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Development of an E-Catalog of Dutch Colonial Relics in the Bekri Region of Central Lampung as a Local History Learning Resource

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ABSTRACT

This research addresses the need for localized history learning resources by developing an E-catalog of Dutch Colonial Heritage in the Bekri area of Central Lampung for use in SMAN 2 Metro. The objectives are: (1) to analyze students' learning needs, (2) to design an E-catalog as a local history learning source, and (3) to assess expert and practitioner feedback on the E-catalog design. The study employs the Research and Development (R&D) method. Data collection techniques include observation, interviews, questionnaires, and documentation. The validation process involves both media and material experts, followed by small group testing. The developed E-catalog showcases various Dutch colonial buildings from 1916 to 2024 in Bekri. Validation results indicate high feasibility. Material expert validation yielded an 80% score, categorized as "very good," while media expert validation scored 91%, also categorized as "very good." In small group testing involving ten students, five students rated the E-catalog as "very suitable" (100%), one student gave a "very suitable" score of 90%, one student rated it 85% ("very decent"), two students rated it 80% ("decent"), and one student rated it 60% ("quite decent"). The findings suggest that the E-catalog is a valid and effective local history learning resource. However, further large-scale testing is recommended to generalize the results. Future research may explore integrating interactive elements to enhance student engagement.

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1. INTRODUCTION

Education is the most critical key to human life today(Setiawan, Aman, & Wulandari, 2020; Yildirim, Elban, & Yildirim, 2018). Because basically, the quality of a nation is determined by the education it has (Boty, Dardiri, Sunarso, Setiawan, & Fadli, 2023; Henriksen, Richardson, & Shack, 2020; Razali, Joebagio, & Sudiyanto, 2018; Takenaka & Soga, 2019). This is confirmed in Anis statement that if a nation has good quality education, then this will create and produce good quality human resources as well (Anis, Putro, Susanto, Hastuti, & Mutiani, 2020). Every human being's education cannot be separated from the learning process (Claravall & Irey, 2021; Lin, 2018; Rokhman & Yuliati, 2010;

Wijayasari, Kurniawati & Winarsih, 2020). Learning is very important because at this stage the interaction process occurs between the teacher and the students (Pratama, Pratiwi, Saputra, & Sumargono, 2022; Puspitarini & Hanif, 2019). Learning should not only focus on cognitive aspects but also psychomotor and emotional aspects. This is also commonly seen in history learning which has a strategic role in shaping the character of students (Adli & Fatimah, 2019; Toraman, 2020).

Learning history is important because it helps people understand the origins of their culture and identity (Brew & Saunders, 2020; Claravall & Irey, 2021; Ningsih, Sariyatun, & Sutimin, 2019; Watz, 2011). By studying history, each individual is able to construct a realistic, empirical way of thinking that is appropriate to existing phenomena(Turiman, Omar, Daud, & Osman, 2012). Alvares states that history learning tries to be a bridge between the past, which is impossible to observe directly and the currents surrounding human life so that forgetting can be minimized (Álvarez-Martínez-Iglesias, Molina-Saorín, Trigueros-Cano, & Miralles-Martínez, 2021). Learning history will help humans realize the nature of the development of human culture and civilization, based on the results of the learning process, which will later be called historical awareness (Grever & Adriaansen, 2019; Sakki & Pirttilä-Backman, 2019; Seixas, 2017).

Edling states that historical awareness is a tendency to think that reflects the positive values of a historical event in everyday life, thereby making an individual wiser in understanding and interacting with various problems in life. In fact, Historical awareness is more easily instilled in students if they know the history of the area where they live or know the local history that occurred in an area (Edling, Sharp, & Sharp, 2020; Sung, 2020).

The existence of local history materials included in history learning is very meaningful in discussing in detail a local historical event phenomenon(Birsyada & Permana, 2020; Ivygina, Pupysheva, & Mukhametshina, 2018). By understanding local history for students, it is hoped that they will be able to provide awareness as a nation that understands local history, especially in its region (Amboro, Setiawati, Setiawan, & Rasmana, 2021; Kuldas, Ismail, & Hashim, 2013; Warsah, Morganna, Uyun, Hamengkubuwono, & Afandi, 2021). In learning, including history learning, the teacher is a facilitator and motivator for students, and history learning will be good if it is supported by the availability of excellent learning resources and is based on the theory of the cone of experience developed by Edgar Dale by applying learning through action by expanding Understanding learning resources and learning approaches can support a more effective learning process (Mamoura, 2013). Based on previous research conducted by Gay to find out learning resources that support the learning process, there is a need for learning resources that are used to introduce interesting information content according to the theme of the learning resource, such as e-catalogs (electronic catalogs) (Gay, 2012).

