Design of task-based digital language teaching materials with environmental education contents for middle school students

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Abstract. The year 2020 is almost over, but the COVID-19 pandemic in Indonesia has not been resolved. Distance learning has been implemented since early 2020, but there are still several limitations, one of which is the use of teaching materials. Teachers need to develop teaching materials based on their needs and current situations. Digital teaching materials will be very relevant to use for distance learning because they can be developed interactively. The teaching materials can be accessed via a computer or mobile device. Teaching materials are developed based on tasks. This method was chosen because it can support the distance learning process and can be used by all students, even though the digital devices and networks are limited. In addition, integrating environmental education in learning is currently very necessary so that students have knowledge and foster environmental awareness. Based on this, the purpose of this study is to develop a task-based digital language teaching material design with environmental education for middle school students. This type of research is development research using the Plomp Model (preliminary research; prototype phase; and assessment phase). This study uses descriptive data analysis techniques. The results showed that the teaching materials developed were categorized as very valid and could then be tested on students.

1. Introduction

The aspects of education, nature, and places of reading have been innovated after the internet, technological gadgets and digital tools have been easily accessible everywhere which is characterized by the production of online reading, electronic books and audio books along with printed materials[1]. There is an increasing need to study these new technologies in education[2]. Innovations need to be made to overcome the shortcomings of printed teaching materials by complementing them with other teaching materials with the help of technology[3].

Teaching materials are one of the learning components that play an important role in improving the quality, results and student achievement[4][5]. This is used to assist educators in carrying out teaching and learning activities in the classroom[6], which allows them to teach without having to look at the syllabus because it is designed in accordance with the applicable syllabus and curriculum[7]. However, in addition to being in accordance with the curriculum, quality teaching materials must be able to follow the development of science and technology, and be able to bridge learning so that the specified competencies can be achieved[8]. The important thing to emphasize here is that technology should not be used as an end, but as a means to achieve that goal[9]. This technology requires
educators to innovate and be creative in the implementation of the learning process by facilitating learning that is challenging, active, creative, innovative, effective and fun and student-oriented [10], so that learning is no longer focused on the teacher[11].

Digital teaching materials are an alternative that teachers can use to assist teachers in the learning process. This is a prerequisite for the use of technology in the learning process which is likely to be of interest to the current generation which has a positive influence on student learning outcomes and motivation[9][12]. In addition, it can also improve learning methods to increase student interest in learning and can be used to study anywhere and anytime[13].

Based on observations that have been made, by distributing questionnaires to 108 teachers in West Sumatra, the teaching materials used by teachers in online-based learning show that printed teaching materials still have the highest percentage of usage, namely printed books from the government (75.9%), printed books private publications (24.1%), student worksheets (44.4%). Meanwhile, digital teaching materials only get a percentage of 20.4%. Although the learning process has been carried out online, the teaching materials used are still dominated by printed teaching materials. This could be because teachers are busy making teaching and administrative tasks such as compiling syllabus, lesson plans, and some other compulsory learning equipment [11]; or teachers have difficulty creating digital material using tools available on the Internet[14].

Teaching materials can be developed by applying appropriate learning models / methods [15]–[18]. One learning model that can be used is Task Based Language Learning (TBLL). This is a language teaching approach that engages students in meaningful communication and interaction, which enables them to acquire grammar knowledge through the use of authentic language[19]. It advocates a learning approach that is natural, organic, and process-oriented [20]. Apart from that, it is also claimed to be a multifaceted approach, enabling creative and flexible design using a variety of materials, textbooks, and technology for language classrooms[21]. By having access to reading material, students can control their own learning by selecting texts, adjusting their own time, place, media and reading strategies, and monitoring their progress[22].

Task-based learning is defined as a learning experience that is planned and directed by the teacher to enable students to acquire new linguistic knowledge, but also to increase the knowledge they have[23][24]. This approach can also increase the learning motivation of students[25], because it creates a positive learning environment to increase pleasure and reduce learners' learning anxiety by increasing their self-confidence[26]. In addition, it also provides a way for students to develop and practice creative thinking skills which include asking the right questions, showing empathy, collaborating with peers, making connections, and experimenting[27][28].

