

# Developing English language material integrated with Duolingo App for young learners in UNU Yogyakarta English Club Program

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## ABSTRACT

English learning materials for young learners in Indonesia are often limited in interactivity and the integration of digital learning resources that are appropriate to the characteristics of student learning, especially in the context of extracurricular learning. This study aims to develop English learning materials by integrating the Duolingo App and to evaluate the suitability of the materials developed for use in the UNU Yogyakarta English Club program. This study applied the Research and Development (R&D) approach using the ADDIE model, consisting of Analysis, Design, Development, Implementation, and Evaluation stages. The need analysis data were taken from pre-test results involving 57 students enrolled in the English program, semi-structured interviews with parents, and expert judgment for material validation. The developed English learning materials were designed and developed into ten learning units integrating the Duolingo App, equipped with printable worksheets and interactive learning activities. Expert validation was conducted by one expert in learning materials and learning models across five aspects: content, design, motivation, and the feasibility of the developed materials. The expert validation yielded a score of 4.18, indicating that this learning material is good and suitable as a supporting medium for English language learning. The implementation stage involves applying the developed materials in actual classes, followed by evaluation through observation and analysis of student performance at the end of each learning session. The study's findings show that the pedagogically developed material is appropriate for classroom use. Students showed positive responses in terms of engagement, motivation, and participation during the learning process.

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## 1. INTRODUCTION

In recent years, English has become one of the most important needs for almost everyone. The function of “International Language” has truly been realized since the mid-

20th century, when English displaced several other languages that were also on the rise, including its increasingly widespread use across many aspects of life [1]. Where almost all areas of life require English, whether it be education, technology, science, or even business [2]. The demand for English is increasing in non-English-speaking countries, including Indonesia, beginning in the 21st century, as large economies have emerged, reinforcing the argument that English is a skill that must be mastered to maintain their achievements [3]. These countries must recognize and utilize efforts to co-exist and familiarize themselves with English, which forms the basis of a broad information foundation that will be developed over time in response to future demands [4]. One of the basic foundations is introducing English to the younger generation at an early age. Shaping a solid foundation by introducing English to young learners is equivalent to preparing human resources ready to compete and form the next generation of a country on an international scale [5].

Young learners are the best age to learn English. At this stage, young learners are still receptive to new things, and their flexible brains easily capture and memorize new information, such as vocabulary, and adapt to new languages more easily [6]. Responsiveness and the activation of new information during the growth period optimize input capacity, ensuring that their vocabulary bank is fully stocked to support growth. This time is considered appropriate for exposure to a new language after the first language because it coincides with a person's growing capabilities in emotional, physical, and intellectual development, including the acceptance of a new language, namely English. Compared to adults, when they start learning English at this age, the tasks and aspects of the language they learn become more complex; therefore, learning English for adults is more complex [7]. Performance, proficiency, and acceptance of a new language at this stage are not as optimal as when learned at a young age, because young learners tend to learn implicitly and remember the meaning of new information using their own language and understanding, which is still free of rules [8]. Young learners' ability to learn new languages is influenced by their memory capacity, which is not yet as developed as that of adults, creating space to hold a wide range of English language information and retain it for the long term [9]. In addition, young learners' desire to explore and their wide imagination also help them learn many things. Therefore, learning a new language, especially English for young learners, must be tailored to the learner's characteristics and circumstances to maximize their competency.

The main problem with English learning materials in Indonesia is the lack of support for students' practical language skills, which remain insufficient, including the provision of engaging and appropriate learning materials. In Indonesia's educational reform following the 2013 curriculum, English was designated a local subject rather than a compulsory one. Meanwhile, the purpose of the curriculum reform is to address concerns about Indonesia's low rank in international education rankings [10]. Following the Merdeka Curriculum reform, English language policy in primary schools became an optional or extracurricular subject in several schools [11]. Besides, English language learning for young learners in schools is often still focused on textbooks, worksheets, and other rigid, low-priority materials. The use of textbooks alone, without integrated active support interactions in the classroom, rarely helps students improve their cognitive aspects [12]. However,

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conventional learning media are still worth using in this era as a complement to digital learning rather than a stand-alone alternative, as well-designed conventional (interesting) media can enhance student engagement and promote more active classroom interaction [13], [14]. According to [15], learning materials are like a gateway for teachers and students to enter the field of language education. Remember that the learning material provided is important to consider, as it must help encourage student learning activity, so relevance is needed in its selection [16].

