DEVELOPMENT OF SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS (STEM)-BASED E-BOOK ON HUMAN DIGESTIVE SYSTEM MATERIAL BASED ON SCIENTIFIC LITERACY

Rizky Agassy Sihombing1*, Hasruddin2
1Master Program in Science Education, Faculty of Mathematics and Science Education, Universitas Pendidikan Indonesia
2Department of Biology Education, Faculty of Mathematics and Natural Sciences, Universitas Negeri Medan
Email: rizkyagassy@upi.edu

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Abstract
The research was conducted on students’ low scientific literacy skills in Indonesia based on PISA, PUSMENDIK data and the lack of science, technology, engineering, and mathematics (STEM)-based teaching materials that measure students’ scientific literacy. Researcher develop teaching material in the form of interactive E-book that can be used on all devices with feasible based on scientific literacy skills on human digestive system material. The research method used is research and development (R&D) with the analysis, design, development, implementation, and evaluation (ADDIE) from Branch. Subjects in this study was 4 experts (1 expert in media, learning design, material, and linguist). The instruments used are tests that experts and non-tests have validated. Test instruments assessment was given to 4 experts (1 expert in media, learning design, material, and linguist). The results showed that resulting validation from a media expert with $\bar{x} = 98.3\%$, a material expert with $\bar{x} = 83.3\%$, a learning design expert with $\bar{x} = 95.3\%$, and a linguist expert with $\bar{x} = 85\%$, and practically $\bar{x} = 97\%$, then an STEM-based E-book was declared feasible, and practically.

Keywords: Development, E-book, STEM, Scientific Literacy, ADDIE

INTRODUCTION
The development of this world is very increasingly rapid and complex in the 21st century which is marked by the era of the industrial revolution 4.0, especially in Indonesia (Harahap & Rafika, 2020; Hermawati et al., 2021). This revolution can be characterized by the integration of technology by blurring the boundaries of physical, digital, and biological spaces. Currently all human activities are being transformed from manual to digital (Xu et al., 2018). Along with the times, learning technology has developed significantly. The use of digital technology in classroom has not resulted in significant changes and
improvements in the learning process in the classroom (Berrocoso et al., 2021). Students’ as part of a global society, really need to be involved to answer these problems. Therefore, students’ need to be equipped with the ability to care and be responsive to issues that develop in society to plan problem-solving and have in-depth knowledge and understanding to be applied in problem-solving. This can be achieved if students’ have scientific literacy (OECD, 2019).

Scientific literacy is the ability that can engage with science-related issues, and with ideas of scientific as a reflective citizen (OECD, 2018). Gu et al. (2019) stated scientific literacy cannot be ignored and must explored to students’, because it helps them make the right decisions, solve individual and universal problems, and achieve science learning goals, besides that scientific literacy also important to face and keep up with increasingly sophisticated technological developments (Fausan et al., 2021).

Scientific literacy consists of 3 dimensions, there are the content dimension (science knowledge), the process dimension (scientific competence), and the context dimension (science application) (Zahro et al., 2021). The aspects of competence in scientific literacy divided into three, there are explaining scientific phenomena, evaluating and designing scientific investigations, and interpreting scientific data and evidence (Saraswati et al., 2021; Pertiwi et al., 2024).

The results of achieving student scientific literacy skills in Indonesia on PISA still low from year to year. In 2009 Indonesia was ranked 61th out of 65 countries with a score of 383, in 2012 Indonesia was ranked 64th out of 65 countries with a score of 382 (OECD, 2013), in 2015 Indonesia was ranked 69th out of 79 countries with a score of 403 (OECD, 2016) and in 2015 Indonesia was ranked 71th out of 78 countries with a score of 396 (OECD, 2019).

Based on that data of PISA, it can be understood, the scientific literacy ability of Indonesia students is still low when compared to international average score and is at a low level from the PISA measurement. This is an urgency that must be resolved and a solution is found at this time.

One of the contexts tested on PISA is the human digestive system. Some students still have difficulty in science learning with the material about human digestive system. The factors that most influence students learning difficulties in understanding the human digestive system lie in internal factors and external factors, namely teaching materials and learning media which still minimal and not interactive (Sinaga et al., 2019).

