Development of interactive digital teaching materials based on 21st century skills in special purpose arabic language courses at STAI Attanwir Bojonegoro

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Abstract: Special Purpose Arabic Language refers to the teaching or learning of Arabic language tailored to specific needs or objectives. This means that Arabic language lessons are designed with a focus on its usage context in specific fields or activities, as opposed to a general approach to teaching Arabic. Special Purpose Arabic Language courses at the university level are tailored to specific needs and objectives in a professional context, producing graduates ready to face global challenges. The objectives of this research are (1) to analyze the process of developing interactive digital teaching materials based on 21st-century skills in Special Purpose Arabic Language courses at STAI Attanwir Bojonegoro, (2) to analyze the feasibility of interactive digital teaching materials based on 21st-century skills in Special Purpose Arabic Language courses at STAI Attanwir Bojonegoro, and (3) to analyze the effectiveness of interactive digital teaching materials based on 21st-century skills in Special Purpose Arabic Language courses at STAI Attanwir Bojonegoro. This research uses the Research and Development (R&D) method using the ADDIE model. Data collection techniques in this study use expert validation questionnaires, expert validation materials, student responses, and tests. The results of this research and development are as follows: (1) The development process consists of five steps: analysis, development, design, implementation, and evaluation, resulting in the production of interactive digital teaching materials based on 21st-century skills. (2) Based on validation results by experts, an average score of 90% was obtained. According to the Likert scale, the value of 90% falls into the category of very feasible because it is within the range of >61%. Meanwhile, the average percentage of student responses obtained an overall score of 88.5%, falling into the category of very feasible. (3) The results of the effectiveness test of teaching materials using a paired sample T-test showed a significant difference between pre-test and post-test scores with a significant value (2-tailed) of p = 0.000, <0.05. The null hypothesis (H0) in this study was rejected, and the alternative hypothesis (Ha) was accepted, indicating a significant difference between the two tests. Based on the data above, the developed teaching materials are effective in Special Purpose Arabic Language courses.

Keywords: Development, teaching materials, digital, interactive, special purpose arabic language.


Introduction

The urgency of choosing a topic in this research can be seen from the following theories and facts: First, there is a there is a lack of available learning resources. Special-purpose Arabic language skills are a specific and focused area of study. Currently, there is a lack of textbooks for this course. By developing interactive digital books aimed at special-purpose Arabic courses, it is hoped that this gap can be filled and provide students with access to relevant and useful learning resources.
Second, request for increasing Arabic language competency. Arabic is becoming increasingly important in today's global context. Many organizations, businesses, and international institutions have a need to communicate in Arabic for specific purposes, such as diplomacy, Arabic language education business, Al-Arabiyyah li Al-Athfal, Hajj and Umrah travel, tourism, or cross-cultural activities. In response to this demand, the development of books that focus on Arabic for specific purposes will help prepare students with the necessary competencies in this field.

Third, technological development. 21st century skills include the application of technology in learning and work. Interactive digital books leverage rapidly emerging technology to enhance students' learning experiences, allowing them to interact with content directly and get instant feedback.

Fourth, 21st century skills-based learning. Contemporary educational theory emphasizes the need for interconnection with 21st century skills, namely communication, collaboration, creativity, and problem-solving skills. Interactive digital books can integrate these elements into learning materials, allowing students to practice and hone these skills in an Arabic-language context.

Fifth, flexibility and accessibility Digital books can be accessed flexibly and easily via various electronic devices, such as computers, tablets, or smartphones. This allows students increased accessibility and the opportunity to practice language skills regularly anywhere.

Basically, the higher education curriculum is a representation of student abilities that is used by users in the field of education. In the industrial world, the 4.0 era is characterized by the use of technology (Alaloul, Liew, Zawawi, & Kennedy, 2020; Rymarczyk, 2020; Shahroom & Hussin, 2018), which is an important challenge for higher education institutions in Indonesia. There is a debate regarding the issue of university disruption, which questions the future role of universities in providing labor for industry so that people can work in any institution without needing to have a diploma, including a diploma from a university. Arabic Language Education includes Arabic Language courses with special purposes to equip students with a main graduate profile as educators and an additional graduate profile as practitioners in various lines of Arabic Language Education. Competitive graduates are greatly influenced by innovation, strategy, textbooks, and technology (Ahmad Jufriadi, 2022).