Meanwhile, young learners have different backgrounds and favorite activities [17]. However, on average, young learners prefer learning activities that are packaged in interesting, playful, and exploratory activities appropriate for their age. In addition, children today are tech-savvy and skilled in using technology, such as gadgets and online applications, so they are more active with technology than just being given a traditional approach [18]. Therefore, the learning materials given to students must also be tailored to their backgrounds, so that when they learn English, they at least feel familiar with the learning context [19]. The circumstances and needs of students, in terms of delivery, activities, assignments, and even learning materials, including the use of technological media, can also support their English language learning.

One of the most widely used tools for helping children learn English is the Duolingo app. An online application-based technology that can support young learners' English language learning as an interactive, exciting, and valuable game-based learning media. According to [20], consistent use of Duolingo results in a significant increase in proficiency and sustained interest. Not only for students, but Duolingo apps can also serve as reference material or a learning content adjustment tool for teachers, taking into account students' levels, needs, and interests. By integrating learning through Duolingo, this application can also serve as an interactive technology platform that helps teachers conduct assessments to review students' learning progress in a fun way [21]. However, there are certain disadvantages or weaknesses in its application if we rely solely on the Duolingo app, including: the glossary used for learning is not very extensive or comprehensive, and the app's sensitivity to student answers [22]. Previous studies have focused only on the effectiveness and use of the app by students and teachers independently, rather than on its integration with learning materials tailored to classroom conditions and needs. If the Duolingo app is used in English courses outside of school materials, its use will be more flexible but still substantial. Input and output learning activities can be further customized and accepted by students with more lenient restrictions.

Previous studies have shown that young learners are exploratory in both their actions and their thinking when learning English, and that motivational beliefs are one of the factors that influence the achievement and activity of young learners in English language learning [23], [24], [25]. Therefore, at the stage of English language learning, it is important to engage their attention and motivation by adjusting the learning process through fun activities appropriate for young learners. One thing suitable for young students is technology, a proven tool that can increase student motivation and interest in learning because of its attractive features and familiarity among the current digital generation [26], [27]. According to [28], the Duolingo App is easy to use and flexible, available anytime, anywhere, making it

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effective in fostering students' interest and motivation in learning English. In addition, Duolingo offers an attractive design and content that can be tailored to the user's background, making it the right digital learning tool for English. However, there is still little research that integrates the Duolingo App into semi-formal English language learning outside of school. From the description above, a research question serves as a compass guiding this more exhaustive research: how English learning materials are developed through Duolingo integration for young learners, and how suitable these materials are for use.

Due to the above issue, the UNU Yogyakarta English Club program was presented as an additional learning program outside of school that supports young learners in learning English. This program is the answer to the questions and concerns above, where young learners can learn English in fun ways, combining modern teaching and integrating with technology. Using the Duolingo app as a foundation, this approach develops and packages learning materials using game-based learning methods, ensuring consistency across vocabulary, task activities, and final assessments. The development of learning materials also takes into account students' ability levels, needs, and circumstances, while continuing to adapt to students' interests and talents through varied and interactive learning media and activities.

This research aims to develop English Language materials integrated with the Duolingo App for young learners in the UNU Yogyakarta English Club Program. Developed based on Duolingo materials and tailored to students' circumstances, this program provides a flexible English learning experience and interactive application by combining traditional methods with a focus on the development of application-based digital methods. For educators, this research offers opportunities to develop learning materials based on digital applications and to apply them innovatively and creatively to students. The game-based teaching method aims to make students feel happy and enthusiastic about learning more, and to help them enjoy, get used to, and easily understand English. Furthermore, the use of the Duolingo app integration as a supplement to technology-based student skills prepares them to hone future skill needs.