Learning resources are not only e-catalog but can cover various things, including museums, cultural heritage, economic activities, natural resources, and regional potential. By using historical learning resources that suit students' needs, students can increase their understanding of history and culture. This is the case with the use of learning resources in the form of e-catalogs (Sukardi, Charunisa, & Hermansyah, 2021). Taranenko states that an e-catalog is an information system that contains a list of images or specifications for the type of image contained in the e-catalog. Learning using e-catalogs aims to improve students' ability to learn independently by knowing the objects they are looking for to understand the information without having to read a lot of text. Because the e-catalog contains information related to the image of the object contained in the e-catalog which is written briefly and clearly (Taranenko, 2019).

Based on a pre-survey conducted at SMAN 2 Metro, the availability of learning resources is dominated by print learning resources available in the library. Non-print learning resources are still not optimal in learning, especially in history learning. This is because their availability is not sufficient and learning seems very monotonous so it does not attract students' attention. The availability of historical learning resources that contain local history is still very limited, and only a few local history learning resources in the form of books are available in libraries. For the context of understanding local history among students at SMAN 2 Metro, there are still many who do not know about local history

and the legacy of that history, especially for the Bekri area, which in fact at that time was one of the supports for the Dutch economy and was located not far from the city Metro. Previous research was still limited to describing an inventory of potential cultural heritage heritage from the Dutch colonial period in the Bekri area of Central Lampung in 2019. There are several problems above, so that these can be resolved, researchers will develop a historical E-catalog.

2. METHODS

2.1. Development Model

Based on its type, this research uses development research methods (Sugiyono, 2020). The development intended to create a product is the development of an E-catalog of Dutch colonial heritage in the Bekri area of Central Lampung as a source for learning local history. It is hoped that the e-catalog can support a history learning process related to local history material. The development model used in this research is the Sugiyono development model.

2.2. Development Procedures

The development research stage only tests product designs that will be developed internally through the opinions of a team of experts (Djamas, Tinedi, & Yohandri, 2018; Hamid, Hashim, Khan, & Ubaidullah, 2022; Kwangmuang, Jarutkamolpong, Sangboonraung, & Daungtod, 2021). The expert team consisted of material experts and media experts, each of whom came from history education lecturers at Muhammadiyah Metro University as well as history subject teachers and ICT subject teachers at SMAN 2 Metro. In determining a team of experts to test product designs, researchers used purposive and snowball sampling methods. Purposive and snowball sampling are sampling techniques with certain considerations (Fadli, Sudrajat, Aman, & Amboro, 2021; Kusdarini, Sunarso, & Arpannudin, 2020; Takko et al., 2020).

Once it is declared feasible, the product development will be tested or asked for opinions from respondents, namely students or potential users, to provide an assessment. The assessment in question is a questionnaire sheet that contains statements regarding product development. Researchers will conduct trials on 10 potential users (Respondents). However, before it can be declared suitable for the product being developed, internal testing needs to be carried out. Internal testing is carried out in two stages, namely internal testing stage 1 and internal testing stage 2.

2.3. Data Collection Instruments

2.3.1. Expert Team Validation Instrument

The expert team's validation instrument is a test of the product to be developed so that the data obtained can solve problems (Aman, 2019a; Ofianto et al., 2022; Wijnen, Walma van der Molen, & Voogt, 2021). The data used will later be able to increase the effectiveness, attractiveness, and efficiency of the products being developed. Product validation instruments were given to teams of material experts and media experts(Setiawan, Sudrajat, Aman, & Kumalasari, 2021).

2.3.1.1. Material Expert Validation Instrument

This instrument takes the form of a questionnaire in the form of the suitability of the content of the E-catalog material being developed, which is given to 2 material experts to assess the suitability of the material presented. Material experts assess indicators of the appropriateness of the content of the material and the grammar used.

