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Developing EFL teachers' competence in designing learning materials through electronic English book design training

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Abstract

This study aims to develop the competence of teachers in designing English learning materials through electronic English book design training. This study was action research. The training was given to 7 English teachers at the Madrasah Tsanawiyah level (Islamic junior high school) with more than 5 years of teaching experience and proficiency in using computers. Data were collected by using product assessment, observation, and interviews. The data was analyzed by using descriptive qualitative analysis. The results show that teachers can create electronic books for English learning after receiving learning technology training with training materials including: (1) designing materials through PowerPoint, (2) changing materials in electronic form through I-spring, and (3) making electronic books with the android extension via APK builder. Indicators of the teacher's competence in designing electronic books include: (1) being able to independently design the content in terms of explanation materials in the form of images, audio, and video and exercises in the form of quizzes equipped with assessments and (2) being able to independently design the appearance or layout of an electronic book consisting of cover, layout, and buttons.
Keywords: EFL teachers' book; teacher competence; training

INTRODUCTION

The use of electronic books has not been an option for many teachers in schools. Even though, electronic books are identical to learning in the digital era. Currently, most teachers and students have computers, laptops, and mobile phones. The use of mobile phones or smartphones can no longer be separated from their daily activities. Nasution et al. (2017) reported that the level of students' motives to have and to use smartphones is high. Likewise, issues related to the negative effect of smartphone use on student behavior have been refuted by the research results of Putra & Wahyuni (2021) who found that there was no significant effect of smartphone use on students' negative social behavior.

Rashid et al. (2019) found that the use of computers, software, and the internet in learning has large positive effects and a few negative effects. Furthermore, the use of mobile phones affects student motivation and achievement (Rahayuningsih & Zede, 2019; Rohmani et al., 2021). This data overview shows that the use of smartphones in learning activities is unavoidable and must receive serious attention from many parties such as the government, school principals, and teachers.

Some previous research about designing English textbooks focused on the content of printed textbooks has been done by many researchers/designers. Teachers' competence in designing electronic English textbooks has not received attention from researchers. As stated by Moiseenko et al. (2019), training for teachers' creativity and reflexivity is important because they are the central facilitators of a foreign language learning process. The previous research related to textbook design was: The first is the form and process of textbook design based on need analysis (Marleni & Asilestari, 2019; Moundy et al., 2022). The second is textbook evaluation (Dobler, 2015; Li, 2016; Setyono & Widodo, 2019). The third is the use of electronic textbooks in learning (Gu et al., 2015; Hurley & Fekrazad, 2020; Joo et al., 2017). The three issues related to textbooks show that the teacher's ability to design and develop textbooks has not been given maximum attention.

An electronic book is a book that can be accessed through mobile devices. It contains learning materials in the form of web links, video clips, and audio files (Dobler, 2015). It is designed by using technological devices thus it can be integrated into mobile technology and a variety of digital resources (Bikowski & Casal, 2018). It also can contain open educational resources (Cozart et al., 2021). Students can access learning materials whenever and wherever they want.

The use of electronic books in schools consciously gives some advantages for learning. Sung et al. (2016) stated that the use of mobile devices in learning can create inquiry-oriented learning this learning orientation is considered effective because it gives students opportunities to learn independently. Moreover, Sun et al. (2012) stated that electronic books provide features that may help students to enhance their involvement in course and learning outcomes.

This study aims to improve EFL teachers' competence in developing learning materials by designing electronic English books. This study complements previous research which tends to only pay attention to the aspects of writing textbooks by researchers or designers and the use and assessment by teachers and students. Technological developments change student learning styles which have an impact on the need for developing learning materials and media. Accordingly, the research question in this study is "How does electronic English book design training improve EFL teachers' competence in developing learning materials?" The research answer provides an overview of the potential for developing electronic teaching materials in schools and becoming input for educational policymaking.