Nowadays, communication and information technology extends the range of tasks with online resources, increasing task authenticity and motivation for task execution[29]. This capability makes it possible to create an optimal, highly contextual, interactive, motivating, task-oriented, and authentic task-based language learning environment[30]. Therefore, online task-based language learning is increasingly being used, and has been reported to be effective by many studies [31]. Not only does this help learners improve their skills, but this digital reading response also enables them to exercise their autonomy in planning, carrying out assignments and monitoring their learning progress [22].

Based on the observations that have been made, the Task-based Language Learning approach is the learning approach most widely used by middle school teachers in West Sumatra during online learning. This is indicated by the percentage of 86.1% of teachers using this approach. However, the implementation of this learning is not in accordance with the TBLL process, the teacher is more likely to only give assignments, both individual and group assignments, without considering the principles of the learning approach. The adoption of this approach is related to teachers' limited understanding of TBLL, which hinders them from properly implementing the approach in their classroom[32].

In the last two decades, environmental education has gained significant recognition as theorists around the world have recognized its value[33]. Environmental education is now considered the most prominent instrument for influencing human behavior towards a more environmentally friendl
ypattern[34]. Basically, this is aimed at changing people's behavior to be more environmentally friendly so that it can minimize the impact of human activities on the environment[35].

Environmental education in its intricacies draws ideas from more established scientific disciplines such as science, sociology, philosophy and education[36]. Lack of individual knowledge about environmental issues is the basis of environmental problems & leads to the integration of environmental education in the curriculum[37]. Although the environmental education program takes place every year, there are certain problems that take into account the incorporation of environmental education in the school curriculum, namely the lack of environmental syllabus and textbooks, and the lack of teachers in training[38][39]. Therefore, it is necessary to integrate environmental education in learning for students[40], one of which is learning Indonesian[41]. Therefore, based on this explanation, this study aims to develop task-based digital teaching materials with environmental education for secondary students.

2. Method
The type of research used is development research with the Plomp model (1997) which consists of three stages, namely (1) preliminary research stage; (2) the design stage; and (3) the assessment phase[42]. This research was conducted to develop products and test the effectiveness of these products. The research was conducted to develop products in the form of task-based digital teaching materials with environmental education for middle school students in learning Indonesian. Based on the research stages, this article will explain the results of the research at the design stage. The data analysis technique used in this research is descriptive data analysis technique which describes the validity of the learning model. The research instrument was a questionnaire.

3. Result and Discussions
Based on the needs analysis and literature review, it was found that it is necessary to develop appropriate teaching materials that can be used for the language learning process. Teaching materials are developed to meet the needs of students today by utilizing technological devices. This is because many formal educational environments require learning to be carried out online. Based on this explanation, digital teaching materials can be developed as an alternative to learning by utilizing technology and can be used online.

Teaching materials used in the learning process are not only in the form of tools used to assist the learning process, but need to apply learning models/methods that can become the basis for the learning stages. Therefore, this teaching material was developed by applying Task Based Language Learning (TBLL) learning. In addition, teaching materials will be developed with the content of environmental education, so that in addition to students having knowledge of language, students can have other knowledge that is useful for their lives.

This article will explain the design of a model in the form of steps (syntax) of learning from the teaching materials to be developed. This syntax can be used as a model or foundation for teachers to develop task-based digital teaching materials with environmental education in language learning for the various texts needed. The syntax of the teaching material model can be seen in Figure 1 and is explained as follows.
3.1 Pre-Task
At this stage, the explanation of the teaching materials can guide students about the environment by displaying several environmental conditions in various places. Perhaps presenting waste management, waste management, global warming, preservation of flora and fauna, or topics that were busy at that time, such as the spread of the COVID-19 virus in 2020. Teachers can present illustrations, pictures, or videos that display these topics in various forms of circumstances, both the impact of protecting the environment and the impact of not caring about the environment. Ask students to respond to the matter, comparing the environment around them. These responses can be filled directly on the link inserted in digital teaching materials, by utilizing social learning networks, for example Edmodo.

At this stage, the digital teaching material must have directed students about the text to be studied, and the presentation of illustrations on the teaching material is based on the text. For example, if students study the text of the procedure, the display of teaching materials can display procedures related to the environment, for example the cycle of rain, the stages of waste processing, and so on. This can be used as a basis for pre-tasking.