Table 1. Material Expert Instrument Grid

Aspect	Assessment Item	Number of Items
Eligibility	1. Fill in the e-catalog according to the topic of discussion	1
	2. The material density is appropriate	1
	3. The content of the material is clear and easy to understand	1
	4. The truth of the content of the material is viewed from a scientific aspect	1
	5. The material contains elements of local history learning	1
Presentation	6. Presentation of titles in accordance with the material	1
	7. Presentation of images in accordance with the content of the material	1
	8. The explanation of each sub-theme is in accordance with the material and its meaning	1
	9. The closing section is in accordance with the content of the material	1
	10. Presentation of the bibliography according to the reading sources used basic information in the e-catalog	1
Language	11. Use appropriate and correct language rules	1
	12. The language used is easy and understandable	1
	13. The language used refers to compliance with general spelling guidelines Indonesian	1
	14. Consistent order and accuracy between paragraphs	1
E-Catalog Assessment	15. The presentation and discussion of history emphasizes strengthening the cultivation of local history	1
	16. E-catalog from the Dutch colonial period can be studied by students without the help of educators (self-instruction)	1
	17. The ability of the material to increase students' understanding of history learning, especially local history	1

2.3.1.2. Media Expert Validation Instrument

This instrument takes the form of a questionnaire in the form of product development validation given to 2 media experts. Media experts assess the feasibility of the product being developed by assessing it in terms of the images, writing, and colors used.

Table 2. Media Expert Instrument Grid

Aspect	Assessment Item	Assessment amount
Cover Design	1. Cover design of e-catalog interesting	1
	2. The physical performance of the e-catalog is attractive	1
	3. The cover color of the e-catalog is attractive	1
	4. Displays a good and harmonious center of view.	1
	5. The appearance of the cover layout elements is harmonious and consistent	1
	6. Composition and size of layout elements 1 (title and image) appropriate and consistent.	1
	7. E-catalog is easy to use	1
	8. The images in the e-catalog are clearly visible	1
	9. The use of variations in letter form (boldness, italics and font size) is not excessive	1
	10. Usage (size, font, margin space) Clear	1

Design Aspects	11. The separation between paragraphs is clear and consistent.	1
	12. The image corresponds to the discussion material	1
	13. Layout images using appropriate titles, text and numbers	1
	14. The image size looks harmonious and is equipped with captions	1
	15. The location of images and text is in harmony	1

The next process is that in this research the researcher carried out an analysis using a Likert scale to determine the assessment scale. The Likert scale is used in developing instruments that will be researched and used to measure opinions, perceptions, and attitudes. The following is a Likert scale table and score weights according to Sugiyono(Sugiyono, 2020):

Table 3. Likert Scale

Category	Score
Strongly agree	5
Agree	4
Undecided	3
Disagree	2
Strongly disagree	1

The percentage results used are used to provide answers to the suitability of a product from the aspects studied. Next, to determine the feasibility of a product, researchers divide the feasibility categories. There are 5 divisions of eligibility categories and the scale uses a number range of percentages and values of a minimum of 10% and a maximum of 100%." The following is a table of eligibility categories according to Arkianto as follows:

Table 4. Eligibility Category

Percentage of Achievement	Interpretation
>21%	5
21%-40%	4
41%-60%	3
61%-80%	2
81%-100%	1

Data collection in this research used qualitative methods. Data collection techniques using qualitative methods can be used by means of observation, interviews, questionnaires, and documentation (Aman, 2019b; Ashaver, 2013). The method is explained as follows: (a) Observation, at this stage, observations were carried out at SMAN 2 Metro to find out the situation at school, and observations were also carried out at PTPN7 Bekri, (b) Interview, at this stage interviews were conducted with history teachers, several class XI students, and PTPN7 Bekri employees. (c) Questionnaire, questionnaires were used in this research during the product evaluation and trial stages. The questionnaire was given to a team of material and design experts consisting of history lecturers at Muhammadiyah Metro University and history teachers at SMAN 2 Metro as well as 10 students to carry out internal trials. (d) Documentation, in this research, the documentation required is in the form of photographs of heritage evidence, data in the form of validation questionnaires, and photos of internal test activities.