This study is supported by the argument that teacher teaching strategies must be adapted to students' learning styles and needs. In the digital era, students need digital learning models and media. This suitability will affect students' motivation

to learn and help students achieve learning goals. Thus, the teacher's ability to develop learning materials and media is needed to create effective, efficient, and fun learning.

METHOD

Research Method

This study is action research. Action research focuses on solving practitioners' local problems (Johnson & Christensen, 2020). The problem in this study was EFL teachers could not design electronic English books because they never got ICT training for teaching. Therefore, this study was conducted to improve teachers' competence in developing digital-based teaching materials. The material is an electronic English textbook. In this study, teachers' abilities were continuously monitored through product assessments, observations, and interviews. The difficulties and obstacles faced by teachers during the competence training process are evaluated for improvement through two action cycles so that teachers can independently create their electronic English textbooks. The cycle of action research is presented as follows:
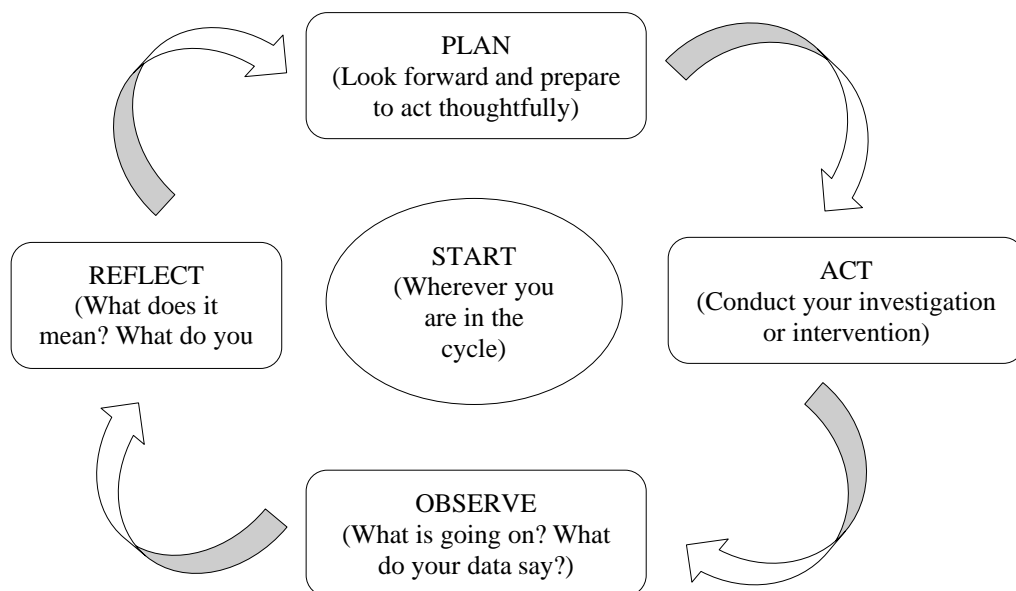

Figure 1. The cycle of action research

Participants

In this study, there were seven teachers as trainees. They were English teachers at Islamic junior high schools. The teachers were selected purposively. They have more than five years of teaching experience and have good computer skills. Experienced and skilled teachers were selected to be respondents because they have experience in compiling teaching materials manually and they can operate computers well. This training focuses on designing electronic English books, such as selection and layout images, audio, video; quiz arrangement; and automatic scoring.

Data Collection and data analysis

Data was collected by using product assessment, observation, and interview. Teacher competence was assessed from the teacher's ability to design electronic books independently and precisely. Product assessment was used to collect data on teacher competence in designing electronic English books. Interviews and observations were used to collect data on teachers' constraints and difficulties in designing electronic books. Product assessment was used to collect data on the accuracy of electronic English books designed by teachers. Indicator of accuracy is completeness of book parts including content and appearance. Book content consists of explanation and description in the form of pictures, audio, and video; quiz including multiple-choice, true-false, matching, and fill-in-the-blank; and scoring. The book's appearance or layout consists of a cover, background, and buttons. Interviews and observation were used to collect data on teachers' independence in designing electronic books. The indicators of independence are the teacher does not ask a lot of questions and asks for help regarding the steps for making an electronic book. Thunman & Persson (2020) stated that independence in learning is when students take responsibility for their learning through self-directed. Learner' independence provides guidance, discovers learning methods, and solves learning problems by himself (Oder & Eisenschmidt, 2018).