## **2. METHOD**

This research used the Research and Development (R&D) method. According to [29], the Research and Development method is used to develop or update products, which are later subjected to validation testing as a means of evaluating their future application. In this research, the researchers developed English learning materials that will continue to evolve and adapt to trends and circumstances. To develop a material, researchers use the ADDIE model to systematically build a learning material framework through five stages: Analysis, Design, Development, Implementation, and Evaluation. According to [30], the ADDIE development model responds to changing situations and conditions, thereby facilitating change and shifts in interests and circumstances. The first step is a needs analysis based on the students' backgrounds. The second step is to create a layout for the material according to the needs analysis results. The third step is to develop a draft product and expert

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judgment. The fourth step is to implement the developed product for users. The final step is to evaluate the developed product as a refinement of the research product.

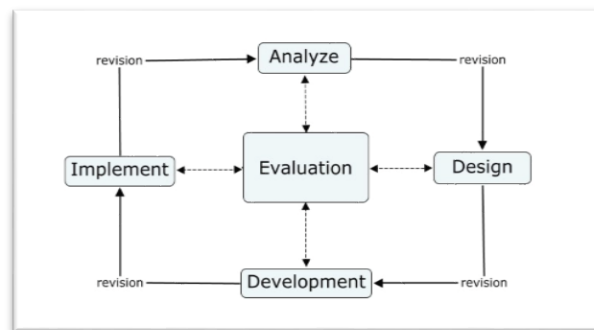


Figure 1. ADDIE stage

The learning material design framework serves as a blueprint for advancing English learning materials. This framework is structured as a needs analysis, thereby defining a sequence and content of learning tailored to those needs. This learning material design integrates digital technology, namely the Duolingo app, which serves as a reference source for learning material topics, vocabulary, and phrase usage, and for final assessments for each unit of the learning material framework. The learning method used in the learning materials is game-based learning. The use of game-based learning methods through various fun activities supports children's motivation to become more involved in the learning process, thereby developing cognitive, social, and emotional skills during their growth period [31].

The development of learning materials integrated with the Duolingo app is tailored to the results of the syllabus design framework. There are 10 learning units in this learning material design framework, each unit containing learning topics, learning objectives, learning materials, and learning tasks that focus on language proficiency components (vocabulary, phrase, speaking, writing) and simple instructions for completing tasks or fun activities. The researcher also reconsiders the sequence, structure, and learning activities of each unit of material in accordance with students' interests, needs, and circumstances. After the learning materials were developed, this study required validity and eligibility tests through expert judgment. At this stage, the expert judgment was conducted by English lecturers, with quantitative scores and qualitative input based on the assessment components of content accuracy, language appropriateness, presentation, and layout design. The expert assessment suggestions will be used to revise the development of the learning materials.

The research sample consisted of all enrolled Beginner and Intermediate-level students, totaling 57 students from grades 1-6, representing various elementary school backgrounds in the Unu Yogyakarta English Club Program. The researcher decided to include all students because they had the same learning needs regarding exposure to English.

Data collection in this study used several techniques: quantitative data from pre-tests and qualitative data from interviews. A pre-test was conducted by asking all students questions using Duolingo games and oral questions to gauge their interests, needs, and proficiency levels. Interviews were conducted with two parents to understand better the

children's needs and circumstances regarding English language learning from the parents' perspective.

### 3. RESULTS AND DISCUSSION

#### 3.1. Results

This section will outline the results and findings of the ADDIE model-based research (analysis, design, development, implementation, and evaluation):

##### Need Analysis Stage

This chapter will discuss the results of the needs analysis used to develop English learning materials for young learners. The first analysis used a pre-test instrument for all 57 beginner and intermediate students in grades 1-6 from different school backgrounds. These findings were used to determine the students' various English language skills. The second analysis used an interview instrument with two parents and one principal from the students' schools. This instrument aimed to gather more detailed information about students' backgrounds, interests, and circumstances from the perspective of their guardians. Based on this analysis, the pre-test data were processed into a quantitative table and described qualitatively, while the interview data were processed into descriptive statements.