3. FINDINGS AND DISCUSSION

3.1. Needs Analysis

3.1.1. Description of History Learning Resources at SMAN 2 Metro

Based on the results obtained in the field through observations and interviews regarding history learning resources at SMAN 2 Metro conducted with the history subject teacher, namely Mrs. Nova Indahyani, it was found that the use of learning resources in history subjects was stated to be quite good. However, the learning resources used focus more on textbooks that have been provided in the school library, teachers also allow students to search for other references via the internet regarding learning materials discussed during the learning process and usually teachers also assign students to look for materials. other materials in the school computer lab. SMAN 2 Metro also provides suggestions for infrastructure that supports learning activities in class, one of which is a good internet network (WIFI) which is provided in every class. According to Mrs. Nova Indahyani's statement above, the learning resources used at SMAN 2 Metro are still limited, namely textbooks and other references from the internet via cell phones and computer labs to support the learning process. The conclusion from the results of the interview conducted with Mrs. Nova Indahyani a history subject teacher at SMAN 2 Metro is that the learning resources used in the learning process to date are still very dependent on textbooks and references via the internet. For learning resources, especially in technology-based history subjects such as e-books, e-modules, flip books, and e-learning catalogs, are still not used at SMAN 2 Metro. Apart from that, local history material is still very limited, in fact, it is very important to teach local history material to students to get to know the local history of the area where they live.

3.1.2. Description of History Learning Resources at SMAN 2 Metro

Based on the results of the research process carried out by researchers at SMAN 2 Metro, researchers analyzed and came to conclusions regarding the needs of the existing problems, namely that what was needed at SMAN 2 Metro was the development of learning resources, especially in historical material that contained local history and utilized technology advances. Learning resources that follow technological advances that are expected and needed at SMAN 2 Metro include e-books, e-modules, flip books, and learning e-catalogs as will be developed by researchers. Therefore, researchers developed a learning resource in the form of an E-catalog which contains local historical information regarding the historical remains of the Dutch colonial period in the Bekri region of Central Lampung. The e-catalog that researchers are developing can later be accessed via an Android smartphone anytime and anywhere.

With the development that includes local history carried out by researchers, it is hoped that students will be able to know that in Lampung, especially in areas that they consider less familiar, such as the Bekri area, there was an occupation during the Dutch colonial period that led to the establishment of a palm oil factory for the benefit of the Dutch at that time, which is now known as name PTPN7 Bekri. By studying local history material, students become more familiar with the local history around where they live.

3.1.3. Product Design to be Developed

Based on the needs analysis obtained by researchers based on conditions in the field, they need learning resources that contain local history following technological advances and developments. So the researchers developed an E-catalog of various buildings left over from the Dutch colonial period in the Bekri area of Central Lampung which it is hoped will later become a learning resource that can attract students' interest in learning about local history. The material preparation stage was carried out on January 9 2024 by collecting information from various sources regarding PTPN7 Bekri along with any relics from the Dutch colonial period that still exist today. Sources containing information about PTPN7 Bekri and its legacy were obtained through direct observations and interviews with PTPN7 Bekri employees and sources from journals. The following is the arrangement of the contents of the e-

catalog material: Cover, Foreword, Learning objectives, Learning competencies, Concept map, Table of contents, Part I Introduction, Part II History of the establishment of the Bekri business unit, Part III PTPN7 Bekri Afdeling distribution system, Part IV Variety of buildings Relics of the Dutch Colonial Period in the Bekri Region of Central Lampung, Part V Conclusion, Bibliography, Author profile.

