



## Developing A Digital-Based Library to Enhance Educational Knowledge Among Students

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### Abstract

This Education serves as a means or pathway for individuals to unlock and develop their potential through the learning experiences they acquire. A type of learning resource is the digital library, which represents an innovative facet of library advancement designed to engage a broader audience. This study emerged from the absence of e-books or digital resources for high school students, specifically those at State Vocational High School 2 Palembang. The research follows a developmental approach using the Research and Development (R&D) method. The study employs two types of instruments: a product validity sheet addressed to both media and material experts, and an instrument evaluating practicality and effectiveness aimed at students, particularly those in class X at State Vocational High School 2 Palembang. The research yields a Digital Library Website for Physical Education, Sports, and Health subjects, deemed suitable as a learning resource based on validation results. Material experts assigned an average score of 4.4, categorizing it as “very practical,” while media experts rated it 4.6, also in the “very practical” category. Small-scale trials obtained an average score of 4.1, and large-scale trials achieved an average of 4.175, both falling into the “very practical” category. These outcomes affirm the practicality of digital-based libraries for educational use.

### How to Cite

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## INTRODUCTION

Soccer Education serves as a means or bridge for individuals to develop their potential through the learning process they receive. As stated in Article 31, Paragraph 1 of the 1945 Constitution, "every citizen has the right to education." Thus, education is clearly the right of every individual. The existence of education is expected to produce a generation capable of utilizing advancements to the fullest, creating intelligent and high-quality individuals with a strong sense of nationalism. Without education, progress would not exist. Therefore, education is crucial and must be provided to every citizen from an early age. Education is also vital for a country's rapid development. Advanced countries are usually those prioritizing education for their citizens. The hope is that with education, the well-being of the citizens will be guaranteed.

However, education will not yield progress if its system is not appropriate (Fitri, 2021). Education must have an effective learning process. Learning, according to Hamalik as cited in (Wisada et al., 2019), involves a combination of elements including human, material, facilities, equipment, and procedures that interact and combine to achieve learning goals. The learning process itself is an interaction between learning goals, students, teachers, materials, and evaluation in the learning environment. The teaching and learning process cannot be separated from its components, as each component is interconnected and influences each other.

Furthermore, learning is always demanded to follow the developments in Knowledge and Technology to create a classroom environment suitable for the needs of the time and in line with students' characteristics. The development of Knowledge and Technology has implications for each generation in various fields of knowledge, aligning each generation with the era's developments in Knowledge and Technology. The development of Knowledge and Technology in the field of education, known as education, is an electronically oriented education system. The application of Knowledge and Technology in education will result in a technology-oriented learning system, especially in learning media.

Learning media is something that serves as a channel or intermediary used to convey messages (learning materials), stimulating the attention, interest, thoughts, and feelings of learners (students) in the learning activity to achieve specific learning goals (Masitoh et al., 2021). The progress in the field of knowledge and techno-

logy has advanced (Hartati, 2019) and is closely related to the present learning process.

The use of technology in learning functions to provide convenience for students in understanding and delving into learning concepts, boosting learning enthusiasm as the delivered material captures students' attention. The learning provided to students must generate interest so that students participate actively and enthusiastically in the teaching and learning activities (Anggraeny et al., 2020). Students adapt to the globalization era marked by technological developments, particularly in the technology-based education world, to expand the power of education and develop the potential of teachers, students, and schools (Emarawati, 2020).

Teachers are required to inform students that information related to learning can be found in the library. The library is a medium in the effort to educate the nation's children; hence, every school must have a library. However, not all school libraries have a supportive management system. In its management process, some still use manual methods (Cahyaningtyas & Iriyani, 2014). The collection of library materials is used by users (students) for non-commercial purposes; this is the perception of the library in the old paradigm. A conventionally managed library may present suboptimal and slow impressions in implementing information technology despite its anticipated role in providing quick, efficient, and accurate service quality improvement. Libraries should improve themselves to keep up with the advancing technology and transform from conventional to automated, making them digital libraries (Aditia et al., 2023). Knowledge in searching for information can be accessed through a digital library.

