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The Development of Interactive Multimedia Career Information for Students at SMKN 1 Mandau

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Abstract. Access to career information for students that is still presented in a conventional and less engaging manner has the potential to reduce students' involvement in the career exploration process optimally. This study develops interactive multimedia career information as a supporting medium designed to facilitate students' career exploration needs, so that students can actively participate in exploring, selecting, and understanding information that is relevant to their interests and career plans. The purpose of this study is to produce an interactive multimedia career information product and to analyze the feasibility of the product in terms of validity and practicality. This study uses a Research and Development (R&D) approach with the ADDIE development model, which includes the stages of analysis, design, development, implementation, and evaluation. This research focuses on product development and feasibility testing (validity and practicality) at the initial implementation stage; therefore, testing the effectiveness of the product in improving career exploration is not included within the scope of this study. The results show that the developed interactive multimedia has a validity level with an average score of 96.23%, categorized as very valid, and a practicality level with a score of 92.21%, categorized as very practical. These findings confirm that the developed interactive multimedia career information is feasible to be used as a career information medium to support the career exploration of vocational high school students.

Keywords: Interactive Multimedia, Career Information, Vocational High School Students, R&D

Introduction

Adolescents' attention to their future increases along with cognitive, social, and emotional development that occurs during secondary school. At this stage, students begin to explore various occupational alternatives and therefore require accurate career information that aligns with their individual potential (Hurlock, 1997; Pilosusan et al., 2021). Nevertheless, numerous studies indicate that the career decision-making process among students remains suboptimal. A survey conducted by Universitas Pertamina (2024) reported that 92% of senior high school students experience confusion in determining their academic majors, and further research found that most students have not yet been able to clearly establish their career choices (Putri et al., 2022).

This condition is exacerbated by the limited utilization of career information media in schools. Guidance and counseling services provided by school counselors are still dominated by conventional methods such as lectures, posters, and brochures (Basri, 2018). In fact, the minimal use of technology causes career information to be difficult to understand and less engaging for students (Gutara & Wati, 2025; Apriani et al., 2025). Findings at SMKN 1 Mandau further reinforce this condition, where 96% of students reported needing information about types of careers. In addition, 75.3% of students stated a preference for digital media, and 60% considered interactive media to be the easiest form of information delivery to understand. These data indicate a significant gap between students' needs and the available media, making the development of interactive multimedia an urgent necessity to ensure that career information services can be accessed, understood, and received more effectively.

From the perspective of career development theory, the secondary school period represents a critical phase for students to explore various occupational alternatives. Super

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emphasized that the exploration stage requires learning experiences and guidance so that students are able to connect their self-concept with career choices (Sulusyawati & Maya, 2023). In line with this view, Holland's RIASEC model highlights the importance of congruence between personality types and work environments, indicating that students require information and assistance to assess this suitability (Rahmat et al., 2019). Thus, guidance and counseling services play a strategic role in facilitating self-understanding, providing information about the world of work, and supporting students' career decision-making.

Interactive multimedia is one of the solutions recommended in the context of modern education. The integration of visual and verbal elements can enhance understanding and information retention, while its interactive nature encourages more active student engagement (Herman, 2017). The use of multimedia in guidance services has also been proven effective, as indicated by the findings of Sabrini et al. (2024), and interactive digital media has been shown to increase students' motivation and self-understanding (Ariarty et al., 2024; Muthmainnah et al., 2025).

Observations and interviews conducted at SMKN 1 Mandau indicate that the available digital media have not been optimally utilized and have not been able to assist students in linking their personal potential with career choices. This situation reveals a gap between students' needs and the available career service media. Therefore, the development of interactive multimedia career information is considered necessary to provide services that are more engaging, easily accessible, and aligned with the characteristics of digital-generation students. This study aims to produce interactive multimedia career information for students of SMKN 1 Mandau as an effort to improve the quality of career information services and to support students' career exploration processes.

Methods

This study employed a Research and Development (R&D) method using the ADDIE development model, which consists of the stages of analysis, design, development, implementation, and evaluation. However, in this study, the development process was limited to the implementation stage, while the evaluation stage was not conducted summatively. The evaluation carried out was formative in nature through validation, revision, and practicality testing activities to ensure the feasibility of the product. The ADDIE model was selected because it provides a systematic framework and is appropriate for the development of educational media (Sugiyono, 2016; Risal et al., 2022).