3.1.4. E-Catalog design

Figure 1. Front cover of the E-catalog

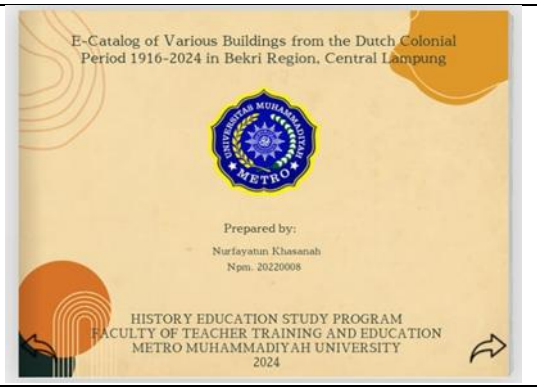

Figure 2. Cover section in the E-catalog

The image above is the front cover and inside cover of the E-catalog being developed. The cover is made as attractive as possible with a combination of colors and customized images. The front cover contains the title and regional address of the various buildings featured in the E-catalog. The inside cover contains the title of the E-catalog, the Muhammadiyah Metro University logo, the name of the E-catalog compiler, and the university institution of the compiler. On this page it is displayed in landscape form and uses a glacial indifference font type.

3.1.5. Presentation of Development Result

The e-catalog that has been developed is then carried out in the validation stage by material and media experts. The material expertise was carried out by a history lecturer at Muhammadiyah Metro University, namely Mrs. Elis Setiawati, M.Pd, and a history teacher at SMAN 2 Metro, namely Mrs. Nova Indahyani, S.Pd. Meanwhile, media experts were carried out by a history lecturer at Muhammadiyah Metro University, Mr. Bahtiar Afwan, M.Pd, and an ICT teacher at SMAN 2 Metro, Mr. Abu Hamas, S.Pd.

At the validation stage, each validator fills in a questionnaire given by the researcher by placing a check mark (√) in the score column, paying attention to the statements provided. Meanwhile, students fill out the questionnaire using a Google form by simply clicking on the number provided, paying attention to the statement regarding the assessment aspects. Calculation of results from completed questionnaires uses the formula provided in CHAPTER III and the eligibility percentage. The following is a presentation of the product validation data developed:

3.1.5.1. Material Expert Validation

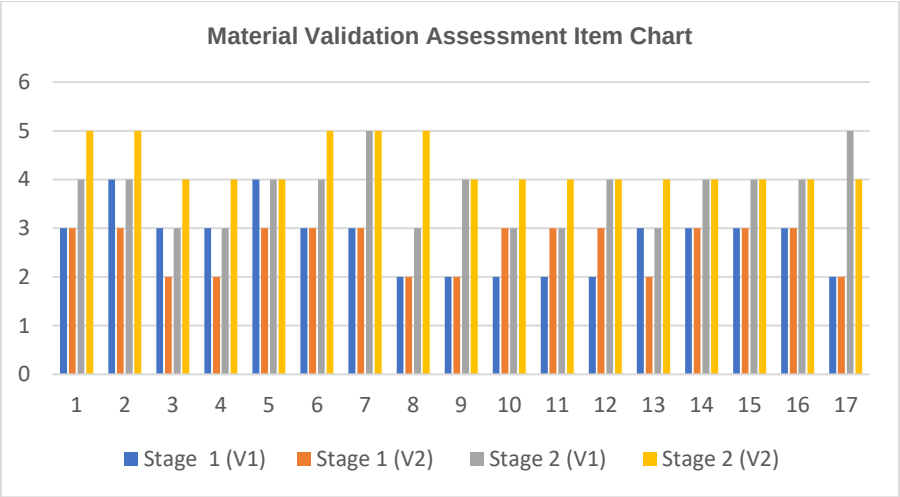

Figure 3. Graphic of material validation assessment items.

In the graph above, you can see the results of each assessment, where at stage 1 the assessment was still low in assessment aspects number 8, 9, and 17, namely in criteria 4. From these results, it can be said that assessment aspects number 8, 9, and 17 still need revision based on suggestions. Then a revision stage was carried out to improve it and then validation was carried out again at stage 2. At stage 2, there was quite a significant improvement in graphics in assessment aspects numbers 8, 9, and 17. The assessment was still low at stage 2 in assessment aspects number 3, 4, 10, 11, and 13. Meanwhile, the highest assessment in stage 2 is in assessment aspect number 7. So from the graph above it can be concluded that the results from stage 2 validation are better than stage 1. Below are graphs on each aspect of the assessment:

From the validation results, it can be seen the average assessment of the material validators for stages 1 and 2 in the table as follows:

Table 5. Data for stage 1 material validation.