The first analysis involved administering a pre-test to 57 students using 20 multiple-choice questions on basic English skills (reading and writing), with a duration of 45 minutes. There was also a short oral test, with a maximum duration of 5 minutes per student. The results are as follows:

Table 1. Pre-test result

No	Score	Frequency	Percentage (%)
1	20-31	7	12,28%
2	32-43	9	15,79%
3	44-55	17	29,82%
4	56-67	13	22,81%
5	68-79	6	10,53%
6	80-91	4	7,02%
7	92-103	1	1,75%
<b>Total</b>		<b>57</b>	<b>100%</b>

The results of the Pre-Test analysis show that the majority of students scored 44-55, with the highest percentage, 29.82%, among 17 students. This percentage indicates that most young learners have basic English language skills. Therefore, English language learning support is needed from a basic level, which can take the form of introducing material with themes familiar to learners. Showing 57.89% with a frequency of 33 learners, more than half of the learners scored below 55, meaning they are at a basic level of ability or need support.

In addition, the second-highest percentage was 22.81%, or 13 learners who scored 56-67. This smaller group of students showed a more stable level of English proficiency, but still needed to improve their performance. Compared to the above presentation, only 8.77% (5 learners) scored above 80. This means learners with high proficiency are a minority. Based on the following analysis results, the findings support the need to develop English learning

materials for young learners that are friendly to students with varying abilities, packaged with explanations, themes, and interactive, innovative activities to maximize young learners' language learning.

The second analysis used semi-structured interviews with randomly selected parents/guardians of students. These interviews aimed to gain deeper insight into students' backgrounds, abilities, and English exposure from the perspective of their parents/guardians. This provided more informative results and helped to tailor the development of English language materials for young learners. Some important topics include (1) the importance of children learning English from a young age, (2) additional English classes outside of school subjects, (3) the motivation of young learners in learning English, (4) the use of a combination of learning methods and media for students, and (5) the integration of Duolingo as a technology media in learning English. The results of the analysis through interviews with respondents are presented with descriptions in accordance with the important questions above:

**What is the urgency for young learners to learn English from an early age?**

*“Children should learn English from a young age, even before they start school, if necessary. They should start with basic knowledge, such as colors and objects around them. The reason is that English is an international language that is important for children’s future. Most technological languages use English, which makes it easier for children to acquire academic knowledge and meet foreigners”.*

In addition, the researcher inquires with parents whether young learners require additional English learning outside the school subject, and what motivates them to study English. Parents state that English learning programs are highly necessary because the English learning they receive is brief, and the material taught is often basic. Through English learning programs, young learners gain access to more extensive material and practice using the language. They also explained that young learners will be motivated to learn English through fun learning methods. Children love to play, and by using fun learning methods while playing, they can quickly understand the material, find learning enjoyable, and avoid boredom. If they only learn through text materials, they will rapidly become bored and lose interest, so it must be packaged with interactive activities or games such as songs, storytelling, and group games.

**Do you recommend integrating technology media, such as the Duolingo app, into English language learning for young learners?**

*“Respondents highly recommend using the Duolingo app as a technological tool to support English language learning. Their children have also used the Duolingo app in their daily lives. Its attractive appearance, ease of use, and ability to be tailored to students’ abilities in each unit make it seem like children are being offered an exciting activity, when in fact it is also a learning activity.”*

The researcher also asked whether a learning approach combining fun activities, technology, and printed materials would help young learners master English. Parents stated that the combination of these methods for teaching English to young children is essential.

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Even though technology already exists, printed materials are still very much needed to visualize the material so they can understand the spelling of English words, which differs from their pronunciation, as notes that can be studied again. Learning through play is highly recommended, especially the integration of technology such as Duolingo, given that today's children are already very savvy. However, in practice, children must still be guided and restricted when using technological media such as gadgets, whether for learning or playing.

### Media Design Stage

At this stage, the syllabus design was developed based on the results of the needs analysis. The function of syllabus design is to provide a sequence of information that bridges the relationship between learners and subjects, making it easy for learners to access the material provided by teachers [32]. The use of content, sequence, and learning activities in each unit was created and evaluated after each learning session. In this syllabus, 10 learning units were developed with the integration of the Duolingo App. Researchers reviewed the content in each Duolingo unit. Themes, vocabulary, phrases, and instructions are analyzed, along with learning activities and time allocations for each stage, which are then organized into a cohesive syllabus framework. Language proficiency is also taken into account in each learning unit, which includes listening, speaking, etc. Activities such as writing printed worksheets and interactive games also complement the syllabus. Furthermore, the module layout is child-friendly, with each unit featuring supporting visuals, solid colors, and clear instructions and descriptions. In addition, researchers used a consistent syllabus format for each unit to ensure a stable learning sequence.