The product development was conducted from August to November 2025 through activities including initial design, prototype development, expert validation, revision, and preliminary testing. The research subjects consisted of media experts, content experts, and students involved in the practicality testing stage. At the analysis stage, the researcher conducted a needs analysis, identified development objectives, analyzed learner characteristics, examined the service context, and analyzed the expected competencies and skills. Referring to Winaryati et al. (2021), this stage was aimed at capturing real conditions in the field, mapping students' needs, and ensuring alignment between service objectives and student characteristics so that the developed product would be appropriately targeted.

At the design stage, the researcher formulated development objectives, organized the framework of career information content, determined the multimedia format and interaction flow, prepared an initial design in the form of a storyboard, and developed validation and practicality instruments. The results of the needs analysis served as the basis for ensuring that the interactive multimedia design was relevant to students' profiles and supported the career exploration process. The development stage involved realizing the design into an interactive multimedia career information product. The developed product was subsequently validated by media experts and content experts to assess its feasibility and obtain suggestions for improvement. Revisions were made based on validators' feedback until the product was declared feasible for testing. The implementation stage was conducted through practical testing with

students of SMKN 1 Mandau. The practicality test aimed to obtain data regarding ease of use, usefulness, and clarity of the display and content. The results of the practicality test were used as a basis for product refinement so that the interactive multimedia could be optimally utilized in career information services.

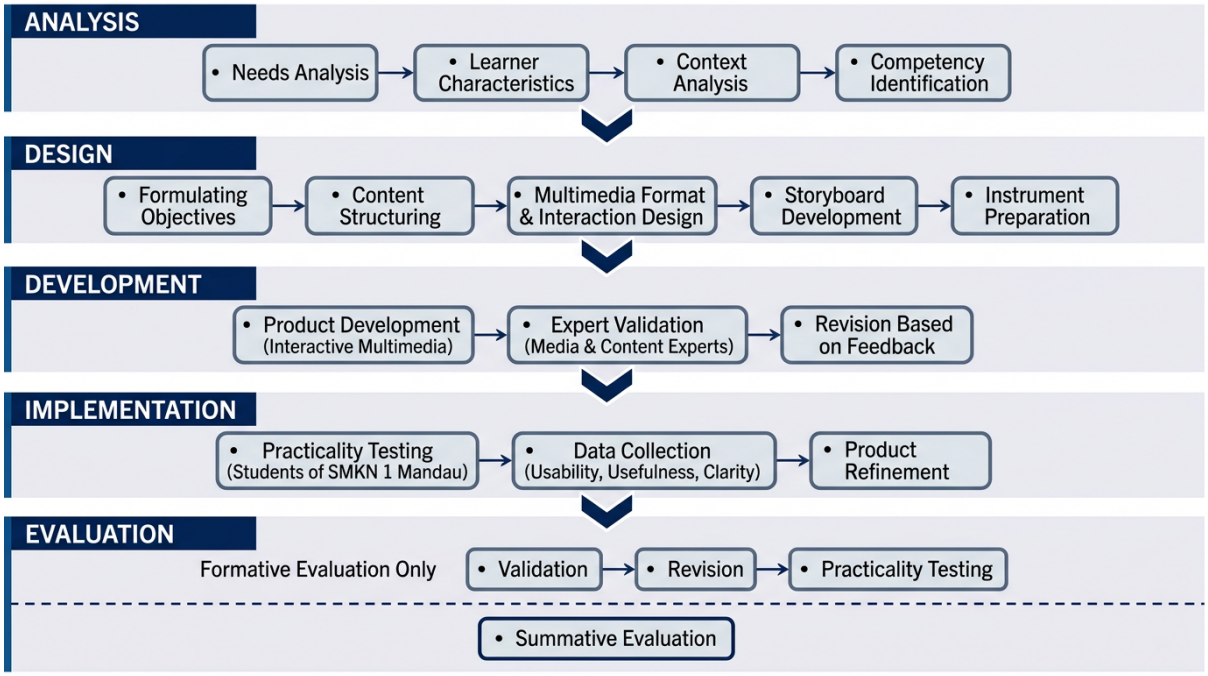

Figure 1. The adapted ADDIE model illustrates the R&D stages implemented in this study.