The low scientific literacy ability of students is caused by several factors. These factors include the lack of use of books, school infrastructure, curriculum, methods and learning models (Purwani et al., 2018). Another factor that affects students’ scientific literacy skills is the teacher (Fakhriyah et al., 2017; Sihombing, 2023).

Based on the problem of the lack of scientific literacy skills and understanding the material of the human digestive system. So, it is necessary to use teaching materials that help to learn by utilizing the role of technology in the form of electronic devices. With rapid technological advances, the development of the
media and the teaching materials needs to be integrated with the technology development (Ningsih et al., 2022). In the classroom, students have several barriers that affect learning outcomes and learning experiences (Panggabean et al., 2023). The creativity of educators is very influential in achieving learning goals (Sihombing et al., 2022; Sihombing et al., 2023).

Electronic book (E-book) are innovative and interactive teaching materials in digital form and new trends in various parts of the world, which have advantages compared to conventional books in general (Huda, 2021). The use of E-book can show a positive response to interest in learning, especially in increasing students’ scientific literacy (Taufauliyati et al., 2020; Pertiw, 2024; Senja et al., 2024). This is reinforced by Öztürk (2021) which states that, E-book can improve students’ scientific literacy skills, and language skills in terms word recognition, and fluency in learning. Based on Yuberti et al. (2022) research, it is said the interactive in an E-book have potential benefit of assisting students in improving scientific literacy.

One of the crucial goals of teaching is to help students understand the main concepts in a subject rather than simply remembering isolated facts (Manurung et al., 2021). Teachers’ skill in improving students’ engagement and limiting disruptive behavior is essential for maintaining a safe, productive, and effective learning environment (Octavia et al., 2022; Sihombing et al., 2023). Overcoming the problem of weak scientific literacy is very appropriate if using appropriate teaching materials, in addition to teaching materials, learning approaches can also affect the students’ scientific literacy skill, and can encourage students to be able improve scientific literacy skills (Yuliati, 2017). STEM is a approach can be used.

The application of the STEM-based learning approach for students’ scientific literacy is very good, because it can encourage students to be able to learn through exploration, investigation, and problem solving (Aswirna et al., 2022; Simatupang et al., 2022). STEM-based E-book can improve students scientific literacy competence, because can encourage students to learn through exploration, investigation, and problem solving for students in learning process (Azalia et al., 2020; Prabawati & Agustika 2020). Based on this problem, researcher decided to research and development of teaching materials in form of STEM-based E-book as electronic teaching materials to carried out that can improve students’ scientific literacy skills on the material of the human digestive system by using the analysis, design, development, implementation and evaluation (ADDIE) development model. It is hoped that with the development of E-book, the resulting product can not only improve students’ scientific literacy skills which are classified as low, but can be a guide for teachers in developing teaching materials.

**METHODS**

**Research Type**

The research method used in this development is the research and development method or often called research and development (R&D). This development research aims to...
produce an E-book that can be said to be valid. The development of the E-book in this study follows the analysis, design, development, implementation and evaluation (ADDIE) model based on Branch (2009).

Population and Subjects
This study focused on class VIII students of SMP Swasta Bina Satria Medan, North Sumatera, for the academic year 2022/2023. The subjects were selected using purposive sampling, considering factors such as the school's accreditation (accreditation A), availability of facilities like computers and permission for students to bring smartphones, and adherence to the K-13 curriculum.

Development Procedure
This development of STEM-based E-book used ADDIE development model. According to Branch (2009), ADDIE development model has five stages which can be described in detail as:

1. Analysis
At this stage, what is commonly done is a performance gap analysis and needs analysis. This analysis can be generated from a observation a problems related to learning in schools, then conducting interviews with science teachers to find out the curriculum and teaching materials used by schools, as well as what problems exist in schools related to science learning, identify the required resources, determine appropriate learning strategies, and from the analysis stage there is some data that has been obtained and analyzed. The general steps taken in analysis stages are: (1) Learning Analysis (analyze performance gaps or problems that exist in the learning process); (2) Technology Analysis (analyze of needs).

2. Design
In this design stage, product design will be carried out in the form of an E-book for science. The purpose of the design is to verify the performance and selection of an appropriate test method. The process of developing teaching materials must be arranged systematically, so that these teaching materials can improve the knowledge, and competence of students properly, and effectively. The general steps taken in designing E-book are: (1) compile the framework of learning materials; (2) determine the software to be used; (3) design product content; (4) incorporating STEM approach in E-book; and (5) questionnaire grid designed for E-book validation.

