocation, improved internet infrastructure, and enhanced IT training and support.

Meanwhile, the second level of challenge is insufficiency new technology as obstacle perceived investigation. The challenges cover limited access to cutting-edge tools, incompatibility issues, and steeper learning curve. In addition, the lack of students' knowledge is the minor challenge that is divided into three categories such as difficulty in applying knowledge, difficulties with collaboration tools of communication, time constraints.

Several strategies conducted by students to cope with the challenges in developing English learning materials integrated with technology are preparing the needs by themselves and making collaboration with others. Students are to manage their needs outside the classroom and collaborate with peers and lecturer.

B. Implication

Finally, we offer practical ideas for challenge in integrating technology in developing learning material such as increased resource allocation, improved internet infrastructure, enhanced IT training and support. By addressing these infrastructure challenges, institutions can empower students to explore the full potential of technology in their learning materials, leading to a more engaging and effective learning experience.

C. Suggestion

Suggestions for Further Research on Technology Integration in English Learning Materials Development. Building upon your research on the challenges students face with technology-integrated English learning materials, consider these potential areas for further

investigation:

1. Deeper Dive into Student Challenges

- a. Qualitative studies: Conduct in-depth interviews or focus groups to understand the specific reasons behind students' challenges.
- b. Comparative studies: Compare the challenges faced by different student demographics (e.g., age, gender, socioeconomic status, learning styles).
- c. Longitudinal studies: Track student progress over time to identify how challenges evolve as they gain more experience with technology-integrated materials.

2. Effectiveness of Technology Integration

- a. Impact on learning outcomes: Measure the correlation between technology integration and student achievement in English language skills.
- b. Student attitudes and motivation: Investigate how technology-integrated materials influence students' attitudes towards English learning and their motivation to learn.
- c. Cost-benefit analysis: Evaluate the cost-effectiveness of different technology integration strategies.

3. Teacher Roles and Professional Development

- a. Teacher perceptions: Explore teachers' attitudes and beliefs about technology integration and how these influence their instructional practices.
- b. Teacher training needs: Identify specific training requirements for teachers to effectively support students in using technology-integrated materials.
- c. Collaborative approaches: Investigate the effectiveness of collaborative approaches between teachers and students in developing and using technology-integrated materials.

4. Technological Factors

- a. Accessibility and equity: Examine the role of digital divide and how it affects students' access to and use of technology-integrated materials.
- b. Technology affordances: Explore the potential of different technologies (e.g., AI, augmented reality, virtual reality) to enhance English language learning.
- c. Technology maintenance and support: Investigate the impact of reliable technology infrastructure and technical support on student learning experiences.

By focusing on these areas, you can contribute to a deeper understanding of the complex relationship between technology, students, and English language learning, leading to more effective and equitable educational practices.

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APPENDIX



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SURAT PENUGASAN PELAKSANAAN PROGRAM PENELITIAN

Nomor : 0221/LPPM-UPY/I/2024

Yang bertandatangan dibawah ini :

Nama : Dr. Setyo Eko Atmojo, M.Pd

Jabatan : Kepala Pusat Penelitian Universitas PGRI Yogyakarta, bertindak untuk dan atas nama Universitas PGRI Yogyakarta

Alamat : Jl. PGRI 1 Sonosewu No. 117 Yogyakarta

Berdasarkan surat edaran pengumuman penerima dana hibah penelitian internal tahun anggaran 2023-2024 No: 008/LPPM-UPY/I/2024, memberikan tugas kepada :

Nama	NIS	Jabatan Tim
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Sri Wiyanah S.Pd, M.Hum	19790613 201401 2 001	Anggota 1

Untuk melaksanakan penelitian yang dibebankan pada **Anggaran Pendapatan dan Belanja Universitas PGRI Yogyakarta Tahun Anggaran 2023-2024** dengan Judul :

**“Technology Integration in English Learning Materials
Development: EFL Students’ Challenges and Their
Coping Strategies”**

