



Development of Infographic Based Biographical Text Teaching Materials with QR Code Assistance for Class X SMA Students

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ABSTRACT

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Indonesian language learning at SMA Negeri 1 Blitar for biographical text material has not been carried out well due to the use of teaching materials that have not been varied. Teaching materials for biographical text material need to be developed to support the implementation of learning activities. The development of biographical text teaching materials based on infographics with the help of QR codes for class The aim of this research is to (1) describe the needs analysis, (2) describe the development process, and (3) describe the feasibility of product development for infographic teaching materials assisted by QR code biographical text material for class X students at SMA Negeri 1 Blitar. This teaching material was developed based on the Borg & Gall development model which consists of three stages, namely 1) needs analysis as a preliminary study, 2) product development, and 3) feasibility test of the final product. The validity of the product being developed can be determined through material expert validation and media expert validation activities. The validation results show that the biographical text teaching material product based on QR code-assisted infographics for class X students at SMA Negeri 1 Blitar is very suitable for use in the learning process.

KEYWORDS:

Development of Teaching Materials, Biographical Texts, Infographics, QR Codes

1. INTRODUCTION

Teaching materials are an important part of the learning process. Teaching materials are used as an important source of material information for teachers and students. The existence of teaching materials is very important because teaching materials are components that must be studied, scrutinized, studied and used as material that will be mastered by students and at the same time can provide guidance for studying them. Good teaching materials must meet the following requirements (1) Teaching materials are prepared according to the applicable curriculum, (2) Teaching materials are prepared by experts in their fields, (3) These teaching materials should be equipped with activities that support thinking skills and process skills. , attitudes and values, and (4) Teaching materials should reflect aspects of presentation, materials and readability that are appropriate to the level of development of students.

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The existence of teaching materials will help teachers achieve learning goals. Therefore, it is very important for teachers to have the competence to develop good teaching materials in accordance with the required requirements and needs, so that learning materials can be delivered well, and students also have good learning activities. Currently, the teaching materials used by teachers have not been paid attention to. conditions of students and their environment, because teachers generally use commercial teaching materials as a guide in learning. This causes teachers to be too dependent on commercial teaching materials. Teachers' dependence on commercial teaching materials is very high. Teachers prefer to buy teaching materials from publishers compared to making their own teaching materials. The reasons vary, ranging from practicality, lack of time and lack of funds in making teaching materials. However, ideally a teacher should be able to develop teaching materials to support learning, because developing teaching materials is one of the efforts to improve the quality of education.

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Biographical text material is one of the materials that is always taught at high school level, both in the 2013 curriculum and the independent curriculum. According to KBBI, a biography is a history of (a person's) life written by another person (Kamajaya et al., 2017). Biographical texts have unique characteristics compared to other types of texts because they tell the story of a person's life journey. The written content in the text is closely related to the time and place setting in the form of dates, times, place names, city names, and others. Most biographical texts are arranged based on a consequential timeline and most of them are in narrative form. The characters appointed and written in a biography are not just random people. This character definitely has experiences and life stories that can provide lessons for many people. A biographical text tells the strengths, weaknesses, problems and solutions faced by a character.

Biographical texts have important benefits in learning, especially in learning Indonesian. However, in reality, there are still many obstacles found in learning activities, such as students' difficulties in understanding the content of the text and students' boredom in studying the existing material with teaching materials presented rigidly. This research aims to develop biographical text teaching materials based on QR Code-assisted infographics, which can improve the quality of learning and make it easier for students to understand biographical text material. In developing this teaching material, infographics are used to visualize information in biographical texts, so that it can make it easier for students to understand the material. In addition, QR Codes

are used to provide additional information relevant to the material being studied.

II. LITERATURE REVIEW

A. Teaching Materials

Teaching materials are an important component in learning. The teaching materials delivered by a teacher should refer to the objectives outlined in the curriculum. Therefore, teachers have the freedom to develop teaching materials that will be delivered as long as they do not deviate from the objectives (Khadijah et al., 2020). Teaching materials have benefits that have a big influence on the success of achieving learning goals. This opinion is in line with Febriana and Afrianti's opinion that the function of teaching materials can be divided into three, namely the function of teaching materials in classical learning, individual learning, and group learning (Febriana & Afrianti, 2021).