3. Development
This development stage is carried out with two process activities, namely product creation and formative evaluation.

a. Product Creation
There are several stages from product installation to product manufacture directly according to the initial design. The stages of making E-book teaching material products that have been prepared such as materials, images, audio, which are arranged according to designs or concepts made using microsoft office, power point, canva, flip pdf corporate and link builder to applications.

b. Validation of Experts
The second stage of this development is by validating product designs (expert tests) conducted by media expert, learning design expert, materials expert, and linguist expert. Validation from experts is the process of collecting data that is used to revise prior to the implementation phase. Validation aims to assess from several aspects regarding the materials and learning media that exist in the E-book teaching materials, whether the product developed is feasible or not to be used or tested on research subjects in the field.

4. Implementation
During the implementation phase, it's essential to provide supplementary learning materials that correspond with the science literacy-oriented E-books. These materials encompass the curriculum, instructional plans, student workbooks, and evaluation documents. It's worth noting, though, that this paper does not center its attention on this particular stage.

5. Evaluation
During the evaluation phase, a comprehensive assessment is conducted for the newly created E-book. A meticulous review is performed to pinpoint both the strengths and weaknesses of the developed E-book. Additionally, evaluations are carried out regarding the practicality for students; however, no testing has been conducted to measure the improvement in scientific literacy yet, as the E-book was developed solely based on references from scientific literacy.

Data Collection Procedures
The study employed non-test instruments to thoroughly assess the validity and practicality of the developed E-book. These instruments included expert test questionnaires and questionnaires for students' and teachers' responses. The expert test questionnaires sought feedback from professionals in relevant fields, while the questionnaires for students and teachers aimed to gather user perspectives on the E-book usability, effectiveness, and suggestions for improvement. By utilizing these non-test instruments, the study aimed to obtain comprehensive qualitative data to complement any quantitative findings obtained through test instruments, providing a holistic understanding of the E-book performance in learning.

Data Analysis Technique
The data in this development research are in the form of quantitative and qualitative data. The data was obtained through expert test questionnaires (validity), student and teacher response questionnaires. Research data is used to obtain information about the validity, effectiveness, and practicality.

At this stage the data is collected to be concluded and used as a reference to improve the product developed by the researcher, so that the improvement process is the result of the process of revising the product of E-book materials.

Expert Validation and Practicality from Responses
The researcher using qualitative descriptive data to show analysis of expert validation data using a STEM-based E-book and practicality from responses. Presentation of data at this stage using tables and graphs. The assessment criteria for learning design expert, material expert, media expert and linguist expert shown in Table 1.

Table 1. Rating scale

<table>
<thead>
<tr>
<th>No.</th>
<th>Score</th>
<th>Assessment Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>4</td>
<td>Very Good</td>
</tr>
<tr>
<td>2.</td>
<td>3</td>
<td>Good</td>
</tr>
<tr>
<td>3.</td>
<td>2</td>
<td>Pretty Good</td>
</tr>
<tr>
<td>4.</td>
<td>1</td>
<td>Not Good</td>
</tr>
<tr>
<td>5.</td>
<td>0</td>
<td>Very Not Good</td>
</tr>
</tbody>
</table>

(Surwana, 2016)

The drawing of the criteria for the validity of from the experts calculation is shown in Table 2.

Table 2. Validity criteria

<table>
<thead>
<tr>
<th>Interval (%)</th>
<th>Assessment Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>81-100</td>
<td>Very Good</td>
</tr>
<tr>
<td>61-80</td>
<td>Good</td>
</tr>
<tr>
<td>41-60</td>
<td>Pretty Good</td>
</tr>
<tr>
<td>21-40</td>
<td>Not Good</td>
</tr>
<tr>
<td>0-20</td>
<td>Very Not Good</td>
</tr>
</tbody>
</table>

(Sugiyono, 2019)

For expert validation questionnaires, in addition to using a rating scale, the answers to the conclusions from the validation results use the Guttman scale. The Guttman scale will produce an unequivocal “yes-no” answer. In this questionnaire, a “feasible-not-feasible” scale is used.

