

"Who Am I?" Learning Media in the Form of Augment Reality for Mapping Student's Talent and Interest

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Abstract

The guidance and counseling media occupy a crucial position in achieving service goals. The existence of media can enhance accessibility to services and facilitate the dissemination of information to students and counseling teachers. The long-term goal in the development of Learning Media in the Form of Augment Reality "Who Am I?" for the material of mapping talents and interests of Guidance and Counseling Study Program Students, Faculty of Teacher Training and Education Science, UNTAN, is to facilitate the integration of the media into the curriculum for guidance and counseling study program students during their teaching practice at school. The method used in this research is the Multimedia Development Life Cycle (MDLC), which consists of 6 stages of development, namely concept, design, material collection, application development, application testing, and distribution. The research involved guidance and counseling students of the Faculty of Teacher Training and Education Science, UNTAN. The findings of this development research indicate that the learning media in the form of Augmented Reality "Who Am I?" is an effective medium for the course of mapping the talents and interests of guidance and counseling students, as evidenced by the overall score of the validation questionnaire.

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1. Introduction

Higher education is the primary means of facilitating and equipping students with knowledge and skills that will enable them to become independent. Higher education is also a place where students learn, adapt, and prepare themselves to pursue their chosen careers in the future (Bakar, 2022). In order to learn, adapt, and prepare for the next career path, a student must know themselves, which is referred to as the self-concept. The self-concept is an important component of personality and is a belief system consisting of various aspects in the form of cognitive assessments and graded evaluations of one's self, as well as its relationship with the environment (Zhang & Li, 2010). Another research suggests that self-concept encompasses the understanding that a person has about himself based on his social environment (Masturah, 2017). Therefore, self-concept is a person's assessment and evaluation of themselves, which is influenced by their environment.

Nastiti and Laili (2020) described that human behavior is invariably driven by the potential for growth. This potential further serves as a catalyst for expanding one's interests and talents. By understanding oneself, a student can discern their interests and talents (Harahap et al., 2023). The influence of interests and talents on a student's achievement is significant. Indeed, the success of a student in their education is influenced by their interests and talents in their field of education (Sarwita, 2018). Furthermore, an understanding of interests and talents affects future career choices. Meanwhile, Phifer (2009) affirmed that career decisions are an ongoing, lifelong process of making choices that complement a person's personal attributes and help them realize the basic values of life. However, before making a decision, it is essential to engage in career planning to ensure that the job chosen aligns with one's potential (Halida et al., 2023). Another perspective expounds that to achieve success in the workplace, individuals must first prepare themselves by studying and practicing diligently in their chosen field. This preparation should involve an understanding of one's talents and interests (Asiah, Violona & Mawaddah, 2022).

The introduction of the student's self-concept is a significant component of the Personal Guidance course, which forms part of the Guidance Counseling Study Program at the Department of Education, Faculty of Teacher Training and Education. This course is delivered to fifth-semester guidance and counseling students, with two learning outcomes. One of these is that students should gain an understanding of their talents and interests, as well as how to channel and develop them through innovative, creative, and productive activities.

There are a number of influencing factors in the achievement of learning outcomes. One such factor is the adopted learning media. The use of appropriate media can enhance student attention to learning materials. Media can also increase student interest and motivation, concentration, and the overall quality of the learning process. Ultimately, the use of appropriate media can lead to greater student understanding of the subject matter (Istiqlal, 2018). Furthermore, Ariyani et al., (2022) describes that the utilization of learning media can enhance the quality of learning, resulting in several beneficial outcomes, including the standardization of learning, increased interest, enhanced interactivity, and the capacity to conduct the learning process in any location and at any time. The incorporation of technology into the learning process also facilitates the acquisition of global competence or knowledge of education in accordance with the specific field of specialization of Generation Z (Probowato, Apriani, & Indreswari, 2023).