Meanwhile, in preparing interactive teaching materials, it is necessary to match the curriculum and student needs. As stated by Lestari (2013: 134), teaching materials are a collection of subject matter that follows the curriculum used to achieve predetermined competency standards and basic competencies. The results of interviews with Lenny Indriyani (2023) as a student and Siti Nurul Aini Lathifah, M.Pd.I. (2023) as the lecturer of this course agreed to state that the Arabic Language Textbook for Special Purposes was still minimal, so that learning resources were less than optimal.

Based on the background explanation above, the researcher was inspired to develop interactive digital teaching materials based on 21st century skills in the special purpose Arabic language course at STAI Attanwir Bojonegoro. By combining technology, 21st-century skills, and special-purpose Arabic in an interactive digital book, Researchers hope to provide a learning experience that is more interesting, relevant, and responsive to student needs. It can also improve students’ ability to apply Arabic in professional contexts, preparing them for the increasingly complex demands of the world of work.

**Method**

Referring to outcomes in research This, which produces a material product for interactive digital teaching for Special Purpose Arabic Language Courses (BATK) and is designed based on 21st century skills, uses research models and development (R&D). Because This research and development aims to develop materials for teaching and to test the effectiveness of the materials that will be developed. According to the theory put forward by Sugiyono (2019), development research is a research model that is deliberately designed to develop a product.

As research designed to develop an interactive digital teaching material product, the procedure for this research and This development uses a model of ADDIE. The four branches developed by Robert...
Maribe are: analysis (analyzing needs and making initial observations), design (designing teaching materials and collecting data), development (developing 21st-century skills-based teaching materials), implementation (carrying out product trials), and evaluation (evaluating teaching materials) (Nana Syaodih, 2013:164). This model can be used for various models, learning strategies, media, and teaching materials. The feasibility of the media can be determined from the experts' assessment that it is in the appropriate category with a percentage ≥ 61% (Riduwan, 2010: 15).

As for data sources, this research is the result of a validation questionnaire from media, material and language learning experts from STAI Attanwir Bojonegoro Arabic Language Education study program student. Secondary data sources include observation results, documents related to the curriculum, syllabus, RPS, and textbook material.

In this research, data collection techniques used validation sheets from media experts, material experts, and media user responses.

This sheet is filled in by media experts and material experts. This aims to determine the assessment of media experts and material experts regarding the suitability of learning media developed by researchers using the Linkert scale. The details of the Linkert scale are as follows:

<table>
<thead>
<tr>
<th>Evaluation</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Worth It</td>
<td>5</td>
</tr>
<tr>
<td>Worthy</td>
<td>4</td>
</tr>
<tr>
<td>Decent Enough</td>
<td>3</td>
</tr>
<tr>
<td>Not feasible</td>
<td>2</td>
</tr>
<tr>
<td>Totally Not Worth It</td>
<td>1</td>
</tr>
</tbody>
</table>

Source: (Ridwan, 2013:16)

This sheet is addressed to respondents (students) with the aim of knowing student responses to teaching materials that are being developed using the Guttman scale. The details are as follows:

<table>
<thead>
<tr>
<th>Evaluation</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>1</td>
</tr>
<tr>
<td>No</td>
<td>2</td>
</tr>
</tbody>
</table>

Source: (Ridwan, 2013:16)
Data analysis techniques in this research include analysis of validation results by learning media experts, material experts, and media user responses, along with data analysis techniques from each questionnaire:

Analysis of the results of review sheets from media experts and material experts were analyzed descriptively qualitatively using percentage techniques. To calculate the percentages from the validation sheets, data analysis techniques were used using percentage techniques obtained from validation questionnaire instruments with the following formula (Ari Donald; 2002: 91):

$$\text{Percentage of answers} = \frac{\text{jumlah nilai rill perolehan}}{\text{jumlah keseluruhan nilai ideal}} \times 100\%$$

After calculating and knowing the percentage results, they are then applied to determine the value of the teaching materials that are being developed. The table below shows the Expert validation scores.