The digital library is part of the innovative development of libraries built to attract a large number of users. Its existence allows reaching potential user groups. The development of digital libraries is one strategy that can be optimized as a medium for distributing information evenly. While digital libraries may not be the main key to attracting the community to use libraries, their presence significantly impacts communication and information distribution, making them essential for libraries (Kristyanto, 2019). We often hear terms like "library without walls," "virtual library," and "digital library" in daily conversations and literature. Previously, these terms might have seemed foreign and had no effect on Indonesian librarians. In this context, a digital library is expected to be a solution for conventional libraries facing limitations in collection issues; one solution

on is developing a digital library (Juarni, 2019).

Based on the research findings in the field, students face difficulties in accessing learning books at school due to the limited empowerment of books at State Vocational High School 2 Palembang, especially in sports books. In this globalization era, it is expected to help students seek extensive information and knowledge, yet the learning media still use printed books, making students easily bored and less interested in the learning process. Therefore, here, the ability of teachers, especially sports teachers, can design a product so that the students' learning process becomes effective and efficient, supported by digital-based technology. The technology aims to ensure that the students' learning process is smooth. Hence, with the assistance of a digital library, it is expected that classroom learning will not be boring, and students' learning interest can be increased. In other words, the teaching and learning process becomes more varied and enjoyable. This is in line with the characteristics of students in upper secondary schools, especially at State Vocational High School 2 Palembang. According to previous research (Junaedi et al., 2021) with the title "Design of a Website-Based Digital Library." In connection with this, when related to the previous problem regarding the management of technology learning products, information resources that have developed well and followed by the increasingly advanced development of Information and Communication Technology (ICT) have.

## METHODS

In the study, the research type employed by the researcher is developmental research. The Research & Development (R&D) method is utilized for generating a specific product and testing its effectiveness (Saputro, 2017). The developmental research procedure essentially consists of two main objectives: (1) developing the product, and (2) testing the product's effectiveness in achieving its goals. The first objective is referred to as the development function, while the second objective is termed validation. Thus, the concept of developmental research is more accurately defined as an effort in both developing and validating the product simultaneously (Fransisca & Putri, 2019). The subjects of this study comprise all students in the first semester of the Computer Network Engineering class, grade X, at State Vocational High School 2 Palembang.

In the R&D research method, there are several stages that must be undertaken. Various

experts have provided opinions on the procedures for R&D research. The researcher adopts the R&D research procedure proposed by Borg and Gall, which involves 10 stages in developing a model, as expanded by Sugiyono. The steps in R&D research consist of identifying potential and problems, collecting data, designing the product, validating the design, revising the design, product testing, revising the product, usage testing, revising the product, and mass production (Ika Mulyanti, 2019).

The research instrument is a tool employed to collect, manage, and interpret respondent information, constructed with the same measurement scheme (Sugiyono, 2015). In this study, a questionnaire is utilized as a tool. The questionnaire is presented to respondents using a checklist (√) answer type. The scale employed is the Likert scale, a measure of attitudes, opinions, and perceptions in the form of questions or statements with responses ranging from strongly agree to strongly disagree.

**Table 1.** Scale Likert

Score	Quantitative Analysis
5	Very Agree
4	Agree
3	Agree Enough
2	Disagree
1	Strongly Disagree

The instruments in this research consist of two types. Firstly, there is a validation sheet instrument aimed at media experts and material experts to assess the feasibility of the product. Secondly, there is an instrument intended for students at State Vocational High School 2 Palembang, particularly in class X, as respondents to evaluate the developed product. The data analysis technique for the digital library research involves two quantitative analysis methods: Assessment data by media experts, and Data from the evaluation by material experts. In the validation process, media and material experts are provided with questionnaires containing responses (Fauzan & Rahdiyanta, 2017). Each obtained answer is scored. The digital library is validated by library validators and media validators. The results of the validation questionnaires and the assessed validators are presented in the form of a validity table. The data from the validation questionnaires are analyzed using quantitative descriptive techniques. According to Mulyatiningsih (2014), quantitative data analysis involves measurement scales that determine the type of statistical analysis used.

Based on the insights from the experts mentioned above, it can be concluded that the data collected in this study utilize questionnaires, including assessments from media experts, evaluations from material experts, and research questionnaires from students. The data analysis technique involves the validation results using a Likert scale as follows.

## RESULTS AND DISCUSSION

In this current research, the type of study employed by the researcher is developmental research using the Research and Development (R&D) method to create a specific product and assess its effectiveness, as suggested by (Saputro, 2017). The outcome of this study is a digital library website containing educational materials on physical education, sports, and health serving as an informational platform to enhance students' educational knowledge at State Vocational High School 2 Palembang. The website development process, including assessment by content experts, media experts, small-scale field trials, and large-scale field trials, yielded valuable data for evaluation.