Data on the English electronic book's accuracy was analyzed by assessing the completeness of the book. The completeness is assessed by using an assessment checklist including items of content and appearance. Data on teachers' competence in designing electronic English books were analyzed by transcribing, coding, classifying, and concluding data from interviews and observations.

RESULTS

Preliminary study

The printed textbook is still the main resource for learning English at Islamic junior high schools in Binuang Regency, West Sulawesi. The textbook is very helpful for teachers in teaching because textbooks are equipped with material explanations and exercises. The teacher just needs to follow the material and learning steps contained in the textbook. Before the teachers received training on electronic book design, the technology-based learning used by the teachers was learning via WhatsApp. The teachers scan the textbook and send it to students via WhatsApp. Students read explanations of material in textbooks that have been scanned and do assignments on worksheets, then the worksheets are photographed or scanned and then the worksheets are sent to the teacher via WhatsApp. This condition indicates that electronic books have become a necessity for teachers and students. In addition, currently, teachers in schools are equipped with facilities and infrastructure that support the manufacture and use of electronic books, such as computers and mobile phones/smartphones. However, teachers have not been able to develop technology-based media and teaching materials due to a lack of ICT training. Electronic books have the same content and format as printed books. The difference between the two books is in

the media and scoring. Printed books use paper and student work is assessed manually while electronic books use mobile phones or smartphones and student work is assessed automatically.

Cycle 1
Planning
The purpose of training is that teachers can design electronic English books accurately and independently. The planning stage includes the design of training materials and training activities. Training materials include PowerPoint, I-spring, and APK builder.

1. PowerPoint is the basis for making books. Book designs are made using PowerPoint such as layout (cover, layout, and buttons) and learning materials (video, audio, picture, quiz, and scoring).
2. I-spring is used to change book design in PowerPoint into electronic book such as activating buttons to move (next or back), playing video and audio, and setting quiz models, and automatic scoring.
3. APK builder is used to change the book extension to Android.
        Training activities include:
1. Explanation of material about the functions and workings of PowerPoint, I-spring, and APK builder by trainers;
2. Demonstration of E-book creation by trainers;
3. Practice (teacher makes a book with the guidance of a trainer; and
4. Design books personally by teachers.

Action and observation
In the explanation and demonstration activities, the teachers were observed to pay serious attention while taking notes on things they considered important and had the potential to forget. In the practice activities, the teachers seemed to be working seriously, such as looking for pictures, audio, videos, and questions that they could use to develop materials and quizzes. Occasionally, they asked questions to the trainer about the steps for making a book as well as when they experienced problems in compiling downloading material and designing the appearance of a book.

In the training activity, it was found that teachers do not experience significant difficulties in designing electronic English books. Below are the results of interviews with teachers:

Table 1. Teachers' perceptions of electronic English books design

Teachers	Interview data
T1	Making this book is very easy. I did not encounter any problems. I just need to repeat. What is needed in making this book is computer capacity.
T2	I think making this book is very easy. The only problem is the computer.
T3	Regarding some of the steps for making an electronic book, I do not think there are any obstacles. I am having trouble uploading a video. My computer does not support it. I also sometimes forget the steps to change the application.
T4	There were no problems with some of the steps in the creation of this book. I encountered a problem with uploading videos. Maybe the video is too long.
T5	The problem is only the video cannot be inserted in PowerPoint.
T6	The duration of uploading videos is very long. In addition, the problem is forgetting the steps for making this book.
T7	In my opinion, there is no problem in making this book. I just need a long time, mainly uploading videos and changing applications due to computer capacity.