Table 2. Sample of syllabus

Theme	English level	Learning objectives	Time allocation	Learning stage
Let us drink together	Beginner level	<ul style="list-style-type: none"> <li>recognize common greeting expressions and names of beverages in English clearly</li> <li>pronounce greeting phrases with confidence</li> <li>understand the greeting expressions and names of beverages correctly</li> <li>work collaboratively in a team-based magic-box game</li> </ul>	120 minutes	<ul style="list-style-type: none"> <li>Introduce the material with a YouTube video and an interactive flashcard</li> <li>pronounce greeting phrases by imitating the tutor</li> <li>play with a collaborative magic box game</li> <li>Reflection and evaluation with the Duolingo App</li> </ul>
	Intermediate level	<ul style="list-style-type: none"> <li>recognize and use common greeting expressions in English clearly</li> <li>Practice using simple greeting phrases and names of beverages correctly.</li> <li>understand and translate greeting expressions with confidence</li> </ul>		<ul style="list-style-type: none"> <li>introduce the material with a YouTube video</li> <li>Practice greeting students' classmates and mentioning their favourite drink.</li> <li>Write the greeting expression mentioned by the tutor</li> </ul>

Where are you from?	Beginner level	<ul style="list-style-type: none"> <li>• Write a greeting expression in English with creativity</li> <li>• understand the kinds of country and landmark vocabulary clearly</li> <li>• pronounce kinds of country and landmarks correctly with confidence</li> <li>• write kinds of country and landmark vocabularies in English with their Indonesian translation independently</li> </ul>	120 minutes	<ul style="list-style-type: none"> <li>• Reflection and evaluation with the Duolingo App.</li> <li>• Introduce the material with the interactive PowerPoint</li> <li>• Pronounce the names of the country and the landmark as directed by the tutor</li> <li>• Completing a printed worksheet</li> <li>• Group matching game</li> <li>• Reflection and evaluation with the Duolingo App</li> </ul>
	Intermediate level	<ul style="list-style-type: none"> <li>• understand the kinds of country and landmark vocabulary clearly</li> <li>• Practice a simple conversation about someone who comes from a confident family</li> <li>• work collaboratively in a team in a matching game</li> </ul>		<ul style="list-style-type: none"> <li>• Introduce the material with a YouTube video and an interactive PowerPoint</li> <li>• Simple conversation practice with classmates about where someone comes from</li> <li>• Spelling the name of the country</li> <li>• Group matching game</li> <li>• Reflection and evaluation with the Duolingo App</li> </ul>

The learning module contains 10 units, with learning materials and activities integrated into the Duolingo App. Starting with unit 1, themed “Let’s drink together,” the material focuses on introductions as an opening. This unit discusses various greetings for meeting or getting acquainted with others. In addition to greetings, favorite drinks are also a topic discussed in the introduction. Unit 2, with the theme “Where are you from?”, is related to the previous unit and discusses a person’s origin, focusing on countries around the world. Unit 3 has the theme “My Family”. This unit discusses getting to know family members. Learners can name their own family members.

Furthermore, Unit 4 has the theme “Animals”. This unit covers various types of animals and introduces their sounds and movements. The first four units are basic material that learners are familiar with in their surroundings. The use of familiar material influences learners’ interest, ease of understanding, and level of creativity [33]. Therefore, placing these units at the beginning of the learning module serves as a bridge to attract learners’ interest and make them feel secure in learning English.