Figure 1. Digital Library Website Product

### Validation and Revision Stage

#### Validation by Content Expert

The Validation and Revision Stage by Content Experts in the Research and Development (R&D) method is a critical process in developing a product, material, or innovation. In this stage, content experts or specialists in the relevant field play a crucial role in evaluating the suitability, accuracy, relevance, and usefulness of the developed material. Data are obtained by providing an assessment sheet that includes an evaluation of the material's alignment with the curriculum, content, and language usage. The following are the steps typically taken in the Validation and Revision Stage by Content Experts in the R&D method:

1. Expert Selection Step: Identifying and inviting content experts with expertise and knowledge relevant to the topic being developed.
2. Initial Assessment Step: Submitting the developed material to content experts for an initial evaluation. This can be a prototype, draft, or part of the material to be assessed.
3. In-Depth Evaluation Step: Content experts evaluate specific aspects of the material, such as information accuracy, conceptual precision, methodological feasibility, and alignment with the target users or audience.
4. Input Collection Step: Receiving feedback from content experts regarding strengths, weaknesses, and suggestions for improvement related to the submitted material. Record all given input for reference during the revision.
5. Material Revision Step: Based on content expert feedback, make necessary improvements, changes, or adjustments to the developed material. Ensure to explain and maintain the authenticity and accuracy of existing information.
6. Re-Verification Step: After revision, the updated material is re-verified by content experts to ensure that the provided input has been implemented accurately.
7. Finalization Step: After the revision and verification process, the refined material is considered ready for the next stage in product development or research. The data resulting from the content expert's assessment of material aspects are presented in the **Table 2 Table 3 Table 4**.

Table 2. Data From the Assessment Aspect Suitability of Material to the Curriculum

Statement	Score
Suitability of material to learning outcomes	4
Suitability of material to learning objectives	4
Suitability to the cognitive level of students	5
Matching material with topic	5
<b>Total Score</b>	<b>18</b>
<b>Average Score</b>	<b>4,5</b>

Table 3. Data Content Aspect Assessment Results

Statement	Score
Clarity of material displayed	4
Suitability of lesson material with media	4
Ease of understanding the material displayed	5
<b>Total Score</b>	<b>13</b>
<b>Average Score</b>	<b>4,3</b>

**Table 4.** Data From the Assessment Results on Language Use Aspect

Statement	Score
Ease of understanding the language	5
Accuracy of sentence structure	5
Accurate of vocabulary	4
Accurate use of sentences	4
Total Score	18
Average Score	4,5

Based on the assessment data in the above **Table 2 Table 3 Table 4**, which includes material alignment with the curriculum, content, and language, it can be observed that each aspect in the Validation and Revision Stage by Content Experts in the R&D process has received scores of 4.5, 4, 3, 4, 5. This stage aims to ensure that the developed product or material undergoes comprehensive evaluation from the perspective of experts competent in their field. This ensures the quality, accuracy, and usefulness of the generated material before it is disseminated or used more widely by end users.

**Media Revision Based on Input from Content Experts**

The process of revising media based on input from content experts in the Research and Development (R&D) method is a crucial step to ensure that the developed product or media maintains high quality and relevance to the intended goals. Here are seven common steps to follow in this process:

1. Input Collection from Content Experts Step: Identify and invite content experts with expertise relevant to the content or media being developed. Provide them with an initial version of the media to be revised, whether it be a draft, prototype, or specific sections of the ongoing work.
2. Content Expert Evaluation Step: Request content experts to thoroughly evaluate the provided media, considering aspects such as content, information accuracy, alignment with objectives, and the ability to convey messages to the target audience. Content experts may also provide input regarding necessary improvements to enhance the quality and effectiveness of the media.
3. Input Analysis Step: Carefully analyze all input provided by content experts. Review each suggestion and criticism to be considered in the revision process.
4. Media Revision Step: Based on the received input, make improvements and adjustments to

the developing media. Ensure to carefully consider and implement each suggestion to enhance the overall quality of the media.

5. Re-Verification Step by Content Experts: After the revision, seek the opinions of content experts on the revised version. Ensure to check whether their input has been implemented effectively.
6. Further Testing and Evaluation Step: After the conducted revisions, perform further testing or evaluation on the media, both internally and with the involvement of end users or the relevant audience.
7. Finalization and Publication Step: After the revision and further evaluation processes, if the media is deemed to meet the desired criteria, it is ready for publication or use according to the initial goals of the R&D.