Result and Discussion

Result

This study resulted in the development of an interactive multimedia career information product for students of SMKN 1 Mandau. The trial was conducted at SMKN 1 Mandau because the school represents the research needs, particularly regarding the limitations of career information media that are still predominantly conventional. The developed product also has the potential to be implemented in other schools with similar characteristics and needs.

Analyze

The findings of the needs assessment indicate that career information services at SMKN 1 Mandau are still delivered through conventional methods such as lectures, posters, and brochures. This model does not align with students' preferences, as they tend to favor interactive digital media. Analysis using the My Vocational Situation questionnaire revealed a high level of students' need for career information: 94.7% required confidence in their career choices, 96% needed an understanding of career types, 97.3% required information on job opportunities, and 94.7% needed information on further training opportunities.

Preferences regarding media formats showed that 75.3% of students favored digital media and 60% preferred interactive media. These findings emphasize the need for interactive digital media capable of addressing career exploration needs more effectively and in accordance with students' characteristics. Thus, the analysis stage confirms that the development of interactive digital media is highly relevant to support career exploration among vocational high school students.

Based on the results of the analysis stage, it can be concluded that the development of interactive multimedia career information is essential to address the gap between students' needs and the career information services currently available in schools. The needs assessment indicates that most students require career information that is clearer, more engaging, and easier

to understand, with a strong preference for digital and interactive media. The analysis of goals, learners, tasks, context, and required skills confirms that students possess adequate technological readiness, schools provide sufficient facility support, and career exploration activities can be effectively facilitated through interactive media. Therefore, the analysis stage provides a strong foundation indicating that the development of this product is relevant, necessary, and aligned with the characteristics and needs of its users.

Design

The design stage produced an initial framework for the interactive multimedia career information based on the needs identified during the analysis stage. At this stage, the development objectives were clearly formulated, namely to create an interactive and engaging career information medium capable of supporting students' career exploration processes. The career information materials were then organized into a systematic structure, covering relevant topics such as occupational information, Holland personality types, educational pathways, and scholarship information.

The researcher developed the material framework, navigation flow, and media format by integrating text, illustrations, videos, audio, and interactive activities. The product was designed with a main menu structure consisting of: (1) Career Exploration, (2) Personality Types, (3) Education and University Pathways, (4) Mini Games, (5) Career Videos, (6) Glossary, (7) Digital Portfolio, (8) About the Media, (9) User Guide, and (10) Sikarier.com Website. All features were designed based on the principle of alignment, ensuring consistency among objectives, content, and instructional strategies (Winaryati et al., 2021).

Overall, the design stage resulted in a media blueprint that aligns with students' needs and the principles of modern multimedia design. Subsequently, the entire design was implemented using Unity, which was considered capable of producing stable and responsive interactive media (Alrashidi, 2022). Below are the results of the interactive multimedia career information design :

Figure 2. Home Page Display

Figure 3. Career Exploration Feature

Figure 4. Personality Type Feature

Figure 5. Education Pathway Feature

Figure 6. Video Feature

Figure 7. Mini Games Feature

Development

After the design stage, the next phase was the development stage, which included the validation of research instruments, the development of interactive career information

multimedia, expert validation of the product, and media revision. The research instruments were first validated by an instrument validator to ensure the appropriateness and reliability of the measurement tools. After the instruments were declared valid, the media validation process was conducted by media experts and subject matter experts. The results of the expert validation are presented in the following table:

Table 1.
Expert Validation Result

No.	Validator	Validity Score	Category
1	Media Expert	94.25%	Very Valid
2	Material Expert	98.21%	Very Valid
	Average	**96.23%**	**Very Valid**

Based on the table, the media expert validation obtained a score of 94.25%, which falls into the very valid category, covering aspects of graphics, layout, interface design, and ease of use. Suggestions from the media expert regarding the addition of text labels on icons and the inclusion of quizzes were revised to enhance visual clarity. Meanwhile, the subject matter expert validation resulted in a score of 98.21%, categorized as very valid. The content was assessed as accurate, aligned with students' characteristics, and relevant to the needs of guidance and counseling services (Kemendikbud, 2021). One improvement was made based on the subject matter expert's suggestion, namely the addition of scholarship links to enrich information on further education pathways.