However, there are issues with the Guidance and Counselling Study Program of UNTAN in relation to the utilization of learning media when providing material on mapping interests, talents, and characters based on realistic, investigative, artistic, social, enterprising, and conventional (RIASEC) approaches. The complaint has been observed from the fifth and seventh-semester students' responses to questionnaires distributed through Google Forms. These fifth and seventh-semester students have received material on mapping interests, talents, and RIASEC-based characters. Data collection was performed on October 23-25, 2023, by involving almost all students in the two cohorts (99.7%).

The garnered data illustrates that the majority of students expect the addition of interesting learning media in providing the learning material. Students also hope for variations in the use of learning media that do not solely rely on PowerPoint. The following is a summary of student's expectations of the learning media used by lecturers on the material of understanding talents and interests. (1) Lecturers should consider various media approaches, such as using slides, images, and videos that support course material to visualize crucial concepts. (2) The material can be provided with more modern learning media, such as the use of e-books or those filled with examples and more detailed material. (3) Increase the number of interesting learning media. (4) This course should provide short, concise, and clear material. (5) The delivery of the learning process must use multiple methods and multimedia. (6) Lecturers should use more updated media following the recent technology progression.

Previous research conducted by Putra, Susanto and Fernando (2023) demonstrated the efficacy of Augmented Reality (AR) technology in facilitating the introduction of Lampung Script. Riskiono et al. (2020) further asserted that AR applications utilized as learning media represent a valuable step toward the provision of more creative and interactive learning media. The utilization of media of this nature provides students with a novel experience in mapping their talent interests represented in 3D, thereby enhancing the appeal of the learning process. This is corroborated by Nistrina (2021), who posits that augmented reality technology enables students to interact with visual objects that appear to merge with the real world, thus allowing for realistic interactions.

In light of the aforementioned conditions, it is imperative to develop learning media for personal guidance courses, particularly in the material of mapping interests, talents, and character based on the RIASEC model. The development of learning media is of paramount importance due to the discrepancy between the expectations of learning outcomes and the conditions experienced by students. The developed product or media was named "Who Am I?" and is an immersive learning media development product that employs augmented reality (AR) technology. This media can be utilized on an Android smartphone, thereby facilitating accessibility for students and lecturers.

2. Method

This research was conducted using the Research and Development (R&D) method. The R&D method is a systematic approach chosen to discover new knowledge, solve problems, or develop products, processes, or services (Rachman et al., 2024). In particular, this study employed the Multimedia Development Life Cycle (MDLC) model, consisting of six development stages. These stages are concept, design, material collection, application development, application testing, and distribution (Febriza et al., 2021), as illustrated in Figure 1.

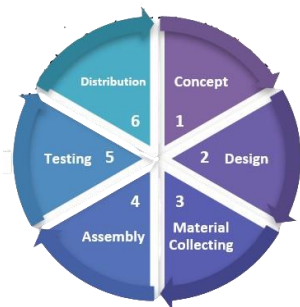


Figure 1. MDLC Method

In this study, the MDLC model was performed in six stages. First, the concept stage, in which the concept is referred to determine the title, purpose, objectives, target users, platform, and graphics and audio. Second, the design stage, where the design for the program architecture was built, including the style and appearance of the application. Third, the material collecting stage, in which the image material was collected for user interface design made using CorelDraw software. Subsequently, files in the form of audio for background sound were obtained from <https://mixkit.co/>. The voice of explanation was recorded directly using a smartphone, while 3D objects were created using Blender software. Fourth, assembly stage, Unity3D software was employed to create the application using the C# programming language for making functions. Vuforia tools were utilized to develop AR features in this application. Subsequently, the application is saved and compiled into a .apk file using the Android Studio software development kit, enabling it to be installed on an Android device. Fifth, the testing stage, where the test was conducted to ensure an error-free project following the design specifications (Afrian & Raharja, 2022). Testing was performed in three stages, namely media expert testing, black box testing, and summative evaluation testing. In the last stage, the AR application "Who Am I" was disseminated to research subjects. The AR application was uploaded to Google Drive, which was then distributed to students and lecturers so that they could be installed via their respective smartphones.