RESULTS AND DISCUSSION

The results of research and development of STEM-based E-book include product results and student responses to STEM-based E-book which are solutions to current problems, namely the low ability of scientific literacy in the subject of the human digestive system. STEM-based E-book that have been developed and are in accordance with development procedures, can be said to be feasible, practical, and effective and can be well received by students and teachers.

Analysis Stage

The analysis that has been carried out is the performance gap analysis and needs analysis. The results obtained based on the current problems are that the scientific literacy skills of students in Indonesia are still in the low category based on the results and assessments of PISA, even from year to year, the acquisition of rankings and scores of students' scientific literacy in Indonesia based on PISA is very low and there is no increase, this is the urgency at this point. At that school, the results of the literacy minimum competency assessment (AKM) pretest were still low, which was carried out by the Education Assessment Center (PUSMENDIK).

Based on the results of observations, it was found that the learning carried out at the school still uses conventional science book published by the Ministry of Education and Culture Revised Edition 2017, but has not used E-book that can improve scientific literacy skills.

The results of a literature study in the journal Yuberti et al. (2022),
STEM-based E-books were found to significantly improve students' scientific literacy, as evidenced by significant differences in N-gain. Similarly, research by Sianturi et al. (2021) concluded that the E-book is highly feasible and effectively utilized as an alternative learning resource. Previous research by Lilis et al. (2019) emphasized the necessity of digital teaching materials with animations and videos, accessible not only on computers but also on smartphones.

The steps taken consisted of observing the school to be studied, interviewing teachers, and conducting literature studies. After this stage was carried out well, based on the results of the analysis it was found that students' scientific literacy abilities were still low. Then the textbooks used in the learning process are not STEM-based and can train students' scientific literacy skills.

**Design Stage**

The design of the E-book consists of stages, namely: (1) compiling material that enables students to achieve learning objectives; (2) determine the supporting software or applications used in the design of the E-book; and (3) designing product contents.

1. **Preparation of Learning Materials in the E-book**

Learning materials compiled in the E-book are based on and guided by the revised 2013 curriculum, materials designed and compiled by researchers are expected to improve students' scientific literacy skills (Figure 1-8).

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**Figure 1. Science as a process**

**Figure 2. Science as a concept**

**Figure 3. Technology as application of science**

**Figure 4. Engineering as engineering science**
2. Software or applications used in the design of the E-book

Software or applications used in designing E-book use Microsoft Windows, Microsoft Word, Microsoft PowerPoint, Canva, Flip PDF Corporate, and Application Builder. Determination of the software is not just chosen, but it is necessary to check, find out the use of each existing software, and adjust it to the needs in designing E-book.

3. E-book Content Design Results

E-book content design refers to two components, namely: display and content. The content design of the E-book that has been developed has its own characteristics in terms of display and content.

The second component is in terms of material content, the material displayed in the E-book is in accordance with the competencies in the revised 2013 curriculum. To achieve and improve students' scientific literacy skills, an appropriate learning approach or learning model is needed, and STEM is one of them. The STEM-based E-book content design that has been developed can be seen in Figure 9.

Rizky Agassy Sihombing & Hasruddin
Development of Science, Technology, Engineering, and Mathematics (STEM)-Based E-Book on Human Digestive System Material Based on Scientific Literacy
At the design stage the stages carried out consist of E-book design by making storyboards. E-book are displayed in two components, namely display and content. The display consists of explanations in the form of text, figures, animations, audio, video, interactive quizzes, and evaluation questions that are displayed. Then the material content is displayed according to the competencies in the 2013 curriculum, the E-book is designed based on STEM and is designed to improve scientific literacy skills. Software used by researchers in making this E-book are microsoft windows (microsoft word), power point, canva, flip pdf corporate and application builder.

Development Results
The third stage in ADDIE is developing an STEM-based E-book. At this stage the E-book that has been developed has changes based on suggestions and input from the validator. The initial stages in developing an E-book are in accordance with the design with the process steps. After the E-book product has been successfully developed, the next step is to carry out a feasibility test by means of product validation. Product validation is carried out after the initial product creation.

1. Experts Validation
There are four types of validation, namely material expert validation, media expert validation, learning design expert validation, and linguist expert validation, which were validated by validators can be seen in Table 3.