Furthermore, the overall average validity score of 96.23% indicates that the media possesses very high content and visual quality. This percentage is consistent with Widiyoko's (2025) criteria, which classify scores above 75% as very valid. The findings at this stage strengthen the conclusion that the media is feasible for use in the implementation stage.

Implementation

The implementation stage was carried out after the interactive career-information multimedia was declared feasible by both media and material experts. The developed product was then tested for its practicality with students at SMKN 1 Mandau. The results of the practicality test are presented below:

Table 2.
Practicality Test Results

No.	Aspect	Percentage (%)	Category
1	Ease of Use	94.71%	Very Practical
2	Time Efficiency	90.38%	Very Practical
3	Content Relevance	91.35%	Very Practical
4	Attractiveness	92.31%	Very Practical
5	Independent Learning	92.31%	Very Practical
	Average Practicality	**92.21%**	**Very Practical**

Based on the table, the practicality test data obtained a score of 92.21%, which falls into the very practical category, indicating high product quality. Improvements were observed in aspects of attractiveness, ease of use, and independent learning, indicating that the media is capable of supporting students' independent career exploration. Scores above 75% across all aspects indicate a high level of practicality (Widiyoko, 2025). Overall, the implementation results confirm that the interactive career information multimedia has a high level of practicality and is able to support students in accessing career information independently.

Evaluation

The evaluation stage is carried out to assess the effectiveness and overall quality of the interactive multimedia career information products that have been developed. This evaluation includes formative and summative evaluations. Formative evaluations have been carried out at the development and implementation stages through expert validation and product revision. Meanwhile, summative evaluation was carried out after the implementation stage by analyzing the results of the practicality test and students' responses to the use of media.

The results of the summative evaluation showed that the multimedia products developed had a high level of effectiveness and usability. This is shown by the average practicality score of 92.21%, which is in the very practical category. High scores in all aspects, namely ease of use, time efficiency, material relevance, attractiveness, and support for independent learning, indicate that this media can facilitate the process of exploring students' careers optimally.

In addition, the results of the evaluation also showed that the integration of interactive elements such as videos, mini games, and digital portfolios made a positive contribution to student engagement and motivation. These findings confirm that the use of interactive multimedia can improve the learning experience as well as access to career information.

However, there are some limitations in this evaluation stage. Product implementation is still limited to one school context, so generalization of findings needs to be done carefully. In addition, the evaluation still focuses on the practical aspect and has not measured the long-term impact on students' career decision-making abilities. Therefore, further research is recommended to test the effectiveness of the product in a broader context as well as use experimental designs to measure learning outcomes in more depth.

Overall, the evaluation stage shows that the interactive multimedia career information developed has a high level of validity and practicality and has the potential to be effective in supporting career guidance services in vocational high schools.

Disscusion

The results of this study indicate that the developed interactive career information multimedia is highly valid and highly practical for use. This media serves as a response to the needs of career information services that have traditionally relied on conventional methods such as lectures, posters, and brochures, which are considered less effective for digital-native students who tend to prefer visual and interactive presentations. This condition is consistent with the findings of Prayoga et al. (2022), who reported that vocational high school students show a strong preference for visual and digital learning styles, making the use of multimedia an unavoidable necessity.

Findings from the analysis stage reveal that more than 90% of students require information related to careers, types of occupations, job opportunities, and further education pathways. This confirms that students are currently in the career exploration stage, as described by Holland, which emphasizes the importance of rich informational exposure to help students develop clarity in career choices. In line with this, Salimah et al. (2019) demonstrated that the use of Android-based interactive multimedia in career information services improves students' career decision-making abilities, indicating that multimedia supports students' career-related decision-making processes.

From the perspective of product quality, expert validation results indicate that aspects of content, visual appearance, navigation, language, and material relevance have met the standards of educational media development. The very high level of validity suggests that the career information content presented is accurate, relevant, and structured in a way that supports readability and learning flow. In multimedia learning theory, alignment between visual design and content contributes to better understanding by helping users focus on essential information, reducing unnecessary cognitive load, and facilitating the integration of verbal and visual information (Moreno & Mayer, 1999). This view is consistent with Herman (2017), who emphasized that appropriate audio-visual integration can enhance information processing,

enabling complex materials such as various professions, educational pathways, and employment opportunities to be understood more effectively than through static text presentation.