The respondents in this study were fifth and seventh-semester students who had taken the Personal Guidance course. The media experts were two individuals, one with a background in engineering and expertise in using software and one serving as a black box tester. These experts were a lecturer and master plan with an educational background in the Software Engineering Options department. The instruments were a media feasibility test format, a black box assessment instrument, a talent interest questionnaire, and a summative evaluation format. The data analysis was performed using a quantitative method involving the calculation of the average product assessment results provided by the media experts, as well as the summative evaluation results provided by the research subjects. Additionally, a qualitative analysis was also conducted, which entailed the consideration of criticisms and suggestions from the media experts.

3. Results and Discussion

3.1. Results

The developed product or media produced in this study is entitled "Who Am I?" This product is an immersive learning media development product utilizing augmented reality (AR) technology that can be accessed through an Android smartphone. The content included in this AR application comprises material about mapping interests, talents, and character based on the RIASEC model,

which encompasses a multitude of professional fields and their activities at work, presented in three-dimensional form as in the real world.

The development stages of the Augmented Reality (AR) application "Who Am I?," are carried out following the findings of Riskiono et al. (2020), which indicate that the utilization of AR applications as a learning medium is an effective approach to enhance the provision of creative and interactive learning resources. Another research posits that AR technology is highly beneficial in the field of education, as it enhances the interactivity, effectiveness, and comprehension of learning (Afrian & Raharja, 2022). The display of the developed media is presented in Figures 1-7.



Figure 2. Display of Splashscreen & Homepage of the Media



Figure 3. Display of Login Page



Figure 4. Interest and Talent Mapping Questionnaire



Figure 5. Display of Profession based on Response to the Interest and Talent Mapping Questionnaire



Figure 6. 3D Display of Profession based on Response to the Interest and Talent Mapping Questionnaire

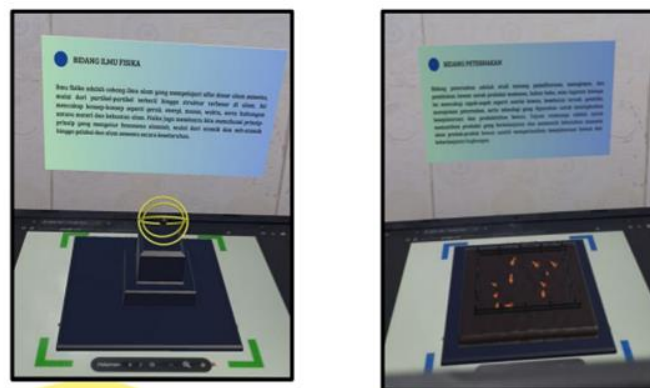


Figure 7. 3D Display of Alternative Profession Menu and its Description

The "Who Am I?" augmented Reality (AR) application developed in this research has undergone a series of rigorous tests to ensure its accuracy and alignment with the original design (Afrian & Raharja, 2022). The testing process was conducted in three stages. The first stage involved formative evaluation, which aimed to assess the application's alignment with the assessment framework for learning media proposed by Wahono (cited in Syahri et al., 2014). The second stage was the testing stage of the functionality assessment criteria using the Black Box testing method. The last stage was a summative evaluation for analyzing and garnering student responses following the applications of the learning media. The assessment was performed using assessment criteria from assessment aspects of the ISO 25010 testing standard in the operability aspect (Febriza et al., 2021). The detailed explanation of each assessment stage is described in the following.

3.1.1. Evaluation by Media Experts

This evaluation aims to ascertain whether the application aligns with the established criteria for learning media in the form of applications or software. These criteria encompass three key dimensions, namely, the value of beauty and visual appeal, the functionality and design of the application, and the design of the application. In this study, the expert evaluation was performed involving two experts in the field of engineering who possess expertise in the use of software. The summary of the assessment results is presented in Table 1.