This process is crucial to ensure that the produced media is not only accurate and relevant but also well-received by the target audience. The overall process, from input collection to finalization, significantly influences the quality and effectiveness of the developed media. In this stage, a product design test was conducted by content experts, who provided general comments and suggestions for improving the design of the developed media product. The suggestions are as follows:

1. Align the material with the school curriculum.
2. Adjust the material to the students' academic level.

**Validation by Media Expert**

The Validation by Media Expert stage in the Research and Development (R&D) method is a crucial process in the development of products or innovations that focus on media aspects. Media experts possess knowledge and expertise in communication, design, or relevant media platforms for the developed product. Here are seven common steps typically followed in the Validation by Media Expert stage:

1. Identification of Relevant Media Experts Step: Select media experts with experience and expertise in fields relevant to the developed product or innovation. They may have backgrounds in graphic design, content production, marketing strategy, or the media platform used.
2. Presentation of Material or Prototype Step: Submit the developed material or prototype to media experts for evaluation. The material may include design, the platform used, content, communication strategy, and other

aspects related to the media used in product development.

3. In-Depth Evaluation Step: Media experts evaluate all aspects of the media used in product development. This includes visual aspects, conveyed messages, design quality, navigation (if applicable), effectiveness in delivering messages, and technical quality if applicable.
4. Input Acceptance Step: Accept input from media experts regarding strengths, weaknesses, and suggestions for improvement on the evaluated media aspects. Carefully record each provided input for reference during the revision process.
5. Revision Based on Input Step: Make improvements, adjustments, or revisions to the media aspects that received input from media experts. Ensure to consider the given suggestions carefully to enhance the quality of the developed media.
6. Re-Verification Step by Media Experts: After the revision, seek the opinions of media experts on the revised version. Ensure to check whether their input has been implemented effectively and that the quality of the media has improved.
7. Media Finalization Step: After the revision and verification process, the refined media is considered ready for the next stage in product development or innovation.

The Validation by Media Expert stage involves obtaining data by providing an assessment sheet for evaluating the suitability of the developed media product. Media experts assess the visual aspects presented in the media product design by completing an assessment sheet based on available assessment criteria. The data resulting from the assessment of media aspects by media experts are presented in the **Table 5**.

**Table 5.** Data From the Assessment Results by Media Expert

Statement	Score
<b>Media Display</b>	
Attractiveness of media design	5
Awesome Image	5
Media Form	4
Combinations and color choices	4
Clarity of writing in the media	5
<b>Media Contents</b>	
The use of language is easy to understand	5
Clarity of content with material	5
Clarity of material presentation	4

<b>Media Use</b>	
Ease of using media	5
Practically of the media	4
The right media for class 10 participants	5
Media Security for users	5
Clarity in using media	4
Total Score	60
Average Score	4,6

Based on the assessment data in the above table, which includes the appearance of the media, content of the media, and the usage of the media, it can be observed that in the Validation and Revision Stage by Content Experts in R&D, the average score is 4.6. The Validation by Media Expert stage is crucial in ensuring that the media used in the product or innovation is of high quality, effective in delivering messages, and aligns with the intended goals. Collaborating with media experts helps ensure that the media aspects of the developed product or innovation meet the expected standards.

**Revising media based on input from media experts**

In the Research and Development (R&D) method is a crucial step to ensure the quality and effectiveness of the developed media. The process involves seven common steps, starting with the Collection of Input from Media Experts, inviting experts with relevant expertise in the field of the developing media. Providing them with an initial version of the media to be revised, which can be a draft, prototype, or specific sections of the work. The Evaluation by Media Experts follows, where experts thoroughly assess the provided media in terms of design, content structure, conveyed messages, navigation (if applicable), or other relevant technical aspects.

Media experts provide input regarding strengths, weaknesses, and suggestions for improvement to enhance the quality and effectiveness of the media. The Analysis of Input follows, carefully reviewing each input from media experts and considering suggestions for the revision process. Subsequently, the Media Revision step involves making improvements and adjustments based on the received input. Paying close attention to each suggestion to ensure that the implemented improvements are relevant and effective.