The use of more varied materials is certainly combined in the learning modules in the following units. Unit 5, themed “Reflection,” is a unit of reflection and assessment of the four units studied previously. This unit aims to activate background knowledge for young learners through a series of fun, game-based activities and collaborative activities that remain

informative. Unit 6, the House tour-themed unit, discusses the various rooms in a house and the items commonly found in them. Unit 7, themed Hobby and Profession, allows learners to learn about each other's hobbies and dream about their future professions. Next is Unit 8, themed Days and Daily Routine, which discusses the days of the week and the activities typically done on each day. Unit 9 carries the theme "Talking about School," and Unit 10 discusses the theme "Kinds of Weather."

### Development Stage

The third stage in the ADDIE model is the development stage. This section will describe several important activities, namely the development of initial draft materials and product layout into a coherent set of materials, which is the main part. Product validation is carried out by experts, followed by revisions based on feedback to improve product quality for implementation in learning.

The cover title "Joyful English Adventure" is a great match, as its vibe reflects the exciting, exploratory learning activities and materials. A child casually reading a book conveys a sense of curiosity. The background of a stack of books on green grass, set against a bright sky and a rainbow, conveys a sense of peaceful happiness. This cover is sure to attract readers' attention to explore the exciting adventures inside.

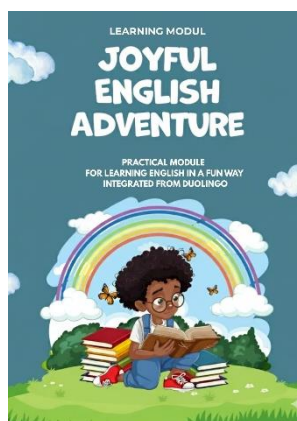


Figure 2. Cover of the product development

Product development is a core part of this research, so it is described in detail. In the process, adjustments to the learner's need analysis and integration of the Duolingo App were consistently implemented in the 10 units of material.



Figure 3. Development stage

Start by reviewing the Duolingo app by trying it out directly to find and determine the themes, sections, units, and tasks. Followed by the process of preparing materials by describing the information on the page based on the vocabulary, phrases, and instructions found on the page. The information from reviews and trials was developed into fun topics based on their stages, forming core material that includes learning objectives, vocabulary lists, worksheets, tasks, instructions, and learning activities. When the material plan was ready, it was time to move on to the implementation of direct learning in the classroom, and the final stage is to use the Duolingo app at the end of each learning session as a reflection and assessment activity for each unit.

After the product development is designed, the next step is to validate the product with validators who are experts in their fields to correct and assess the product’s feasibility. The expert judgment instrument covers five key aspects with 27 sub-aspects, designed using revisions to Bloom’s Taxonomy cognitive process dimensions [34], [35]. The validator is a lecturer in the English education study program at UNU Yogyakarta, an expert in learning materials and models.

Table 3. Expert judgment result

Aspect	Sub Aspect	Score	Average score
Cognitive	Remembering	4.0	4.3
	Understanding	4.0	
	Applying	5.0	
	Analysing	4.0	
	Evaluating	5.0	
	Creating	4.0	
Content	Relevance	5.0	3.8
	Cultural appropriateness	3.0	
	Authenticity	4.0	
	Clarity of objectives	5.0	
	Accuracy of content	3.0	
	Consistency	3.0	
Design	Layout design	4.0	4.3
	Sequence activities	4.0	
	Balance	5.0	
	Integration	5.0	
	Instruction	4.0	
	Assessment	4.0	
Engagement & Motivation	Interest	4.0	4.4
	Enjoyment	4.0	
	Challenge	5.0	
	Interaction	5.0	

	Feedback	4.0	
	Accessibility	4.0	
Practicality & Usability	Teacher usability	4.0	4.0
	Time efficiency	4.0	
	Overall usefulness	4.0	
<b>Average score</b>			<b>4.18</b>

The validation results show that the 27 sub-aspects detailed into 27 indicators in five assessment aspects, which are cognitive, content, design, engagement-motivation, and practicality-usability, received high scores ranging from fair to good to very good.

The cognitive aspect, which has six assessment indicators, received an average score of 4.3 and was categorized as “very good”. For the details, two indicators got a “very good” score, which is applying and evaluating indicators, and four indicators got a “good” score. The validators agreed that this product effectively supports learners’ cognitive processes in using language in relevant contexts and encourages students to express their opinions. In addition, this product is suitable for supporting recall, understanding, analysis, and the production of English learning materials.