Validator Assessment	Number of Assessment Scores	Average Number of Eligibility	%	Description
1	47	0.55	55%	Suitable for use with revisions based on suggestions
2	45	0.52	52%	Suitable for use with revisions based on suggestions
Total score	92	0.54	54%	Suitable for use with revisions based on suggestions

From the data table on the results of stage 1 material validation above, the assessment given by validator 1 obtained a total assessment score of 47, the average number of feasibility was 0.55, a percentage of 55% entered the statement as quite suitable for use with revisions based on suggestions. Meanwhile, the assessment given by validator 2 obtained a total assessment score of 45, the average number of feasibility was 0.52, and a percentage of 52% was included in the statement as quite suitable for use with revisions based on suggestions. For the total score from validators 1 and 2, the total assessment score was 92, the average number of eligibility was 0.54, and the percentage was 54%. So to obtain the total score included in the information it is quite feasible to use it with revisions based on

suggestions. In stage 1 validation, we received comments and suggestions from material validators 1 and 2 as follows:

Table 6. Comments and suggestions from material expert validation stage 1.

Material Expert Validator	Comments and Suggestions
Validator 1	It is not yet suitable for use, it needs to be revised in the arrangement of numbers on each building variety image to make it easier to compile the e-catalog.
Validator 2	Writing e-catalogs is quite good
	The suggestion is that the title should be written with the sentence "E-catalog" clarified.
	The bibliography is more customized The closing section is more clear
	When writing a cover, it is best to write the title first, the university symbol, the author's name and NPM, and department

Based on the table of comments and suggestions provided by the validator of material 1 and 2 above, the researcher will make improvements to the e-catalog which was developed based on the comments and suggestions provided by the validator so that it is better and achieves feasibility. After making improvements, the researcher carried out stage 2 validation, the following table shows the results of stage 2 validation:

Table 7. Data for stage 2 material validation.

Validator Assessment	Number of Assessment Scores	Average Number of Eligibility	%	Description
1	64	0.75	75%	Worth using with revisions
2	73	0.85	85%	Very worth using
Total score	137	0.80	80%	Very worth using

From the data table on the results of stage 2 material validation above, the assessment given by validator 1 obtained a total assessment score of 64, the average number of suitability was 0.75, a percentage of 75% entered the information suitable for use with revision. Meanwhile, the assessment given by validator 2 obtained a total assessment score of 45, the average feasibility score was 0.85, a percentage of 85% considered very suitable for use. For the total score from validators 1 and 2, the total assessment score was 137, the average number of eligibility was 0.80, and the percentage was 80%. So to obtain the total score, it is very suitable to use the information in the description.

Table 8. Comments and suggestions from stage 2 material expert validation.

Material Expert Validator	Comments and Suggestions
Validator 1	Worth using with minor revisions.
Validator 2	The e-catalog is in accordance with the topic of discussion and the title matches the content of the material. According to validator 2, e-catalog writing is suitable for use as a learning resource.

Based on the table of comments and suggestions provided by material validators 1 and 2 at stage 2, each validator stated that the e-catalog that the researcher had developed had been declared feasible

so that the researcher could proceed to the next stage, namely designing the e-catalog and was ready to be validated by media experts.

3.1.5.2. Media Expert Validation

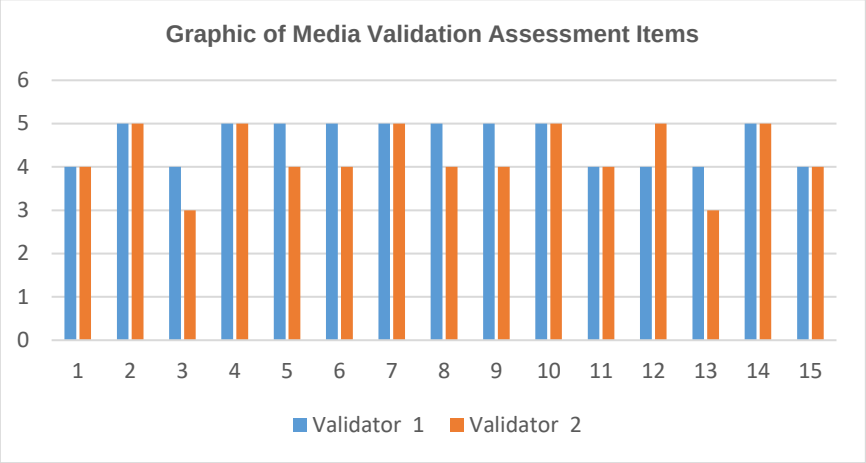

Figure 4. Graphic of media expert assessment items.