After revision, the Verification Step by Media Experts ensures that their feedback has been well-implemented and that the quality of the media has improved. The Testing and Further Evaluation step involves conducting additional

tests or evaluations, both internally and with appropriate end users or audiences. The Finalization and Publication step concludes the process, indicating that the media is ready for publication or use according to the initial goals of the R&D.

This process is crucial to ensure that the resulting media is not only of high quality in terms of design and conveyed messages but also effective in achieving the desired objectives. Collaborating with media experts helps ensure that the media aspects of the developed product or innovation meet expected standards. Based on the steps taken, product design testing by media experts for visual appearance provided general comments and suggestions for improving the design of the developed media product. The feedback indicated that the website product is suitable for a digital library and aligns with the standards of State Vocational High School 2 Palembang. The media product, a digital library, was found to practically enhance students' educational knowledge in the assessment by media experts and is ready for the next testing phase with revisions based on the feedback.

#### **The Small-Scale Field Testing phase**

The Small-Scale Field Testing phase is a crucial component of the Research and Development (R&D) method, where the developed product or innovation undergoes direct testing in a limited environment before broader implementation. After the digital library product design has been revised based on input from subject matter experts and media specialists, the next step is to conduct testing. The subsequent testing is a small-scale field trial aimed at identifying deficiencies, weaknesses, or errors in the product. The data obtained from this trial serves as input for further revisions before the media product is used in the next testing phase. This Small-Scale Field Testing phase allows product developers or innovators to identify issues and improve the product before a wider launch. This helps mitigate risks and ensures that the resulting product meets user expectations and needs.

The typical steps involved in this phase consist of seven key steps, starting with the Planning Step, where the objectives of the small-scale field trial are determined. This could include testing functionality, usability, user acceptance, or specific aspects of the developed product or innovation. A clear testing plan is then created, outlining measurable parameters, the sample or group involved, the testing environment, and evaluation metrics. The Preparation and Implementation step follows, involving the preparation of all ne-

cessary resources for the trial, including equipment, scope, and the involved team. The trial is implemented according to the established plan, ensuring that the process is well-documented for subsequent evaluation.

Data Collection and Evaluation constitute the next steps, involving the systematic collection of data, including user experiences, product performance, and other relevant outcomes. The trial results are then evaluated by comparing the collected data with the predefined objectives. Successes, weaknesses, and areas requiring improvement are reviewed. The Data Analysis step involves analyzing the collected data to understand specific patterns or trends and identify the strengths and weaknesses of the product. The results of this analysis guide the next steps, whether it involves adjustments, improvements, or further development.

The Revision and Further Development step is based on the field trial results, where adjustments or modifications are made to the product or innovation being developed. Product development continues to enhance quality, performance, or features based on findings from the field trial. The Iteration or Further Testing step, if necessary, involves additional iterations or small-scale field trials to ensure that the changes or improvements made are successful and meet expectations. The Documentation and Reporting step concludes the process by documenting all findings, evaluation results, and steps taken during the small-scale field testing phase. This documentation serves as a foundation for reporting and future reference.

#### **The Large-Scale Field Testing phase**

The Large-Scale Field Testing phase in the Research and Development (R&D) method is a crucial step in product or innovation development to assess performance, usability, and product response in an environment more representative of actual usage. This phase allows product developers or innovators to better understand the product's performance in an environment more similar to real usage conditions. It aids in evaluating user responses and making necessary adjustments or improvements before widespread implementation.

Common steps in large-scale field testing begin with the Planning Step, where clear objectives for the large-scale trial are defined, including measurable parameters, target groups, and an environment representing real usage conditions. Prepare a testing plan that includes technical details, resource allocation, and an implementa-

tion schedule. The Preparation and Implementation step involves preparing the infrastructure and equipment required for the large-scale trial. Implement the trial according to the established plan, ensuring all processes are well-documented for further evaluation.

Data Collection is the next step, conducting the trial according to the plan and systematically recording data, including user experiences, product performance, and other relevant outcomes. Ensure the collected data directly relates to the objectives of the large-scale trial. The Analysis of Results involves analyzing data from the large-scale trial to understand specific patterns or trends and identify the strengths and weaknesses of the product. Use the analysis results to determine the next steps, whether adjustments, improvements, or further development.