Table 1. General Assessment Results from Media Experts

Assessment Aspects	Media Expert 1	Media Expert 2
The aesthetic value and visual appeal	70%	90%
Application and design	76%	88%
The aesthetic value and visual appeal of the application	70%	93%
Total	72%	89,3%
Average Score	81%	

The results of the assessment conducted by the first media expert resulted in a 72% score, categorized as reliable, while the second expert granted a score of 89.3%, in the very reliable category. The mean score obtained is 81%, indicating that the learning media in the form of augmented reality, "Who Am I?," for the course of mapping the talents and interests in the Guidance and Counselling program of the Faculty of Teacher Training and Education Science, UNTAN is 81%, which falls into the very feasible category.

3.1.2. Black Box Testing

Black-box testing is employed to ascertain the efficacy of an application by evaluating the functionality of its constituent features (Raharja & Indrajaya, 2023). The testing was conducted by running each feature in the application on an Android smartphone with multiple repetitions. Three different types of smartphones were used, including the Xiaomi Redmi Note 8, the Realme C2, and the OPPO A53s. The results of the trial indicated that the three smartphones yielded comparable results.

The results of the feature test using black box testing indicate that all application features were successfully tested and functioned properly, in accordance with their intended features. Based on the results of the feature testing using black box testing, the features in the application are operational and can be used without further improvement.

3.1.3. Summative Evaluation

The summative evaluation stage is designed to analyze and obtain results from student responses to the developed applications. These assessment criteria utilize aspects of the ISO 25010 testing standard assessment on the operability aspect (Febriza et al., 2021). The operability aspect was tested involving 10 fifth and seventh semester students of the Guidance and Counselling Study Program, Faculty of Teacher Training and Education, UNTAN. The respondents utilized the AR application on a smartphone and then completed a questionnaire comprising 30 items arranged using a Likert scale. The questionnaire comprises four sub-indicators: (1) appropriateness and recognizability, which assesses the level of user recognition of the system; (2) learnability, which gauges the ease with which users can learn a system and complete basic tasks for the first time; (3) ease of use and helpfulness, which evaluates the system's ease of operation and control; and (4) helpfulness and attractiveness, which assesses the level of user interest and acceptance of system features and devices. The summative test results are presented in Table 2.

Table 2. Results of Summative Evaluation

Criteria of Answer	Weight	Sub Indicator				Total Score	
		1	2	3	4		
Strongly Agree	5	4	6	19	21	240	
Agree	4	88	36	118	72	1292	
Neutral	3	65	36	72	47	606	
Disagree	2	3	2	11	0	26	
Strongly Disagree	1	0	0	0	0	0	
Actual Score						2198	
Ideal Score						3000	
% Actual						72.26 %	

The results of the calculations yielded an actual percentage of 72.26%. According to the Likert scale, the Augment Reality application "Who Am I?" is included in the "good" category. This indicates that its application is effective in terms of operability, thereby, it can be understood, used, and is interesting for its users.

4. Discussion

In the current era of the 4.0 industry, there has been a digital transition characterized by technological advances in various aspects of life. This progress has a positive impact, especially in the world of education. The development of information technology presents new innovations that help achieve educational goals. In the guidance and counselling education program, the implications are particularly observable from the development of digital technology-based products or media in service delivery. Counseling teachers are not solely expected to possess knowledge and an attractive personality; they are also required to demonstrate proficiency in various skills and creativity in order to facilitate the development of their student's potential in a multitude of domains (Basri, 2018). Consequently, in this era, counselors must cultivate expertise in fundamental technology in order to create a product or media. As Kurniawan et al. (2023) observe, a significant challenge is to create interactive and digitized platforms, as well as digital activities, to engage students meaningfully so that learning can be adequately assessed based on a specific framework or taxonomy. One essential aspect of guidance and counseling that requires attention is interest and talent mapping.