In the graph, the media expert validation assessment was carried out in only 1 stage because validators 1 and 2 thought that the media created for the e-catalog being developed was very suitable for use if seen from every aspect of the assessment given to the validator. The assessment given by each validator almost gives the same assessment and the highest assessment given by each validator falls into criterion 5 "strongly agree" while the low assessment given falls under criterion 3 "doubtful". Can be seen in the graphic image above.

From the validation results, the validator only carried out one stage of validation, and this was because the validator considered that the media validation was carried out by paying attention to the assessment aspects given by the researchers of the media (design) e-catalog being developed was very suitable for use so that the average assessment could be known. Given by media expert validators 1 and 2 in the following table:

Table 9. Media expert validation data

Validator Assessment	Number of Assessment Scores	Average Number of Eligibility	Persentase	Description
1	70	0.93	93%	Very suitable for use
2	64	0.85	85%	Very suitable for use
Total score	137	0.91	91%	Very suitable for use

3.1.6. Respondent Data

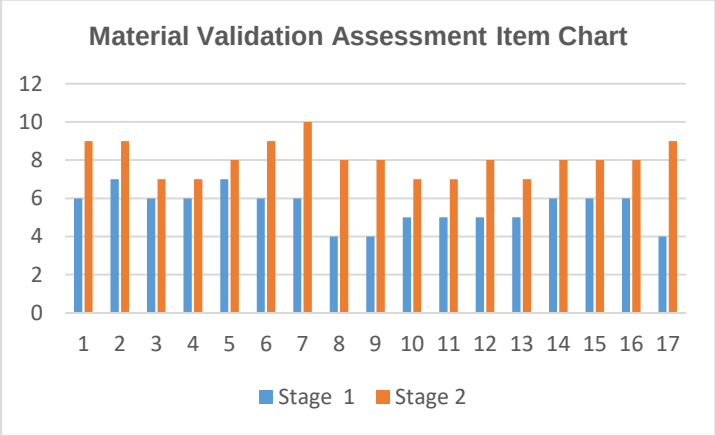

Figure 5. Respondent assessment indicators

In the graph above, you can see the progress of students at the small group trial stage using the e-catalog that has been developed by researchers. The results of the data in the graph above shows that the highest assessment given by students to the e-catalog developed by researchers obtained an assessment percentage with a score of 100% in the very suitable for use category, namely there were 5 students who gave the highest assessment percentage. The lowest assessment percentage was only given by 1 student with an assessment score of 60% in the category quite suitable for use with revisions based on suggestions. Meanwhile, other students provide assessment percentages with scores of 80%, 85%, and 90%, which are very suitable for use as well. It can be seen from the results of the graph above that it can be concluded that the average assessment given by student respondents to the e-catalog developed by the researcher is in the category of very suitable for use.

3.1.7. Product Revision

The development of the e-catalog featuring various Dutch colonial buildings (1916–2024) in the Bekri area of Central Lampung followed a structured validation process to ensure the product's quality and usability. This process involved multiple stages of expert validation by both material and media specialists. Initially, the e-catalog underwent material expert validation in two stages. After the first stage, the validator provided critical feedback and suggestions, prompting necessary revisions to improve content accuracy and relevance. Following these revisions, the second stage of validation confirmed the e-catalog as valid and highly suitable for use. In contrast, the media expert validation was completed in a single stage, with the product receiving immediate approval as valid and very appropriate for educational purposes. Each revision phase was carefully guided by the validators' input, ensuring the final product met high standards of quality. A comparison between the pre-revision and post-revision versions demonstrates significant improvements in both content and design, reflecting the constructive role of expert feedback in the development process.

3.2 Discussion

Based on research conducted by researchers to determine the analysis of learning resource needs at SMAN 2 Metro, the results are that SMAN 2 Metro needs learning resources, especially for technology-based history learning containing local history. Nova Indahyani, a history subject teacher at SMAN 2 Metro, stated that the technology-based learning resources needed include e-books, e-modules, flip books, animated learning videos, and learning e-catalogs. So from these results, the researchers developed e-catalog learning resources by designing the overall format starting from the material content and media layout according to existing provisions and then went through a validation stage carried out by media experts and material experts.