3.2 Task Stage
Activities that can be done at this stage are to provide instructions to students about what language skills to develop, what types of tasks will be carried out, and how to format the desired tasks so that students can achieve learning objectives. If the task is writing text, then determine whether the task is done individually or in groups. Give a clear explanation of the task in the digital teaching materials developed.

The use of digital teaching materials is expected to assist students in completing assignments, at this stage, the assignments are not directly related to the final product, but there are directions for each stage until the students write a text. For example, students write a procedural text, then students begin by determining the theme of the text, looking for supporting data from various sources, and compiling the text based on the structure of the text. Each of these stages is carried out by students based on
available worksheets on digital teaching materials with social learning network assistance, such as Edmodo.

3.3 Report
Activities carried out at this stage are preparing reports. If the task given is in the form of writing a text, then the report is in text. The text is prepared to be reported to all class members. The report is based on preliminary agreement. If the assignment is in the form of individual assignments, the teacher can select several students to be able to report their assignments in front of all class members. Conversely, if the assignment is in the form of a group assignment, then each group can choose one class member to report the task that has been done. In online learning, teachers can take advantage of the Zoom Meeting application for this learning stage is online learning, teachers can use the Zoom Meeting application for this learning stage.

3.4 Analysis
At this stage, students are asked to analyze the language of the text that has been made. The language is not limited to typos and spelling, but also pays attention to whether the written text is in accordance with the linguistic characteristics of the text. For example, for procedural texts, linguistic characteristics include: using command sentences, using suggestions or prohibitions, using sentences in the passive form, using adverbs of method, descriptions of tools, and descriptions of objectives. At this stage, digital teaching materials must contain guidelines so that students can analyze them systematically. In addition, students must analyze the structure of the text. If students write procedural texts, the language of the text must be in accordance with the structure. For example, the structure in the steps section, must use a command sentence.

3.5 Practice
The practical stage, students improve the assignment, based on the results of the analysis that has been done and report the assignment back. Reports at this stage can publish text on the media, either print or electronic.

3.6 Reflection
At this stage, reflecting on the entire learning process that is useful for teaching in the future. In teaching materials, there are instructions and illustrations about the benefits of learning carried out, especially those related to environmental education so that students have an environmental awareness attitude. In addition, students are given the opportunity to present problems during the learning process and make assignments and the teacher provides solutions to these problems. In online learning, problems and solutions can be conveyed through Social Learning Network (SNL) assistance such as Edmodo.

The design of task-based digital teaching materials with environmental education is modified based on [43][44][45]. Several previous researchers have used this model to be applied to language learning. [45] the modifying model [44] develop task-based learning for translation learning. The learning stage consists of six steps, namely pre-task, task, reporting, analysis, revision, and reflection. The results drawn from this study found tangible development of students translation competence as well as bilingual competence.

[46] implements task-based learning in learning to write recount text for junior high school students. The results showed that the application of task-based learning had many weaknesses in several aspects, including incomplete steps in the implementation at the time of implementation, lack of time when doing assignments and also the use of mother tongue instead of target language by students who made the application of based learning, the task did not work out as expected. He suggested that the assignment should be simpler.
Hadi (2013) modifies the TBL in the process of teaching and learning at the stage of task and report cycle; it used mind maps in helping the students to accomplish the task. Students assumed by using mind map, the modification of TBL, they were easier to speak in front of the class to report the task. Applying the TBL model of [43], for grammar learning. The implementation of this learning is based on the 10 language principles formulated by Ellis [48].

[49] provides an overview of Task-Based Language Learning (TBL) and its use in foreign language learning. It provides an additional stage to consider when planning task-based learning: one of formal and informal assessments. Self-evaluation rubrics and formats emerged as additional constituents of each task cycle. Based on these studies, TBL can be used as an alternative in language learning by considering several things that can hinder or support the learning process when integrated into digital teaching materials.

4. Conclusions and Suggestions
Based on the results of research and discussion, it is concluded that it is necessary to develop teaching materials for language learning. In addition, teaching materials need to be innovated in accordance with developments in science and technology. One alternative that can be used is digital, task-based teaching materials with environmental education. It is hoped that the digital teaching materials developed can also be used in the online distance learning process due to the COVID-19 pandemic.

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