<table>
<thead>
<tr>
<th>Evaluation</th>
<th>Score</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Worth It</td>
<td>5</td>
<td>81%-100%</td>
</tr>
<tr>
<td>Worthy</td>
<td>4</td>
<td>61%-80%</td>
</tr>
<tr>
<td>Decent Enough</td>
<td>3</td>
<td>41%-60%</td>
</tr>
<tr>
<td>Not feasible</td>
<td>2</td>
<td>21%-40%</td>
</tr>
<tr>
<td>Totally Not Worth It</td>
<td>1</td>
<td>0%-20%</td>
</tr>
</tbody>
</table>

Source: (Ridwan, 2013:15)

Results and Discussion

Development process interactive digital teaching materials based on 21st century skills in special purpose arabic language courses at STAI Attanwir Bojonegoro

In the process of developing interactive digital teaching materials, the ADDIE model is used, namely analysis, design, development, implementation, and evaluation. The following is an explanation of each step namely:

**Analyze**

The first step is to analyze needs in developing teaching materials. In this case the researcher analyzes the relevant books used in BATK learning, reviewing the curriculum, syllabus, RPS and materials or topics related to the discussion, accommodating the aspirations of lecturers and students regarding BATK materials, media or teaching materials. In this step the researcher conducted interviews with Language lecturer Special Purpose Arabic namely Siti Nurul Aini Latifah, M.Pd. Results of the interview provide some answers to be used as information by researchers, including:

1) In the learning process, it is known that lecturers carry out learning using various methods and strategies, such as drills, lectures, assignments, singing and so on. Lecturers also use learning media such as projectors and LCDs for certain materials.
2) In the aspect of textbooks, no textbooks have been found that are used by lecturers.
3) In the competency aspect taught, the average competency to be achieved still revolves around academic skills and is not skills-based 21.
4) In the aspect of providing opportunities to students, it is known that lecturers have not fully provided opportunities for students to improve their language skills.
5) In the aspect of student ability, it shows that the average student is not yet able to have Special Purpose Arabic language competence, they need media or teaching materials that support these activities.

**Design**

Next, after analyzing needs and obtaining sufficient information, the next step is to prepare interactive digital teaching materials. The second step is preparing a prototyperinteractive digital teaching materials based on 21st century. In its preparation, researchers developed related themes into material in textbooks, determined basic competencies and learning indicators, developed evaluation tools, prepared BATK teaching materials which are related with material and design teaching materials is a questionnaire.
Development

The third step is developing interactive digital teaching materials based on the 21st century. The result is with the following specifications:

1) This teaching material is entitled Special Purpose Arabic (New Paradigm of Arabic for the 21st Century)
2) This teaching material measures 18 x 25cm and uses Fusha Arabic.
3) This teaching material consists of front and back covers, pages, foreword, table of contents, CPL and CPMK, 21st Century Skills to be acquired, Instructions for Using the Book, learning indicators, main material accompanied by QR, video and audio, evaluation, list References.
4) This teaching material consists of five themes
5) This teaching material uses the Book Creator application
6) The interactive digital teaching materials developed have advantages including: based on 21st century skills, based on the Merdeka Belajar curriculum, the language used is simpler, equipped with audio and video.

Once the book prototype is complete, researchers validated this teaching material through expert testing to get responses regarding the advantages and disadvantages as well as input in developing this interactive digital teaching material.

Based on the test results of material experts and design experts, it can be concluded that Interactive Digital Teaching Materials Based on 21st Century Skills in Special Purpose Arabic Language Courses at STAI Attanwir Bojonegoro are very proper to use.