The User Response Evaluation step involves reviewing user responses to the tested product or innovation on a large scale. Gather suggestions and feedback from users to tailor the product to better meet their needs and preferences. The step of Further Improvement or Development, based on findings from the large-scale trial, involves making adjustments or modifications to the product or innovation. Continue with product development to enhance quality, performance, or features based on findings from the trial.

The Iteration and Further Testing step, if necessary, includes additional iterations or large-scale field trials to ensure that the product has been improved according to previous evaluation results. The Documentation and Reporting step concludes the process by documenting all findings, evaluation results, and steps taken during the large-scale field testing phase. This documentation is essential for future reference. After making improvements based on the results of small-scale field testing, the next testing phase is the large-scale field test. This test aims to identify various deficiencies, weaknesses, or errors in the product. Data obtained from this test is analyzed and used as input for further revisions before the final product or mass production.

### Data Analysis

Analysing the practicality of this digital library helps identify strengths and weaknesses of the platform, providing a more comprehensive understanding of the user experience in utilizing available resources. This enables developers to make improvements or enhancements to enhance the quality and usability of the digital library. Once the research instrument is deemed valid or practical for use, it can be employed for data col-

lection, with data obtained from media experts, subject matter experts, small-scale field testing, and large-scale field testing. The collected data through survey responses is then calculated and analyzed to determine the feasibility results of the learning media.

### Analysis of the Practicality of the Digital Library

The analysis of the practicality of a digital library involves assessing the extent to which the library meets user needs efficiently, is user-friendly, and aligns with its intended purpose. Here are several factors that can be evaluated in the analysis of the practicality of a digital library:

1. **Accessibility and Content Availability**  
Evaluate the diversity and quality of resources available in the digital library.  
Assess the availability of collections relevant to various topics or fields of knowledge.
2. **User Interface (UI)**  
Assess the feasibility of the user interface in facilitating navigation and information retrieval.  
Evaluate the simplicity and user-friendliness of the digital library platform.
3. **Feature and Functionality Availability**  
Evaluate provided features, such as advanced search options, storage, sharing, or annotation.  
Assess the availability of user experience customization features, such as display options or other personalization settings.
4. **Device Responsiveness**  
Evaluate the responsiveness of the digital library on various devices, including desktops, tablets, or smartphones.  
Ensure consistent and adaptable interface display across different device types.
5. **Security and Privacy**  
Assess the security of user data, especially personal information and search history.  
Ensure the presence of adequate security measures in the digital library.
6. **Support and Assistance Availability**  
Evaluate technical support services or assistance available to digital library users.  
Ensure the availability of guides, tutorials, or other aids to help users make optimal use of the library.
7. **Performance and Response Time**  
Assess the speed of the digital library site or application in responding to user access.  
Evaluate response times for information searches or download processes.
8. **User Experience Evaluation:** Assess the overall



user experience, including satisfaction levels, clarity, and ease of use in utilizing the digital library.

9. Integration and Connectivity: Evaluate the digital library's ability to connect with other systems or integrate with other platforms.

The analysis of the practicality of this digital library serves to identify strengths and weaknesses of the platform, offering a comprehensive overview of user experiences in utilizing available resources. This enables developers to make improvements or enhancements to elevate the quality and usability of the digital library. Once the research instruments are validated and deemed practical, they can be employed for data collection. Data is gathered from media experts, content specialists, small-scale field trials, and large-scale field trials. Information collected through questionnaire responses is then calculated and analyzed to assess the effectiveness of the learning media.

#### Analyzing the data from material expert validation

Analyzing the data from material expert validation allows developers or researchers to comprehend external perspectives related to the product or subject under development. This aids in enhancing the quality and relevance of the product and ensures alignment with the needs and expectations of stakeholders or end-users. The data obtained from media expert assessments encompass aspects such as the alignment of content with the curriculum, content substance, and language usage. This is presented in a straightforward manner, as shown in the **Table 6**.

**Table 6.** Material Expert Data Assessment Aspect

Assessment Aspect	Average
Comformity of the material with the curriculum	4,5
Contents	4,3
Use of language	4,5
Average Overall Score	4,4

Based on the **Table 6** above, the material expert validation, with an assessment based on the aspect of content alignment with the curriculum, yielded an average score of 4.5. This result is then converted using the research criteria data conversion reference. Therefore, based on the competency aspect, the ignition system learning media can be categorized as highly practical. The validation result from media experts, with an as-

essment based on the content aspect, obtained an average score of 4.3. This result is then converted using the research criteria data conversion reference. Thus, based on the content presentation aspect, the ignition system learning media can be categorized as highly practical. The validation result from media experts, with an assessment based on the language usage aspect, obtained an average score of 4.5. This result is then converted using the criteria data conversion reference. Therefore, based on the benefit aspect, the ignition system learning media can be categorized as highly practical. Based on the three assessment aspects by material experts, namely competency, content presentation, benefits, and completeness, the overall average score is 4.4. Thus, the ignition system learning media, based on material expert validation, can be categorized as highly practical overall.