The table shows that all teachers have problems with computer capacity and two teachers have problems with forgetfulness. Teachers did not get problems related to training materials and activity. They get problems related to the facility. Even so, the material that is affected by the limited facilities is only video material. Other materials can be worked on without facility constraints. It indicates that teachers understand training materials and can design the book independently and accurately.

The teacher's ability to design electronic English books can also be seen in the completeness and accuracy of the book's elements. The data can be seen in the table below:

Table 2. The completeness and accuracy of electronic English books in the Cycle One

Teachers	Cover	Background	Button	Video	Audio	Picture	Quiz	Scoring
T1	√	√	√ /dw	X	√ / w	√	√	√ /w
T2	√	√	√ / w	X	√/ w	√	√	√ / w
T3	√	√	√ /w	√	√ / w	√	√	√ /w
T4	√	√	√ /w	X	√/ w	√	√	√ /w
T5	√	√	√ /dw	√	√ / w	√	√	√ /w
T6	√	√	√ /w	√	√/ w	√	√	√ /w
T7	√	√	√ /w	X	√ / w	√	√	√ /w

*W: works DW: doesn't work   *√: available x: unavailable

Table 2 shows that some books are not completed by video and some buttons do not work. The data in Table 2 follows the data in Table 1. Table 1 shows that teachers' problems in designing electronic English books are uploading videos and forgetting the steps.

Reflection
The data on implementation show that teachers understand the training materials in terms of function PowerPoint, I-spring, and APK builder and the steps to design an electronic book. It can be looked at in teachers' products (electronic English books). Some books have a complete content component. However, there are still some books that do not have videos. It is not caused by the teachers' ignorance of the training material but it is caused by inadequate computer capacity. Then, it affects the time and access to the computer for uploading videos. Another problem is teachers sometimes forget design steps.
To solve the teachers' problems above, the researchers prepared two actions for Cycle 2. The first is suggesting the teacher take videos with a short duration and the second is preparing tutorial videos of steps in designing electronic English books.

Cycle 2
Action and observation
In the second implementation stage, teachers independently create and revise their electronic books guided by video tutorials. The interview data shows that video tutorials help teachers remember the steps for making books.

Table 3. Teachers' perceptions of tutorial video

Teachers	Interview data
T1	It helps me remember the steps of making a book because we cannot always ask others if we forget.
T2	It is beneficial that it can be replayed.
T3	It makes it easier because there is a guide to making the book.
T4	It was very useful because I was embarrassed to always ask if I had forgotten.
T5	The video tutorial helped me a lot because I could recall the material for making the book.
T6	It was very useful because to become proficient at making the book, I had to repeat it over and over and I could make it while watching the tutorial video.
T7	The video is very useful because it can be accessed again if we forget the steps.

The table shows that tutorial video is very helpful for teachers. They used the video to enhance the book. The video tutorial also helps teachers learn and work independently without the help of trainers. They can repeat the training material until they are proficient at it.

In this cycle, the improvement of electronic English books made by teachers can be seen in the table below:

Table 4. The completeness and accuracy of electronic English book in Cycle Two

Teachers	Cover	Background	Button	Video	Audio	Picture	Quiz	Scoring
T1	√	√	√ /w	√	√ / w	√	√	√ /w
T2	√	√	√ / w	√	√/ w	√	√	√ / w
T3	√	√	√ /w	√	√ / w	√	√	√ /w
T4	√	√	√ /w	√	√/ w	√	√	√ /w
T5	√	√	√ /w	√	√ / w	√	√	√ /w
T6	√	√	√ /w	√	√/ w	√	√	√ /w
T7	√	√	√ /w	√	√ / w	√	√	√ /w

*W: works DW: doesn't work   *√: available x: unavailable

Table 4 shows that elements of teachers' electronic English books are complete and they work well. Teachers were successful in completing the books with video and fixing buttons in the books.