Implementation

The fourth step is to carry out the trial product. This step is carried out after the test and revision field test to try to apply interactive digital teaching materials to lecturers and students. This stage is aimed at getting input and responses from lecturers and students who have directly used the interactive digital teaching materials developed. Besides that, on stage, this researcher also tested the feasibility of using the teaching materials that were developed.

The respondents in this field test were 20 students. Students are taught by BATK course lecturers using interactive digital teaching materials by completing one chapter and then being asked to fill out a questionnaire in response. Student responses to learning materials that are being developed using the Guttman scale.

The results test student responses with a grade score of 94. This shows that Interactive Digital Teaching Materials Based on 21st Century Skills in Special Purpose Arabic Language Courses at STAI Attanwir Bojonegoro are worthy of use.

Evaluation

Evaluating interactive digital teaching materials is the final step. If there is input from users, namely lecturers and students, then the researchers take corrective steps so that the teaching materials become more perfect. If there is no input, the development of teaching materials can proceed to the final preparation stage or production of teaching materials in the form of Interactive Digital Teaching Materials Based on 21st Century Skills in Special Purpose Arabic Language Courses at STAI Attanwir Bojonegoro.

Feasibility test results for interactive digital teaching materials based on 21st century skills in special purpose arabic language courses at STAI Attanwir Bojonegoro

Media expert and material expert validation test results

Once the book prototype is complete, researchers validate this teaching material through expert testing to get responses regarding the advantages and disadvantages as well as input in developing this interactive digital teaching material. There were three experts asked to validate this teaching material, namely learning media development experts, learning materials experts, and Arabic language experts. This step is to obtain input from experts on improving the development of interactive digital teaching materials, both in terms of content, appearance, and substance.

The research results stated that the teaching materials had been assessed for their suitability by media experts and material experts. Assessment of the suitability of teaching materials in Chapter IV Arabic for Special Purposes using a validation sheet. On November 4, 2023, an expert assessment or validation was carried out. Researchers chose two experts who are very competent in their field. Test media experts and development teaching materials to Dr. Inchinia Angger Rowin. Material expert test
for developing teaching materials for Dr. Dzikrul Hakim, M.Pd. The assessment results use a 5-category Likert scale (Riduwan, 2013:15).

Based on validation results by media experts, an average value of 88% was obtained. Based on the Linkert scale, the average score of 88% is in the "very feasible" category because it is in the range > 61%.

Meanwhile, based on validation results by material experts, an average value (x) of 92% was found to be in the "very feasible" category because it was in the X range of 61%. Media validation results can be seen in the following table:

<table>
<thead>
<tr>
<th>No</th>
<th>Validator</th>
<th>Percentage</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Media Expert</td>
<td>88%</td>
<td>Very Worth It</td>
</tr>
<tr>
<td>2</td>
<td>Materials Expert</td>
<td>92%</td>
<td>Very Worth It</td>
</tr>
<tr>
<td></td>
<td>Average</td>
<td>90%</td>
<td>Very Worth It</td>
</tr>
</tbody>
</table>

Source: Processed Primary Data

Based on the results of validation by experts, an average value of 90% was obtained. Based on the Linkert scale, a score of 90% falls into the "Very feasible" category because it is in the range > 61%.

User response results (students)

The response in this development research involved 20 students from the Arabic Language Education study program. Student responses are needed to determine the reactions given by students to the presence of this digital teaching material. This sheet is addressed to respondents (students) with the aim of knowing student responses to teaching materials that are being developed using the Guttman scale.