There is a need to develop teaching materials, so that the availability of teaching materials is in accordance with student needs, curriculum demands, target characteristics, and demands for solving learning problems. The development of teaching materials must be in accordance with curriculum demands, meaning that the teaching materials developed must be in accordance with the Independent Curriculum which refers to the National Education Standards, including content standards, process standards and graduate competency standards.

Based on the questionnaire distributed to teachers and students, the available biographical text teaching materials are still not appropriate to the needs of teachers and students. The required teaching materials must be accessible in various ways and can attract students' interest. Infographic-based biographical text teaching materials with the help of QR Codes are presented in attractive, varied and interactive packaging with the hope of becoming supporting teaching materials for teachers and triggers for students in the teaching and learning process. Validation or feasibility testing carried out by experts is the final stage of this development research. The validation results can determine the feasibility level of using this teaching material so that it can be used directly in the target school.

B. Infographics in Learning

Infographics are graphic information which is a visual representation of a collection of data, information and design. In infographics there are visual concepts in the form of structure, systematics, flow and navigation which will become an important part of science in the field of visual communication (Smiciklas, 2012). In simple terms, infographics try to visualize a complex set of data and information by utilizing visual elements such as pictures, graphs, maps and diagrams so that the message will be presented in a way that is fast and easy to understand (Izzah & Wibawa, 2014) (Anggun et al. al., 2020).

Infographics provide many benefits that conventional data presentation does not have. The advantage of visual communication through infographics is that image visualization can replace explanations that are too long, as well as replace tables that are complicated and full of numbers. Visually conveying information has many advantages compared to text, because humans can grasp the information conveyed much more quickly.

C. QR Code

Quick Response Code or what we often call QR Code or can be translated as quick response code. The QR Code consists of a collection of black bars on a white background, and is a unique code for each character. QR Code technology makes it easy to quickly respond to a URL address. This QR Code can be applied in education, for example to go to a certain learning address related to certain material (Zulkarnain Sianipar et al., 2021).

QR Codes are capable of storing all types of data, such as number/numeric, alphanumeric, binary, kanji/kana data. Apart from that, QR Codes have a smaller display than barcodes or barcodes. This is because the QR Code is able to accommodate data horizontally and vertically, so automatically the size of the QR Code image display can only be one tenth of the size of a barcode. Not only that, QR Codes are also resistant to damage, because QR Codes are able to correct errors up to 30% depending on the size or version. Therefore, even if some of the QR Code symbols are dirty or damaged, the data can still be stored and read. Three square-shaped signs at three corners have the function of ensuring that the symbols can be read with the same results from any angle (Sumbogo et al., 2019).

There are a number of commercial and free tools that centers can use to generate QR codes (Wainwright, 2015) (Petrova et al., 2016). On the client side, the user must have a device (phone) that once the code is available, the device can read it. Second, there must be a way to decode it and obtain its contents – either through software pre-installed on the client device (for example, a suitable mobile application), and/or by accessing a remote server to obtain the content or contents. parts of which may require user authentication.

As quoted by Wikipedia, a barcode is a collection of optical data that can be read by a machine. The black and white lines and codes in the barcode area are a collection of different size combinations that are arranged according to certain rules so that they can be interpreted by a reader. According to Malik, a barcode is a code in the form of lines, the thickness of each line varies according to the contents of the code, and the code represents certain data or information (Malik et al., 2010). Barcodes have the ability to store certain data, such as production codes and identification numbers, making tracking easier.

If barcodes are used in business processes, processing can be automated to increase productivity and

reduce human error. Whenever there is a need to identify or track something accurately, barcodes should be used. In a traditional work environment, workers are required to enter large amounts of data into customer database systems. Instead of manually typing customer identification numbers into a database of information, contained in barcodes, data entry may be easily scanned. This increases automation and reduces human error.

Quick Response Code (QR Code) is a type of two-dimensional (2D) bar code that can be read using a barcode reader, QR Code or camera-enabled smartphone with QR reader software. QR codes are capable of carrying information in both vertical and horizontal directions, therefore they are called 2D barcodes. QR code is a registered trademark of Denso Wave Inc. in Japan and other countries (Lyne, 2009). QR codes are popular among mobile phone users because barcodes can be used to store addresses and URLs. With a smartphone equipped with a camera, users can scan pre-coded QR codes to do things like display text, provide contact data or even open web pages in a browser on the smartphone. The QR code specification describes the data or service type for this information. Using this standard ensures that QR code software can read the code correctly. QR codes can be printed and displayed anywhere a mobile phone user can scan a code such as in a magazine or displayed at a cash register. This can also be displayed online (Waters, 2012).