The content aspect, which has six assessment indicators, received an average score of 3.8 and was classified as “good”. Of the six indicators, two are rated “very good”, one “good”, and three “fair”. This product is considered effective at providing content that is relevant to learners' ages, interests, and English proficiency levels. Each unit or lesson sets clear and measurable learning objectives. Experts noted that more of the material should be presented inclusively.

For the design aspect, experts assessed six indicators, with an average score of 4.3, which was identified as “very good”. Two indicators scored “very good” and four scored “good”; this indicates that the layout is organized and balanced, and that the instructions and series of activities are presented logically. Comments were obtained from experts on this aspect, in the reflection and evaluation section, providing clearer examples and instructions on what students should do, considering that Duolingo has various levels and tasks.

For the engagement and motivation aspect, five indicators, with an average score of 4.4, were considered “very good”. The learning activities provided stimulate students’ interest and enjoyment in using the product. Tasks were also presented gradually, from easy to difficult, and at the end of the session, students received feedback. There was no expert correction for this aspect.

The last aspect, the practicality and usability, contained four indicators, with an average score of 4.0, and was classified as “good”. This product is easily accessible to educators, students, and readers, so its use has the potential to improve students’ English skills effectively.

Based on the average scores given by experts for each aspect, consisting of cognitive suitability, content, design, engagement-motivation, and practicality-ease of use, received a score 4.18 and it can be concluded that the English language materials for young learners in the UNU Yogyakarta English Club program are suitable and ready for use in real classroom

learning, of course, after the researchers revise and improve the parts that experts have revised to create a better product for implementation.

### **Implementation Stage**

The product was implemented in the UNU Yogyakarta English Club program. This trial involved 57 elementary school students from diverse backgrounds enrolled in the English Club program. Students were grouped into two classes, namely beginner-level and intermediate-level students, according to the pre-test results. In total, there were 10 meetings, each with 10 different topics. In a one-time meeting, the learning session lasts 120 minutes. Each session opened with a bridging activity in the form of questions or brief discussions to hone their background skills before moving on to new material, followed by an explanation of the material through interactive PPT or YouTube videos, the printed material is used as a learning task, a fun and engaging activity, and then ends with a reflection using a customized Duolingo assessment. In the process, the researchers involved students as active research subjects, observing their reactions and interactions when receiving learning materials, as well as their challenges and responses when integrating technology with the Duolingo App.

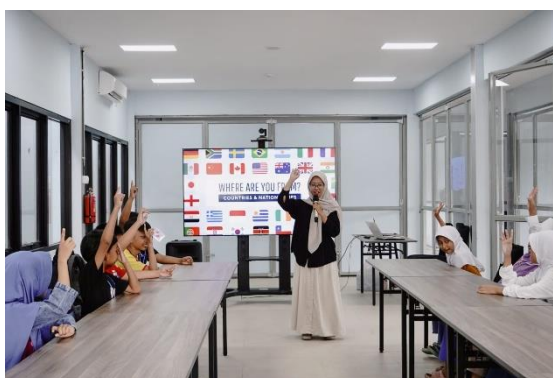


Figure 4. Learning activity

During this implementation, the learning modules received positive responses and some feedback. The series of materials and fun activities was well-organized and interesting, so students and tutors could easily access and navigate the learning process. The integration of the Duolingo app into the unit materials and its direct use as a final assessment for each unit also made students more interested. However, the integration of the developed material is closely tied to digital technology, such as Interactive PPTs, QR codes, and Duolingo assessments, which require digital devices and a stable internet connection to access some materials online. In addition, the Duolingo app appearance may differ for each user depending on their knowledge background and needs. Even though there were some obstacles, overall, the product development was well organized, the content was structured, and the learning materials were suitable as a supplement to English language instruction for young learners, presented in a simple, fun way.

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Figure 5. Duolingo implementation

This trial aims to collect feedback and responses on how well the material facilitates the learning process, the level of student engagement with the content, and the overall usability of the resource. Input obtained through this implementation will be compiled to identify areas for improvement, ensuring the final product is more effective and user-friendly.