<table>
<thead>
<tr>
<th>Question No</th>
<th>Evaluation 1</th>
<th>Evaluation 2</th>
<th>%</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>19</td>
<td>95</td>
<td>Very Worth It</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>17</td>
<td>85</td>
<td>Very Worth It</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>18</td>
<td>90</td>
<td>Very Worth It</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>18</td>
<td>90</td>
<td>Very Worth It</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td>18</td>
<td>90</td>
<td>Very Worth It</td>
</tr>
<tr>
<td>6</td>
<td>3</td>
<td>17</td>
<td>85</td>
<td>Very Worth It</td>
</tr>
<tr>
<td>7</td>
<td>3</td>
<td>17</td>
<td>85</td>
<td>Very Worth It</td>
</tr>
<tr>
<td>8</td>
<td>2</td>
<td>18</td>
<td>90</td>
<td>Very Worth It</td>
</tr>
<tr>
<td>9</td>
<td>2</td>
<td>18</td>
<td>90</td>
<td>Very Worth It</td>
</tr>
<tr>
<td>10</td>
<td>3</td>
<td>17</td>
<td>85</td>
<td>Very Worth It</td>
</tr>
<tr>
<td>Average</td>
<td></td>
<td></td>
<td>88.5</td>
<td>Very Worth It</td>
</tr>
</tbody>
</table>

Source: Processed Primary Data

Based on the table above, it shows that the teaching materials developed received a very good response. This is shown in the percentage of scores obtained from the questionnaires that have been distributed. The average percentage of student responses with an overall score was 88.5% and was included in the Very Decent category.

Test results on the level of effectiveness of interactive digital teaching materials based on 21st century skills in special purpose arabic language courses at STAI Attanwir Bojonegoro

In this research, the effectiveness test was carried out by conducting a pretest and posttest on 20 Arabic Language Education study program students who were taking the Special Purpose Arabic Language course.

The results of the effectiveness test of teaching materials used the Paired Sample T-Test. These results show a significant number between the pre-test and post-test values with a significant value (2-tailed) \( p = 0.000, <0.05 \) (see table 1). The null hypothesis (H0) in this study was rejected and the alternative hypothesis (Ha) was accepted where there was a significant difference between the two tests. So that after students learn to use 21st Century skills-based teaching materials, the post test scores can increase significantly.
Based on the table above, it shows that Interactive Digital Teaching Materials Based on 21st Century Skills in Special Purpose Arabic Language Courses are effectively used at STAI Attanwir Bojonegoro.

The process of developing interactive digital teaching materials follows the ADDIE model, namely analysis, design, development, implementation, and evaluation. At the analyze stage, researchers carried out a needs analysis by examining relevant books, curriculum, syllabus, RPS, and getting aspirations from lecturers and students of Special Purpose Arabic. The interview results show that there is a need for teaching materials based on 21st-century skills.

At the design stage, based on this analysis, the researcher prepared a prototype of interactive digital teaching materials by determining basic competencies, learning indicators, evaluation tools, and teaching materials. This step includes thematic design, material preparation, and the development of evaluation tools using Book Creator.

The development step involves developing interactive digital teaching materials with certain specifications, such as the title "Special Purpose Arabic (New Paradigm of Arabic for the 21st Century)" with a size of 18 x 25 cm and using Fusha Arabic. This teaching material consists of five themes and uses the Book Creator application. The advantages of this teaching material include being based on 21st century skills, in accordance with the Independent Learning Curriculum, and equipped with audio and video.

After that, researchers carried out validation by material experts and design experts at the implementation stage. The expert test results show that 21st Century Skills-Based Interactive Digital Teaching Materials in the Special Purpose Arabic Language Course at STAI Attanwir Bojonegoro are very suitable for use. The implementation stage involves product trials involving 20 students. The field test results showed a positive response from students with a score of 94, confirming that this teaching material is very suitable for use.

The final step, evaluation, involves the process of evaluating teaching materials based on input from users (lecturers and students). If there is input, researchers make improvements so that the teaching materials become better. However, if there is no input, the development of teaching materials can proceed to the final production stage.

Thus, the ADDIE model applied in the development of interactive digital teaching materials comprehensively covers the principles of various teaching materials development theories, digital teaching materials theory, special purpose Arabic learning theory, and 21st century skills theory. This process ensures a close link between theory and practice in producing teaching materials that are effective and responsive to student needs.