After carrying out several stages starting from validating material experts, and media experts and distributing questionnaires to student respondents, then the experts and trainees provided several comments and suggestions given by each expert so that the material content and design for the e-catalog were improved. Comments and suggestions from the validator team are as follows: Material Expert: (1) Not yet suitable for use, needs to be revised in the arrangement of numbers on each building variety image to make it easier to compile the e-catalog. (2) The e-catalog writing is good enough. (3) The writing of the title is clarified with the sentence "E-catalog". (4) The bibliography is more adjusted and the closing section is clearer. (5) For the cover, it is best to write the title, symbol, author's name, NPM, and department. Media Expert: It is suitable to be used as a learning resource for students. The suggestions on the cover are made a little more interesting and the learning objectives section is made more specific.

Based on the results of improvements received by researchers, experts, and practitioners stated that the material and design of the e-catalog developed were declared very suitable for use as a local history learning resource for students. This is based on the results of validation stages 1 and 2. With the results of statements that are very suitable for use given by experts and practitioners regarding e-catalogs which are used as a source of learning local history, it is hoped that the e-catalogs that are developed can strengthen the understanding of local history of the students(Fauzi & Kumalasari, 2020; Ma'unah, Umamah, Sumardi, & Afita Surya, 2018; Sayono, Jauhari, Ayundasari, & Sulistyo, 2020; Sukardi et al., 2021).

The e-catalog of various buildings left over from the Dutch colonial period 1916-2024 in the Bekri area of Central Lampung has been designed to meet student's needs for learning resources in understanding local history material so that it has an attractive display design so that students are interested in understanding the material(Clarke & Lee, 2004). In the e-catalog developed by researchers, there is a voice feature that students can use to understand the material when students do not want to read the material. The way to use the voice feature is by clicking on the tap to voice section and then listening to the explanation of the material from the voice. In presenting the e-catalog that has been developed, students can download the application via the barcode code that has been shared or open it directly via the link that has been shared as well. Then the students were presented directly with the front cover and other interesting parts of the e-catalog.

The e-catalog product was developed at SMAN 2 Metro to assist teachers in carrying out the learning process on local history material. However, this e-catalog can also be used by other schools if teachers need contemporary local history learning resources according to current technological developments. Currently, e-catalog products can only be accessed via shared links and barcodes. The following is the barcode and link of the e-catalog being developed:

Application Barcodes:	Website Link Barcode

Importantly, the e-catalog not only provides visually engaging content but also includes a voice feature to support auditory learners, enhancing accessibility and student engagement. Students can

access the e-catalog easily through a QR barcode or link, making it flexible for classroom and independent use.

While the product has shown promising results, a limitation of this study is its focus on a single school and small-scale testing. Therefore, future research should explore large-scale implementation across multiple schools, possibly incorporating student performance assessments to evaluate its long-term effectiveness. Further development may also integrate interactive elements like quizzes or virtual tours to deepen student engagement and comprehension.

4. CONCLUSION

Based on the research conducted at SMAN 2 Metro, it was found that technology-based learning resources, particularly those related to local history content, are lacking despite the availability of adequate infrastructure, such as internet access. This gap highlighted the need to develop interactive and accessible learning tools to support history education. In response, this study successfully developed an e-catalog of Dutch Colonial Heritage in Bekri, Central Lampung (1916–2024), designed to enhance students' interest in local history. The final product, available both as an offline application and an online website link, includes a voice feature to aid comprehension, making it accessible across various devices. The e-catalog underwent a two-stage validation process, receiving an 80% score from material experts and 91% from media experts, both categorized as "very good," confirming its suitability for use as a learning resource. However, this research has certain limitations, notably its focus on a single school and a limited number of respondents, which restricts the generalizability of the findings. Future research is recommended to expand the implementation of the e-catalog across multiple schools and evaluate its impact on student learning outcomes over a longer period. Additionally, integrating more interactive elements, such as quizzes or augmented reality features, could further enhance student engagement and provide richer learning experiences.

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