Teachers' outcome

Based on the interview data, observation, and product assessment in the two circles above, it can be seen that teachers have been able to design electronic English books independently and accurately. Teacher independence can be seen in the teacher's ability to design books without the help of a trainer. The design of the electronic English book produced by the teacher can be seen in the image below:
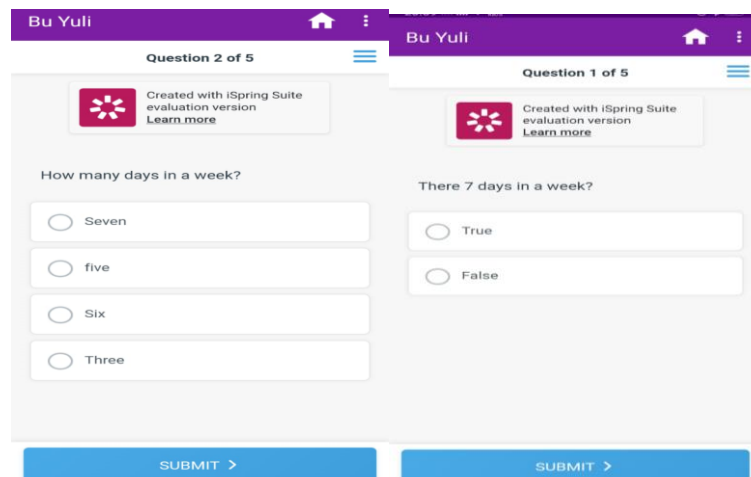

Figure 2. Cover

Figure 3. The window of material and quiz

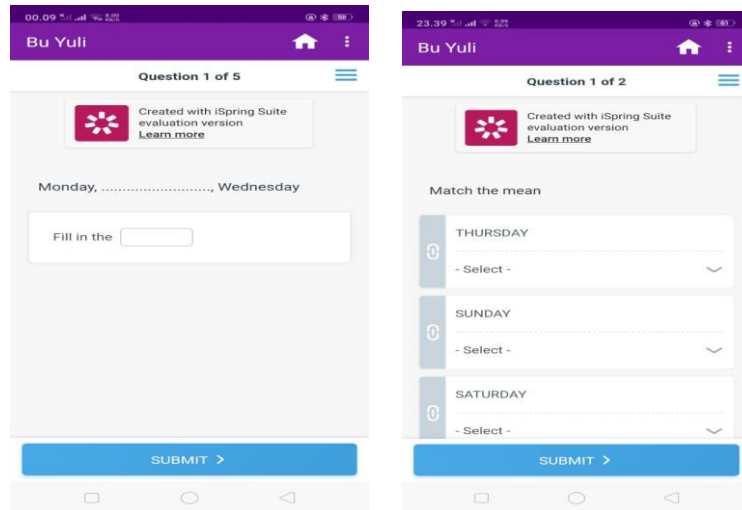**Figure 4. Learning materials (video, picture, audio)**

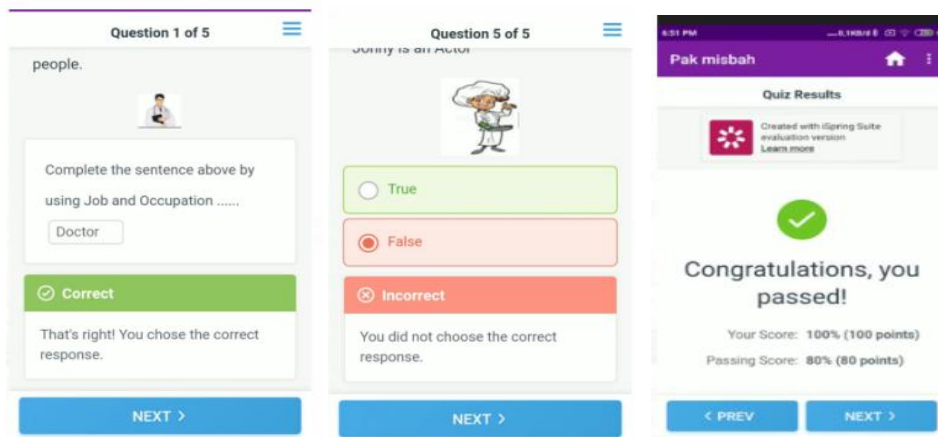**Figure 5. Quiz (multiple-choice, true-false, fill in the blank, matching)**