### Discussion of feasibility level test interactive digital teaching based on 21st century skills in special purpose arabic language courses at STAI Attanwir Bojonegoro

The validation results by media experts show an average value of 90%, which is included in the Very Appropriate category based on the Likert scale. This assessment reflects that the interactive digital teaching materials developed have received positive validation from media experts. The concept of developing teaching materials by Dick and Carey (2015) emphasizes the need for analysis, design, development, implementation, and evaluation stages. Positive validation results indicate that the researcher has succeeded in following the steps for developing teaching materials well. According to multimedia contextual theory (Clark and Mayer, 2016), digital teaching materials must pay attention to aspects such as appropriate multimedia representation and the use of well-arranged verbal and visual messages. Good validation results can be interpreted as the suitability of teaching materials with the principles of this theory.
Language learning theory (Berliner, 1994) emphasizes the importance of integrating context and specific learning objectives. With a high average score, it can be considered that the teaching materials have succeeded in accommodating the characteristics of special-purpose Arabic learning. Positive validation results can be interpreted as an indication that the teaching materials support the development of these skills through the use of digital and interactive formats.

Overall, the results of validation by experts provide strong support for the quality of interactive digital teaching materials. This indicates that the approach applied in developing teaching materials is in line with the principles of the theories above, creating a learning tool that is in line with contemporary demands and the needs of learning Arabic for special purposes.

**Discussion of the effectiveness level test: interactive digital teaching based on 21st century skills in special purpose arabic language courses at STAI Attanwir Bojonegoro**

The results of the effectiveness test using the pretest and post-test method with the paired sample T-test showed that there was a significant difference between the pre-test and post-test scores for 20 Arabic Language Education Study Program students who took the Special Purpose Arabic course. This shows that interactive digital teaching materials based on 21st century skills have a positive impact on increasing students' understanding and skills after going through the learning process.

The results of a significant increase in the post-test can reflect that the design of teaching materials, as developed in the prototype, is successful in responding to students' learning needs. A structured and planned approach can facilitate a more effective understanding and mastery of the material.

Multimedia contextual theory emphasizes the importance of presenting information in a format that combines visual and verbal elements. The success of digital teaching materials in increasing student understanding can be attributed to the appropriate and effective use of multimedia in conveying information. The significant increase in the post-test reflects the effectiveness of teaching materials in developing students' 21st century skills, such as collaboration, creativity, and problem-solving skills. This is in accordance with the aim of developing teaching materials based on 21st-century skills.

Thus, the results of the effectiveness test confirm that 21st Century Skills-Based Interactive Digital Teaching Materials in Special Purpose Arabic Language Courses are effectively implemented at STAI Attanwir Bojonegoro, and this can be linked to the principles of teaching material development theory, digital teaching material theory, theory-specific purpose Arabic language learning, and the 21st century skills theory that has been applied in its design and development.

**Conclusion**

Research and development Interactive Digital Teaching Materials Based on 21st Century Skills in Special Purpose Arabic Language Courses at STAI Attanwir BojonegoroThis aims to produce products in the form of teaching materials and test the validity and suitability of these materials. This development was carried out based on the ADDIE model, which consists of five steps: analysis, development, design, implementation, and evaluation.

In this research, the feasibility test was carried out by distributing questionnaires. Based on the results of validation by experts, an average score of 90% was obtained. Based on the Linkert scale, a score of 90% is in the "very feasible" category because it is in the range > 61%. Meanwhile, the average percentage of student responses with an overall score of 88.5% was included in the Very Decent category.

The results of the effectiveness test of teaching materials used the paired sample T-test. These results show a significant difference between the pre-test and post-test values, with a significant value (2-tailed) \( p = 0.000, <0.05 \) (see table 1). The null hypothesis (H0) in this study was rejected, and the alternative hypothesis (Ha) was accepted where there was a significant difference between the two tests. So that after students learn to use interactive digital teaching materials based on 21st century skills, post-test scores can increase significantly. Based on the data above, the teaching materials developed are effective in the Special Purpose Arabic course.
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