Ketentuan Penugasan

1. Dukungan dana penelitian tersebut diatas adalah sebesar Rp. 8000000 (Delapan Juta Rupiah). Jumlah dana tersebut sudah termasuk seluruh beban pajak yang berlaku (PPn, PPh 23, PPh 21)
2. Jika peneliti tidak mengguakan dana untuk honorarium dalam anggaran penelitian maka peneliti tidak dikenakan pajak (PPn, PPh 23, PPh 21)
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- b. Peneliti berkeawajiban menyerahkan bukti *Accepted* pada jurnal internasional terindek Scopus (Q4 untuk AA/TP, Q3 untuk Doktor, Lektor LK dan GB, Q2 untuk penelitian Kerjasama Internasional), selambat lambatnya pada 10 Juli 2024.
- c. Peneliti diwajibkan menyerahkan bukti penggunaan dana penelitian kepada LPPM Universitas PGRI Yogyakarta sesuai dengan jumlah dana yang disalurkan.
4. Kewajiban Peneliti
 - a. Peneliti diwajibkan menyampaikan surat pernyataan telah menyelesaikan seluruh pekerjaan
 - 1) Telah membuat artikel hasil penelitian dan wajib *Accepted* pada jurnal internasional terindek Scopus (Q4 untuk AA/TP, Q3 untuk Doktor, Lektor LK dan GB, Q2 untuk penelitian Kerjasama Internasional) .
 - 2) Laporan akhir penelitian paling lambat 10 Juli 2024
 - b. Peneliti wajib mengunggah laporan akhir dan luaran secara online pada laman aplikasi SIAP LPPM
 - c. Peneliti wajib menuliskan bahwa penelitian ini dibiayai oleh Dana Bantuan Dari Universitas PGRI Yogyakarta Melalui Anggaran LPPM Tahun 2023/2024 pada laporan dan artikel hasil penelitian
 - d. Laporan Hasil Penelitian tersebut harus memenuhi ketentuan dalam panduan penelitian LPPM Universitas PGRI Yogyakarta edisi 2024.
 - e. Peneliti tidak diperkenankan menyerahkan sebagian atau seluruh Hasil Penelitian tersebut kepada PIHAK LAIN tanpa persetujuan tertulis dari LPPM Universitas PGRI Yogyakarta.
 - f. Peneliti diwajibkan menghasilkan luaran penelitian sesuai skema penelitian masing masing dan mengupload bukti luaran pada laman aplikasi SIAP LPPM
 - g. Setiap publikasi, makalah dan/atau ekspos dalam bentuk apapun yang berkaitan dengan hasil penelitian ini wajib mencantumkan LPPM UPY sebagai pemberi dana.
 - h. Hak Kekayaan Intelektual yang dihasilkan dari pelaksanaan penelitian tersebut diatas, diatur dan dikelola sesuai dengan peraturan perundang-undangan yang berlaku.
 - i. Dalam hal peneliti tidak dapat memenuhi syarat-syarat sebagaimana diatur dalam Surat Penugasan Hibah Penelitian, maka peneliti wajib mengembalikan dana penelitian yang telah diterimanya kepada Universitas PGRI Yogyakarta melalui LPPM UPY.
5. Pelaksanaan dan hasil penelitian secara berkala akan dimonitor dan dievaluasi. Monitoring dan Evaluasi akan dilaksanakan dengan cara membandingkan laporan pelaksanaan kegiatan schedule penelitian yang terdapat pada proposal penelitian, serta



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- kewajaran laporan keuangan yang dibuat. Monitoring dan Evaluasi dijadwalkan oleh LPPM UPY.
6. Jangka waktu penelitian ini berakhir pada tanggal 10 Juli 2024.
 7. Apabila batas waktu penelitian habis, namun peneliti belum menyerahkan hasil pekerjaan seluruhnya kepada LPPM maka kepada peneliti akan dikenakan denda sebesar 1⁰/₀₀ (satu permil) setiap hari keterlambatan sampai setinggi tingginya 5% dari nilai Surat Tugas Pelaksanaan Hibah Penelitian terhitung dari tanggal jatuh tempo yang telah ditetapkan sampai dengan berakhirnya pembayaran dana penelitian oleh LPPM Universitas PGRI Yogyakarta serta tidak diperkenankan mengajukan proposal hibah internal pada tahun anggaran selanjutnya.
 8. Apabila dikemudian hari peneliti mendapat sanksi dari Universitas PGRI Yogyakarta dan atau instansi lain karena terbukti melakukan penelitian atau melanggar kode etik dosen, maka peneliti harus menghentikan dan mengembalikan dana yang sudah diterima kepada Universitas PGRI Yogyakarta melalui LPPM.
 9. Apabila dikemudian hari terbukti bahwa judul-judul penelitian adanya indikasi tidak bersifat original, pernah dibiayai oleh lembaga/sumber dana lain, dan atau diperoleh indikasi ketidak jujuran serta etika kurang baik, maka penelitian tersebut dinyatakan batal dan peneliti wajib mengembalikan dana penelitian yang telah diterimanya kepada LPPM Universitas PGRI Yogyakarta yang selanjutnya disetorkan ke Kas Universitas PGRI Yogyakarta.

Yogyakarta, 25 Januari 2024

Pemberi Tugas



Dr. Setyo Eko Atmojo, M.Pd

NIS. 198612272012011001

Penerima Tugas:

Nafisah Endahati, S.Pd, M.Hum

Sri Wiyannah S.Pd, M.Hum

Tembusan Yth:

1. Rektor
2. Para Wakil Rektor
3. Para Dekan
4. Para Kaprodi

Di lingkungan Universitas PGRI Yogyakarta



UNIVERSITAS PGRI YOGYAKARTA
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SURAT PERNYATAAN KETUA PENELITIAN

Yang bertandatangan dibawah ini:

Nama : Nafisah Endahati

NIDN 0516037804

Pangkat/Golongan : Penata - III/c

Jabatan Fungsional : Lektor

Dengan ini menyatakan bahwa penelitian saya dengan judul :

Technology Integration in English Learning Materials Development: EFL Students' Challenges and Their Coping Strategies

Yang diusulkan pada skema penelitian Lektor

Untuk tahun anggaran 2023/2024 bersifat original dan belum pernah dibiayai oleh Lembaga/sumber dana lain.

Bilamana di kemudian hari ditemukan ketidaksesuaian dengan pernyataan ini, maka saya bersedia dituntut dan diproses sesuai dengan ketentuan yang berlaku dan mengembalikan seluruh biaya penelitian yang sudah diterima.

Demikian pernyataan ini dibuat dengan sesungguhnya dan sebenar benarnya.

Yogyakarta, 25 Januari 2024

Yang menyatakan

Peneliti

Mangetahui

Kepala Pusat Penelitian UPY



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