Furthermore, the high validity also indicates that the product meets fundamental principles of educational media design, including visual consistency, clarity of icons and buttons, and ease of navigation between menus. In interactive media, navigation plays a crucial role, as it determines whether students can explore content independently without confusion. Revisions made based on expert feedback, such as adding text to icons and incorporating quizzes, demonstrate that the development process focused not only on aesthetics but also on pedagogical and communicative functions, ensuring that user interaction with the media becomes clearer and more meaningful.

The very high practicality test results further reinforce that the product is not only feasible in terms of quality but also easy to implement in real usage contexts. Practicality indicates that students perceive the media as easy to use, engaging, efficient, and supportive of independent learning. This finding is important because career information services ideally should not be limited to classical guidance sessions but should also be accessible to students at any time according to their needs. When a medium is considered practical, it enables students to engage in more flexible exploration and reduces dependence on one-way information delivery. This is consistent with Cahyaningsih et al. (2018), who stated that interactive multimedia can enhance career planning by providing more active and constructive learning experiences, in which students do not merely receive information but also engage in activities that strengthen self-understanding and career choices.

The developed features, such as career information, RIASEC personality types, educational pathways, educational videos, mini-games, and digital portfolios, serve as important elements in supporting students' systematic career exploration. This approach aligns with Lee and Hammer (2011), who argued that gamification and interactivity can enhance learners' intrinsic motivation and encourage active participation in the learning process.

From the perspective of guidance and counseling services, the findings of this study have practical implications. Interactive multimedia can assist school counselors in enriching career information service strategies, both in classical guidance sessions and independent services. This media also has the potential to improve service efficiency, as basic information can be accessed independently by students, allowing counselors to focus on more personalized interventions such as clarifying career choices, reflecting on individual potential, and planning concrete action steps. In this sense, multimedia functions as a supporting tool that enhances service quality and aligns it with advancements in educational technology.

However, it should be emphasized that this study is limited to the implementation stage. The research focus was directed toward assessing product feasibility through validity and practicality, and therefore, the effectiveness of the media in improving career exploration or the quality of career decision-making has not yet been experimentally tested. Consequently, further research is recommended to examine the effectiveness of the developed media. Future studies may also expand formative evaluation by involving feedback from school counselors and parents, as well as examining the sustainability of media use over a longer period.

Overall, this study demonstrates that the developed interactive career information multimedia is highly feasible and practical for implementation in guidance and counseling services. The media not only improves access to career information but also provides a more engaging and meaningful career exploration experience for digital-native students. The high levels of validity and practicality further confirm that this product can serve as an effective supporting medium for school counselors in delivering modern, responsive career information services aligned with developments in educational technology.

Conclusion

This study concludes that the development of interactive career information multimedia is both necessary and effective in addressing students' needs in the career exploration process.

The results of the needs analysis indicate that career information services in schools remain largely conventional and are less aligned with the characteristics of digital-native students, who tend to prefer visual, interactive, and easily accessible media. Most students require information regarding types of occupations, employment opportunities, educational pathways, and the alignment of career choices with their personal potential; therefore, interactive digital media represents an appropriate solution. The development process using the ADDIE model produced a product that aligns with students' needs, as evidenced by expert validation results with a score of 96.23% (very valid) and practicality test results of 92.21% (very practical).

The high validity score indicates that the content, visual appearance, navigation, and alignment of materials with multimedia design principles meet the standards of educational media. Meanwhile, the practicality results demonstrate that students perceive the media as easy to use, engaging, efficient, and supportive of independent learning in exploring career information. Features such as career exploration, RIASEC personality types, educational maps, career videos, and mini-games have been shown to support the career exploration process in a more meaningful way. Thus, the developed interactive career information multimedia is not only feasible and practical but also capable of improving the quality of guidance and counseling services in schools by enhancing the delivery of career information and supporting school counselors in providing modern, effective, and student-centered services.

This product can be utilized by school counselors as a more adaptive, interactive, and relevant medium for career information services. Future research is recommended to conduct effectiveness testing to assess the impact of media use on career exploration indicators or career decision-making, involve a broader range of participants, and refine the features based on user feedback obtained through more comprehensive implementation.

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