#### The analysis of validation data by media experts

The analysis of validation data by media experts helps ensure that the developed product or content meets the expected standards of media quality. This allows developers to make improvements or adjustments to enhance communication effectiveness and align the product with the needs of users or the targeted market. The data obtained from the validation assessment by media experts on the aspects of appearance, content, and media usage are presented more succinctly in the **Table 7**.

**Table 7.** Media Expert Data Assessment Aspect

Assessment Aspect	Average
Media attachment	4,6
Media contents	4,6
Media use	4,6
Average Overall Score	4,6

Based on the **Table 7** above, media expert validation with an assessment based on the appearance aspect obtained an average score of 4.6. This result is then converted using the research criteria data conversion reference. Therefore, based on the appearance aspect, the ignition system learning media can be categorized as highly practical. The media expert validation result with an assessment based on the content aspect obtained an average score of 4.6. This result is then converted using the research criteria data conversion reference. Thus, based on the content aspect, the ignition system learning media can be categorized as highly practical. The media expert

validation result with an assessment based on the usage aspect obtained an average score of 4.6. This result is then converted using the criteria data conversion reference. Therefore, based on the usage aspect, the ignition system learning media can be categorized as highly practical. Based on the three assessment aspects by media experts, namely appearance, content, and usage, the overall average score is 4.6. Thus, the ignition system learning media overall, based on media expert validation, can be categorized as highly practical.

**The analysis of data from the Small-Scale Field Trial**

The analysis of data from the Small-Scale Field Trial allows researchers or developers to gain crucial insights into the performance of the product or innovation in a controlled situation before taking further steps in broader development. The assessment data of the digital library learning media in the small-scale field trial, based on aspects such as appearance, content presentation, clarity, and benefits, can be presented more succinctly in the **Table 8**.

**Table 8.** Small-Scale Field Trial Data Assessment Aspect

Assessment Aspect	Average
Material	4,1
Language	4,0
Appearance	4,1
Function	4,15
Average Overall Score	4,6

Based on the **Table 8** the results of the Small-Scale Field Trial with an assessment based on the content aspect obtained an average score of 4.1. This result is then converted using the research criteria data conversion reference. Therefore, based on the content aspect, the digital library can be categorized as highly practical. The Small-Scale Field Trial results with an assessment based on the language aspect obtained an average score of 4.0. This result is then converted using the research criteria data conversion reference. Thus, based on the content presentation aspect, the digital library can be categorized as highly practical. The Small-Scale Field Trial results with an assessment based on the appearance aspect obtained an average score of 4.1. This result is then converted using the research criteria data conversion reference. Therefore, based on the clarity aspect, the digital library can be categorized as highly practical. The Small-Scale Field Trial results with an assessment based on the function

aspect obtained an average score of 4.15. This result is then converted using the research criteria data conversion reference. Thus, based on the benefit aspect, the digital library can be categorized as highly practical. Based on the four aspects of the Small-Scale Field Trial, namely content, language, appearance, and function, the overall score is 4.1. Therefore, the digital library overall, based on the Small-Scale Field Trial, can be categorized as highly practical.

**The analysis of data from the Large-Scale Field Trial**

The analysis of data from the Large-Scale Field Trial provides in-depth insights into the performance of the product or innovation in a more representative environment of actual usage. This helps in making informed decisions about the direction of further product or innovation development before proceeding to the next implementation stage. The assessment data of the digital library product in the Large-Scale Field Trial, based on aspects such as appearance, content presentation, clarity, and benefits, can be presented more succinctly in the **Table 9**.