Compared with linear (one-dimensional) barcodes, QR codes have two main functional advantages (Rouillard, 2008). Firstly, due to its high coding data density (approximately 100 times more than a barcode), a QR code can contain significantly more information than a barcode and occupy a comparable space slot (up to 7000 alphanumeric characters), and secondly it is capable of supports character encodings as used in logographic and phonemic writing systems (e.g. Kanji and Kana).

D. Biographical Text

Biography comes from Greek, namely from the words bios which means life, and graphien which means write. A biographical text is a text about the life of a person or character written by someone else. However, if a person's life history is written by that person himself, the result is called an autobiography (Kemendikbud, n.d.). A biography contains the identity and events experienced by a person, including the work and awards they have received and the problems they have faced. The description of identity contains, among other things, name, place and date of birth, family background, educational history, and history of the organization being joined.

A biography is a book about a person's life written by someone else (KBBI, 2022) (Fuad, 2008) (Aulia & Gumilar, 2021). The author as the owner of intellectual property rights or writing is responsible for the legal risks of

the book, while the characters written are only sources. A biographical text is the text of a written work or essay that is written according to the facts of a person's life and inspiring life experiences and then expressed in written form by paying attention to the rules of good and correct language.

The purpose of a biographical text is to find out what actually happened to a character through the experiences of other people, so that students can be inspired and emulate the events experienced by that character. The structure of a biographical text has three stages, namely orientation, events and problems, and reorientation. Orientation, explains the introduction of the character, contains an initial description of the character told in the biography. Events and problems, the part that contains an event or incident that has been experienced. Reorientation, namely the closing part, contains the author's view of the character being told.

III. RESULTS

This QR Code-assisted, biographical text-based biographical text teaching material product was developed in accordance with the learning outcomes in the flow of Indonesian language learning objectives for class X. The Indonesian language learning achievements for class goals, social, academic, and work contexts; (2) understand, process, interpret, and evaluate information from various types of texts on various topics; (3) synthesizing ideas and opinions from various sources; (4) able to participate actively in discussions and debates; and (5) writing various texts to convey opinions and present and respond to non-fiction and fiction information critically and ethically (Kemendikbudristek BSKAP, 2022).

Infographic-based biographical text teaching materials with the help of QR Codes contain learning objectives including (1) listening skills, namely that students are able to understand and analyze information in the form of main ideas and explanatory ideas from biographical texts accurately and critically; (2) reading and viewing skills, namely students are able to analyze descriptive texts to find explicit and implied ideas, thoughts or messages, and students are able to use other supporting sources to accurately examine the use of punctuation and loan words in biographical texts; (3) writing skills, namely students are able to write biographies for various purposes logically and creatively; and (4) speaking and presentation skills, namely students are able to present biographical texts coherently, logically and creatively.

One of the supporting components for preparing this teaching material is the teacher's book and student's book published by the government as a learning guide, especially in the part of the teaching material that will be presented in the lesson. These teaching materials can be used as a reference and tool in the process of achieving general learning goals and still need to be further developed based on the characteristics of students in each region.

IV. DISCUSSION

A. Needs Analysis

Needs analysis is the initial stage in research and development design. Needs analysis aims to obtain the necessary information before starting research. Analysis of teacher and student needs begins with initial data collection consisting of the stage of distributing questionnaires to teachers and students.

This research was carried out as an innovation for the development of infographic teaching materials assisted by QR Code biographical text material which has never been done at SMA Negeri 1 Blitar. The results of the analysis of student and teacher needs were used as a reference in the process of developing infographic teaching materials assisted by QR Code biographical text material for class X students at SMA Negeri 1 Blitar.

Based on a student needs analysis questionnaire, the results showed that the majority of students wanted to learn Indonesian using interactive multimedia using computers, laptops or cellphones. Students want to make learning Indonesian, especially biographical text material, more interesting and easy to understand.