<table>
<thead>
<tr>
<th>No</th>
<th>Aspects</th>
<th>X</th>
<th>X1</th>
<th>P (%)</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Suitability of Material with KD, Learning Indicators and Objectives</td>
<td>10</td>
<td>12</td>
<td>83.3</td>
<td>Very Good</td>
</tr>
<tr>
<td>2</td>
<td>Material Accuracy</td>
<td>18</td>
<td>20</td>
<td>90</td>
<td>Very Good</td>
</tr>
<tr>
<td>3</td>
<td>Material Update</td>
<td>6</td>
<td>8</td>
<td>75</td>
<td>Good</td>
</tr>
<tr>
<td>4</td>
<td>Encourage Curiosity</td>
<td>6</td>
<td>8</td>
<td>75</td>
<td>Good</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>40</strong></td>
<td><strong>48</strong></td>
<td><strong>83.3</strong></td>
<td><strong>Very Good</strong></td>
</tr>
</tbody>
</table>

Material expert is one lecturer majoring in Biology, State University of Medan who are expert in the field of matter. Material expert state that this STEM-based E-book is feasible to use or valid. STEM-based E-book were declared feasible with an assessment of all aspects according to material expert, and an assessment was obtained with a score of 40 out of 48 (\(\bar{x} = 83.3\)), can be seen in Table 4.

<table>
<thead>
<tr>
<th>No</th>
<th>Aspects</th>
<th>X</th>
<th>X1</th>
<th>P (%)</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Software Engineeri...</td>
<td>2</td>
<td>8</td>
<td>100</td>
<td>Very Good</td>
</tr>
<tr>
<td>2</td>
<td>Visual and Audio Display</td>
<td>3</td>
<td>1</td>
<td>97</td>
<td>Very Good</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>5</strong></td>
<td><strong>60</strong></td>
<td><strong>98.3</strong></td>
<td><strong>Very Good</strong></td>
</tr>
</tbody>
</table>

The media expert is one lecturer in Natural Science Education study program at State University of Medan who is an expert in the field of media. Media expert state that this STEM-
based E-book is feasible to use or valid. STEM-based E-book were declared feasible with an assessment of all aspects according to media expert, and an assessment was obtained with a score of 59 out of 60 (\( \bar{x} = 98.3 \)), can be seen in Table 5.

Table 5. E-book assessment results of learning design expert

<table>
<thead>
<tr>
<th>No</th>
<th>Aspects</th>
<th>X</th>
<th>XI</th>
<th>P (%)</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Learning objective</td>
<td>16</td>
<td>16</td>
<td>100</td>
<td>Very Good</td>
</tr>
<tr>
<td>2</td>
<td>Scientific approach</td>
<td>20</td>
<td>20</td>
<td>100</td>
<td>Very Good</td>
</tr>
<tr>
<td>3</td>
<td>STEM indicators</td>
<td>16</td>
<td>16</td>
<td>100</td>
<td>Very Good</td>
</tr>
<tr>
<td>4</td>
<td>Presentation strategies</td>
<td>20</td>
<td>24</td>
<td>83.3</td>
<td>Very Good</td>
</tr>
<tr>
<td>5</td>
<td>Logical flow</td>
<td>4</td>
<td>4</td>
<td>100</td>
<td>Very Good</td>
</tr>
<tr>
<td>6</td>
<td>Evaluation</td>
<td>8</td>
<td>8</td>
<td>100</td>
<td>Very Good</td>
</tr>
<tr>
<td>7</td>
<td>Student activity</td>
<td>4</td>
<td>4</td>
<td>100</td>
<td>Very Good</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>88</td>
<td>92</td>
<td>95.6</td>
<td>Very Good</td>
</tr>
</tbody>
</table>

The learning design expert is one lecturer in Natural Science Education study program at State University of Medan who is an expert in the field of learning design. Learning design expert state that this STEM-based E-book is feasible to use or valid. STEM-based E-book were declared feasible by an assessment of all indicators according to learning design expert, and an assessment was obtained with a score of 88 out of 92 (\( \bar{x} = 95.6 \)), and can be seen in Table 6.