**Table 9.** Large-Scale Field Trial Data Assessment Aspect

Assessment Aspect	Average
Material	4,2
Language	4,1
Appearance	4,2
Function	4,2
Average Overall Score	4,175

Based on the **Table 9**, the results of the Large-Scale Field Trial with evaluation based on the content aspect obtained an average score of 4.2. The results were then converted using the research criteria data conversion reference. Therefore, based on the appearance aspect, the digital library can be categorized as highly practical. The results of the large-scale field trial with evaluation based on the language aspect obtained an average score of 4.1. The results were then converted using the research criteria data conversion reference. Therefore, based on the content presentation aspect, the digital library can be categorized as highly practical. The results of the large-scale field trial with evaluation based on the appearance aspect obtained an average score of 4.2. The results were then converted using the research criteria data conversion reference. Therefore, based on the clarity aspect, the digital library can be categorized as highly practical. The results of the

large-scale field trial with evaluation based on the function aspect obtained an average score of 4.2. The results were then converted using the research criteria data conversion reference. Therefore, based on the benefit aspect, the digital library can be categorized as highly practical. Based on the four aspects of the large-scale field trial, namely content, language, appearance, and function, the overall score obtained is 4.175. Thus, the digital library as a whole, based on the large-scale field trial, can be categorized as highly practical.

The conducted research resulted in the creation of a digital library website system, intended to serve as an educational tool for enhancing knowledge at State Vocational High School 2 Palembang. According to Fitriah (2020) and the Digital Library Federation, a digital library is an organization that provides resources, including specially trained personnel, to select, organize, offer access, understand, disseminate, maintain integrity, and ensure the proper functioning of digital works. The aim is to make the collection economically accessible to a community or group in need. Based on this explanation, the research aims to produce a digital library website to facilitate teachers and students in finding books to support the learning process. The primary goal of the digital library is to provide library services prioritized for quick and accurate information dissemination, or in other words, it is flexible (Della et al., 2022).

Referring to Niari's study (2023) at the Salomon Library in the Digital School Library of Methodist 2 Palembang, a digital library facilitates students in finding references for assigned tasks without physically going to the library. The outcome of the research on the digital library at State Vocational High School 2 Palembang can be accessed on the SIPUSTAKA page (Digital Library Information System for SMK Students).

The research and development process for the digital library website follows the Borg and Gall development procedure, encompassing ten stages further refined using the Research and Development method by Sugiyono (2014). These ten stages include Potential and Problems, Data Collection, Product Design, Design Validation, Design Revision, Product Testing, Product Revision, User Trial, Product Revision, and Mass Production. Each stage in the development process serves a specific function, as outlined in the block diagram.

1. Potential and Issues:\*The researcher leveraged existing potential to develop a digital library, addressing the challenge that stu-

dents rarely engage in reading printed books. Consequently, the aim is to create a digital library accessible via laptops, computers, or smartphones, with the goal of assisting both teachers and students in finding relevant books to support the learning process.

2. Data Collection:\* The collection of data focused on the evolving technological potential among students. This information guided the design of a product tailored to the needs of students, specifically, a digital library website.
3. Product Design: The digital library encompasses books, educational content related to Physical Education and Health, and information about sports in Indonesia. It includes menus based on book classifications, a search feature, as well as images and videos related to sports, and learning.
4. Design Validation: Validation at this stage relies on rational assessment. The product design derived from the research undergoes continuous scrutiny and evaluation to ensure its validity. This involves validation from media and metadata experts, as well as feedback from users.
5. Design Revision: The revision of the design aims to ensure that the product development adheres to correct procedures, yielding optimal results.
6. Small-Scale Product Testing: This phase aims to determine whether the product functions optimally and serves as a reference for further revisions.
7. Product Revision: Used to monitor product development and feasibility, data collected during this phase serves as an evaluation to enhance product quality.
8. Large-Scale Usage Testing: Conducted to assess the revised product's performance on a larger scale after initial testing.
9. Product Revision: This step involves further refinement to address any remaining weaknesses or shortcomings.
10. Mass Production: To refine the product until it is deemed effective and suitable for final production. Collaboration with relevant parties, in this case, State Vocational High School 2 Palembang, is essential to ensure compliance with agreed-upon standards.

## CONCLUSION

Based on the description and analysis of the research on "Physical Fitness Test Measurement in Soccer for Students of Indralaya 1

Public Junior High School Using the Outdoor Education Laboratory,” the results indicate that the physical condition in the sport of soccer falls into the category of fairly good with a percentage of 50.14%. The implication of this research is that students, especially those involved in soccer, should be aware of their physical condition. To assess their fitness level, physical tests are conducted, focusing on components relevant to the sport of soccer.

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