Figure 6. Scoring

The complete e-book can be seen at the following link:
https://youtu.be/9lqKnPAMeyY
https://youtu.be/A9t4pt64EUU

DISCUSSION

The new approach used in learning technology training is the outcome approach. Learning technology training must be able to produce an intervention such as strategies, materials, products, and guidelines (Murray et al., 2012). This study found that training in designing electronic books can improve teachers' ability to develop technology-based learning materials. This ability can be seen from the teacher's success in producing outcomes in the form of electronic English books independently and accurately. Then, technology-based learning material development training encourages teachers to create materials, media, and teaching strategies that suit the needs of students (Susanto et al., 2020).

This training covers two domains, theoretical domain and practical domain. The theoretical domain relates to knowledge about PowerPoint, I-spring, and APK builder and the practical domain relates to performance to integrate the three materials (PowerPoint, I-spring, and APK builder) to design electronic English books. It indicates that learning technology training develops teachers' cognitive and psychomotor. The training also changes teachers' perceptions, attitudes, and self-efficacy (Hartell et al., 2015; Ying-chen & Kinzie, 2000). Teachers' belief in the value of technology influences the use of technology in teaching (Taimalu & Luik, 2019; Tondeur et al., 2017).

The ease with which teachers understand and practice training materials on electronic book design is due to the basic material of this training, namely PowerPoint. In this design, PowerPoint is integrated with I-spring and APK builder. PowerPoint is a familiar material for teachers. It is the material or media that most teachers use in every technology-based learning activity. It is realized to be effective and efficient in conveying learning material (Bluestein & Kim, 2017; Lawrence & Tar, 2018; Siew-Eng & Muuk, 2015). Therefore, teachers do not experience significant difficulties in understanding the training material.

The use of technology in developing teaching materials and media often experiences problems with facilities and infrastructure. The problems are in the form of device variability, speed, size of resolution, colour, contrast, and memory (Elias, 2011). These problems can affect teachers mentally, causing teachers to refuse to use technology in learning activities (Chen et al., 2019; Shelton, 2017). In this training, computer capacity is a problem for teachers in designing some materials, such as uploading videos. However, these problems do not significantly reduce the quality of the book. Teachers can use several tricks to overcome this, such as using videos that are short and low in size so that problems related to computer capacity do not reduce teachers' motivation in developing technology-based teaching materials.

In addition to the problem of computer capacity, teachers also sometimes forget the steps for making a book which causes some parts of the electronic book to not work. This problem can be solved by making tutorial videos to help teachers remember the steps for making electronic books. Tutorials video can help teachers learn independently because it is considered effective for optimizing understanding and quality of work by reducing weaknesses and difficulties (Lai et al., 2017; Nasir & Bargstädt, 2017; van der Meij & van der Meij, 2016).

CONCLUSION

Training is one of the teacher's efforts in developing professional competence. In this study, it was found that electronic English book design training was able to develop teacher competency in developing technology-based English teaching materials. Teachers can independently design accurate electronic English books. This teaching material development training uses two approaches, namely a theoretical approach and a practical approach. The teacher's ability to design electronic textbooks is because the material used to develop teaching materials is material that is familiar to teachers, namely PowerPoint combined with the I-

spring program and APK builder. Problems related to limited facilities in designing electronic textbooks do not significantly affect the teacher and the quality of the books. Meanwhile, teachers' problems such as forgetting the steps for making a book can be overcome by using video tutorials. This study has not examined the level of student acceptance of the electronic book Therefore, this study calls for further research to conduct it.

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