Table 6. E-book assessment results of linguist expert

<table>
<thead>
<tr>
<th>No</th>
<th>Indicators</th>
<th>X</th>
<th>XI</th>
<th>P (%)</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Direct and expressive</td>
<td>3</td>
<td>4</td>
<td>75</td>
<td>Good</td>
</tr>
<tr>
<td>2</td>
<td>Dialogic and interactive</td>
<td>4</td>
<td>4</td>
<td>100</td>
<td>Very Good</td>
</tr>
<tr>
<td>3</td>
<td>Adhere to Indonesian Language Rules (KBBI)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Use effective language</td>
<td>3</td>
<td>4</td>
<td>75</td>
<td>Good</td>
</tr>
<tr>
<td>5</td>
<td>Clarity in language usage</td>
<td>4</td>
<td>4</td>
<td>100</td>
<td>Very Good</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>17</td>
<td>20</td>
<td>85</td>
<td>Very Good</td>
</tr>
</tbody>
</table>

Linguist expert in the validation assessment consist of one person. The linguist is a lecturer in Indonesian Language and Literature Education at State University of Medan who is an expert in Indonesian language. Linguist state that this STEM-based E-book is feasible to use. STEM-based E-book were declared feasible by an assessment of all indicators according to linguists, and an assessment was obtained with a score of 17 out of 20 (\( \bar{x} = 85 \)).

2. E-book Revision Result Based on Expert Advices

In this development it is very necessary to have suggestions provided by experts so that this E-book can be even better in implementing it in the learning process.
At this development stage, STEM-based E-book products were created. In product manufacture, there are several stages that are carried out, starting from product installation to the product manufacturing process directly according to the initial design. Next, an evaluation of the E-book design will be carried out. At this development stage, evaluation is done by validating the product design carried out by material expert, media expert, learning design expert, and linguist.

After all the content in the E-book has been assessed and comments and suggestions given by experts for improvement, the researcher then revises the E-book according to the input that has been given.

**Implementation Results**

During the implementation phase, it's essential to provide supplementary learning materials that correspond with the science literacy-oriented e-books. These materials encompass the curriculum, instructional plans, student workbooks, and evaluation documents. It's worth noting, though, that this paper does not center its attention on this particular stage. The results of implementation can be seen in Table 7.

Based on Table 7, aspects 1, 2, and 4 received a score of 8, placing them in the “very good” category, while aspect 3 received a score of 7, also in the “very good” category. Aspect 3 had the lowest score, while aspects 1, 2, and 4 had the highest scores. Overall, the STEM-based E-book showed very good effectiveness.

**Evaluation Results**

During the evaluation phase, a comprehensive assessment is conducted for the newly created E-book. A meticulous review is performed to pinpoint both the strengths and weaknesses of the developed E-book.
The evaluation of the STEM-based E-book focused on its feasibility, and practicality. Expert validation questionnaires and student response questionnaires were used to assess feasibility, resulting in a high average score ($\bar{x} = 89.6$). For practicality teacher response questionnaires during implementation indicated practicality with an average score of ($\bar{x} = 97$). At the evaluation stage the results of the evaluation of the research that has been carried out are regarding the feasibility of STEM-based E-book. A thorough evaluation was carried out to identify the weaknesses and strengths of the developed E-book.

The STEM-based E-book developed by Prasetyo et al. (2021) is recognized for enhancing students' scientific literacy skills. This is supported by Stehle & Burton (2019) and Sarac (2018), who emphasize that integrating STEM concepts in lessons promotes comprehensive development of students' knowledge and skills. Moreover, the E-book's application form enables independent usage, aligning with Qizi & Kobiljanovna's (2021) notion that autonomous learning fosters students' abilities and skills without external assistance.

CONCLUSIONS

The conclusions from the results of research and development STEM-based E-book were declared 89.6% suitable for use as teaching book in schools based on the validation results of learning media expert, learning material expert, learning design expert, linguist, and students. E-book on the subject of human digestive system, designed to promote scientific literacy, have been created. These materials are enriched with visuals, animations, music, videos, quiz interactive, and accompanying worksheets. The assessment of the scientific literacy E-book quality encompasses three key facets: media, content, learning design, and language. Across these dimensions, the validity score falls within the range of 90-95%. Consequently, the developed scientific literacy e-book is deemed highly valid for use as an educational resource.

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