Based on the teacher needs analysis questionnaire, the results showed that the majority of teachers wanted the teaching materials to be complete, for example there were interesting learning videos, in line with curriculum achievements and evaluations to find out how much students understood the material that had been presented. When presenting biographical text material, teaching materials must have questions or reading prompts. The most appropriate evaluation questions in this teaching material are assignments and written tests that analyze a text. The infographic display must be attractive and clear, the sentences used must be clear and communicative. The type of letters used can vary according to needs.

B. Product Development

The initial product preparation was based on the results of an analysis of student and teacher needs regarding biographical text teaching materials by determining the desired learning outcomes. The development product that will be created is biographical text teaching material based on infographics with the help of a QR Code. Infographic-based biographical text teaching materials with QR Code help teachers and students understand the material based on the learning outcomes that will be achieved by students. This

infographic-based biographical text teaching material with the help of a QR Code has instructions for use. The material in the development product is assisted by a QR Code which has links to further material. Using this product requires internet access or is used online so that students can also study independently.

The development of teaching materials can be carried out in addition to meeting students' needs for information and knowledge, it can also be an alternative for educators to develop their abilities morally and financially. The teaching materials developed must meet feasibility and effectiveness assessments, so that they can be used optimally by students. Students are able to achieve learning goals and gain knowledge, and can apply moral values in everyday life, especially in their learning activities at school.

The initial product preparation was carried out based on the results of an analysis of student and teacher needs by determining the desired learning outcomes. The product of developing infographic teaching materials assisted by QR Code, this biographical text material is a biographical text teaching material that has a design that uses infographics to convey material to students with the hope that they will be interested and motivated to carry out learning in class. Infographic-based biographical text teaching materials with the help of QR Codes can be used in a hybrid way, namely printed and accessible via smartphone, laptop or computer that can scan QR Codes.

C. Product Feasibility

The data obtained from testing teaching materials varies, this difference aims to ensure that the assessment of teaching material suitability test subjects only focuses on certain aspects according to their respective expertise. Validator one assesses aspects of content and language, validator two assesses aspects of learning planning and media, teachers as practitioners assess aspects of the effectiveness and efficiency of teaching materials, systematics of teaching materials, language, and appearance of teaching materials. Students assess teaching materials and measure the ability of biographical texts after using teaching materials developed by researchers.

The validation sheet filled out by the validator is obtained in percentage form with a measurement scale using a Likert scale, namely using a scale of 1 to 4 with a range of strongly disagree, disagree, agree and strongly agree.

No	Test Subjects	Assessment Aspects	Percentage of Trial Results	Average Percentage	Criteria
1	Expert Validator 1	Content Aspect	97,2%	96,5%	Very Worth It
		Language Aspects	95,8%		
2	Expert Validator 2	Learning Design	91,67%	92,1%	Very Worth It
		Media Aspect	92,5%		
3	Practitioner (teacher)	Effectiveness of Teaching Materials	91,7%	94,1%	Very Worth It
		Systematics of Teaching Materials	95,8%		
		Language Appearance Teaching materialsr	94,4%		
4	Learners	Product Eligibility	87,3%	89,3%	Very Worth It
		Retention of material	91,25%		
Average trial results				93%	Very Worth It

From the table above it can be concluded that the average score of the four research subjects is 93%. The validation results are included in the very feasible category and can be implemented as Indonesian language teaching material for class X biographical text material at SMA Negeri 1 Blitar.

The cover of the teaching material uses a photo taken directly by the researcher. The image on the cover is a statue of Bung Karno which is located at the intersection of Jalan Imam Bonjol and Jalan S. Supriadi. Beside the statue there is also the writing 'Welcome to BLITAR BUMI BUNG KARNO CITY'. The cover of teaching materials with a picture of a proclaimer of the pride of the Indonesian people is very appropriate for biographical text material. The text on the cover also includes Biographical Text and class X material. The contents of the teaching materials are also listed on the cover page.



V. CONCLUSION

This teaching material was developed based on the Borg & Gall development model which consists of three stages, namely 1) needs analysis as a preliminary study, 2) product development, and 3) feasibility test of the final product. The validity of the product developed can be determined through material expert validation and media expert validation activities. The validation results show that the infographic-based biographical text teaching material product with the help of a QR code for class X students at SMA Negeri 1 Blitar is very suitable for use in the learning process.

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