### **Evaluation Stage**

The evaluation stage is the final stage of the ADDIE methodology. This stage assesses progress made in the previous four stages, with a view to improving the product's effectiveness. Based on previous implementations, the majority of young learners today are very tech-savvy. However, some are still unfamiliar with technology and require assistance accessing certain product development features that require technological support, such as interactive PPT materials and Duolingo assessments. This is an important consideration because learning barriers can also hinder the process of information input and student focus. To overcome these challenges, the use of these features has been made easier by providing QR codes that students can easily access for interactive PPT and Duolingo assessments in each unit. Most of the materials and tasks are also accessible without technology, so students can use them immediately and obtain information easily. In addition, teacher guidance and familiarization with specific features can help minimize obstacles for students, with the hope that they can meet product usage expectations to the fullest and improve their technological discipline in the future.

Based on student feedback, the evaluation focused on cognitive skills, material relevance, motivation, and student experience. The majority of students found it easy to access the learning materials, which were familiar to their background, facilitating their understanding. The learning process and activities were presented in a fun and exciting way, which increased student motivation. However, some students still needed guidance in overcoming certain obstacles.

### **3.2. Discussion**

The research results indicated that 57.89% of learners scored below 55 on the pre-test. This indicates that more than half of the students are still at a basic level or need further support and exposure to English. This finding highlights the importance of providing easily

accessible learning materials for young learners in alignment with students' proficiency levels. Similar to the findings of a previous study, the suboptimal performance of young learners in gaining exposure to English as a foreign language is sometimes caused by limited exposure and a lack of engaging learning materials [23].

Parents' perspectives indicate that additional English language learning beyond school subjects is essential to expose students to English and provide them with practice. As discussed in previous studies, exposure to English through additional classes tailored to students' interests, conditions, and learning stages can increase learning motivation, compensating for limitations in formal classes [25].

The developed learning materials used the ADDIE model across 10 learning units, each incorporating various language skills. Integrated with Duolingo's digital app, instructional printed materials, game-based learning activities, and easily accessible materials. This concept is consistent with previous research indicating that integrating technology into game-based learning can increase young learners' participation and enthusiasm in language learning [27], [28]. By combining digital technology with conventional learning, this study shows that the two are a good fit. Digital technology can be used as an additional learning tool without replacing the position and function of conventional learning materials.

The expert validation results averaged 4.18 across cognitive, content, design, engagement, and practicality, indicating the product's suitability for implementation. These findings are consistent with previous research on substantial expert judgment in validating the suitability of learning materials across various aspects before being tested in real classrooms [16].

Previous research has discussed the effectiveness of the Duolingo app and its independent use [20], [22]. This study expands on existing research by introducing a new position for the Duolingo app as a core section of learning materials, including the selection of themes, vocabulary, activities, and learning assessments tailored to students' needs.

#### **4. CONCLUSION**

This study focused on English learning materials developed by integrating the Duolingo application for young learners into the UNU Yogyakarta English club programs. Findings showed that English learning materials for young learners, integrated with the Duolingo app, structured for interactive learning, and combined with printed materials and game-based learning activities, can support students' active participation in the learning process.

The results of this study have several important implications for research. Practically, this study suggests that material developers and teachers directly involved should consider digital applications such as the Duolingo App, which are structured and tailored to pedagogy, as not only an additional learning tool but also a core source of material integration and learning assessment.

However, this study has several boundaries. It was limited to a specific learning program, namely the UNU Yogyakarta English club program, and the number of research participants was relatively small. The evaluation also focused solely on expert assessments

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and student responses, and did not include them in its assessment of long-term learning effectiveness.

Given the limitations of this study, further research is recommended to analyze long-term effectiveness, involve a larger number of participants, focus on specific English language skills, such as speaking, and compare material development with the integration of other digital applications. This will result in research findings on long-term, more efficient, accessible, and valuable material development.

In conclusion, this study provides a broader discussion on how to develop English learning materials that can be integrated with technology, particularly the Duolingo app, in a structured and systematic manner. The findings of this study are expected to be useful for educators, material developers, and education practitioners by providing insights into English learning materials that are appropriate and interesting for young learners while remaining digitally literate.

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