Counseling guidance services, particularly in the field of career development, place a significant emphasis on the understanding of interests and talents. This understanding is crucial for determining the potential that individuals possess, which in turn helps in the process of making informed career choices. Talent interest mapping is a valuable tool that enables the proper channeling of skills. In the context of technological advances, it is important to recognize that these advances are becoming increasingly sophisticated. This is leading to increased competition among individuals and organizations to create products and media to ease their work. One such innovation is the advent of augmented reality (AR) technology, which has attracted considerable interest from the research community. AR offers a distinctive learning experience that cannot be achieved through other technologies or approaches (Garzon et al., 2021).

In more specific terms, the AR utilized in this research is referred to as "Augmented Reality (AR) 'Who Am I?'" This conclusion was reached by applying augmented reality technology to produce 3D products. This approach is supported by Gunawan (2020), who posits that the utilization of augmented reality technology enables students to interact with the screen in a tangible manner, thereby facilitating the emergence of an engaging 3D object accompanied by an explanatory voice. This multimodal experience is believed to enhance students' understanding of the material, as it engages multiple senses. This application serves as an information medium that aims to direct students to recognize their talents and interests through the completion of a talent interest mapping questionnaire, which displays a number of professional fields. Besides, AR-based media provides convenience in the learning process because it presents objects that may be difficult to present in the real world (Nuraini et al., 2022). The existence of this technology also enables information to be more informative and interesting for students. Furthermore, the application is equipped with narrated audio explanations, which facilitate a more comprehensive understanding of the descriptions of each professional field selected by the user.

The results of this product development assist in the mapping of the interests and talents of students. The resulting product has undergone a testing and assessment process with the involvement of media experts and students as users of this application. The results of the assessment in stage 1 carried out by two media experts suggest that this application is categorized as very feasible as each aspect obtained a score above 50%. However, the experts also propose a number of recommendations. The recommendations include (1) provision of instructions on how to use the application; (2) eliminating the need for users to log in again when returning to the selection of scientific fields; (3) ensuring that barcodes with 3D scientific forms that appear are consistently aligned, (4) it is challenging to ascertain the precise location of the barcode scan to maintain stability; (5) the size of 3D image appearance is insufficient; (6) an additional image and animation section is required, namely the addition of images of humans engaged in various forms of work, in order to enhance user comprehension of the types of jobs on offer. The results of the two media validators' tests indicate that the learning media is suitable for use and can be improved in accordance with the suggestions and input provided by the two media experts.

The results of the media functionality test at the black box testing stage implied that all features were 100% functional following their intended functionality. The expert involved in the black box test provided two suggestions and input. First, the addition of user-defined markerless AR features to enable more realistic simulation of professional activities. Second, the inclusion of more specific profession questions to enhance the precision of professional choices. Following the completion of the aforementioned test, the media was applied to the research subjects in accordance with the provided implementation instructions. Upon completion of the application, the research subjects were then required to complete a questionnaire in order to conduct a summative evaluation. The resulting score, as indicated by the questionnaire, was 2198 (72.26%) out of a total possible score of 3000. This score indicates that the AR application "Who Am I," is suitable for use by students in mapping their interests and talents.

Following a series of tests and trial and error, the developed Augmented Reality application, "Who Am I?," is declared valid and feasible for use by students to help map their interests and talents through this innovation. The application can also be used by educators to help students map their interests and talents.

5. Conclusion

The results of the study indicate that the developed product in the form of Augment Reality named "Who Am I?" is a valuable learning tool and a viable learning media alternative, particularly for the course of mapping talents and interests in the guidance and counseling study program. The findings of this study provide an overview for students aspiring to become professional counselors, offering insights into the potential of technology in the process of counseling guidance services. Although this application is suitable for use, researchers will continue to make improvements based on suggestions and input from media experts and students as users. It is recommended that users of this application complete the questionnaire in its entirety, as this will affect the final results. For future researchers, updates should be made so that this application can be used by all operating systems, including iOS. Furthermore, this application should be available on the Playstore to facilitate installation for users.

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