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Development of Interactive Media to Introduce the World of Careers Based on the Android System to Improve the Career Understanding of Junior High School Students in Yogyakarta

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Abstract

Interactive Android-based research for junior high school students to test its effectiveness in improving students' career understanding. This research uses a research and development approach with the ADDIE model, which consists of the analysis, design, development, implementation, and evaluation stages. The product developed is an interactive mobile application titled Mengenal Dunia Karier (Getting to Know the World of Careers), which is designed to support the three core dimensions of career understanding, namely self-understanding, knowledge about jobs, and career reasoning. The feasibility and practicality of the application were assessed through expert validation and practitioner evaluation, while its effectiveness was tested using a single-group pretest-posttest design involving 110 junior high school students in Yogyakarta, Indonesia. The expert validation results showed that the application was highly feasible, with media expert and material expert scores of 55 and 66, respectively, and practitioner assessments by five school counsellors classified the application as highly practical (scores ranging from 68 to 73). The effectiveness test showed a significant increase in students' career understanding after using the application, with the average score increasing from 59.93 (SD = 5.754) in the pre-test to 73.81 (SD = 6.617) in the post-test, resulting in an average increase of 13.88 points. A paired sample t-test confirmed that this increase was statistically significant ($t = –16.399$, $df = 109$, $p < 0.001$). These findings indicate that the developed Android-based interactive career guidance media is feasible, practical, and effective in improving the career understanding of junior high school students and can be used as a supporting tool for school-based career guidance services.

Keywords: *Career Guidance; Career Understanding; Interactive Media; Android Applications; Junior High School Students*

INTRODUCTION

Guidance and counselling services (BK) are an integral component of the formal education system that serves to support the personal, social, academic, and career development of students (Saputri, 2025). In the framework of modern education, guidance and counselling services are no longer understood as merely remedial activities, but rather as developmental interventions that focus on optimising the potential of students throughout their development (Panjaitan, 2025). One area of guidance and counselling services that plays a strategic role in preparing students for life is career guidance and counselling (Nurmalasari, 2020).

In Indonesia, the strengthening of career guidance and counselling services at the primary and secondary education levels has gained regulatory legitimacy through Minister of Education and Culture Regulation No. 111 of 2014, which emphasises that guidance and counselling services, including career services, aim to help students achieve optimal development and readiness for the transition from education to the world of work. In this context, mature career decisions are seen as an important indicator of the success of guidance and counselling services in schools (Monika, 2018; Tsiapis, 2008).

Career guidance and counselling is understood as a systematic professional process to help individuals recognise themselves, explore the world of work, and develop realistic and responsible career plans (Fikriyani, 2021). Juwitaningrum, I. (2013) emphasises that guidance encompasses all activities related to preparing individuals to enter the world of work, choosing a position, and adapting to the demands of their chosen profession. In line with this, Dewi, F. N. R. (2021) emphasises two main dimensions of career guidance, namely the dimension of self-development (self-understanding and self-acceptance) and the dimension of adaptation to the work environment.

For adolescent students, especially those in junior high school (SMP), career guidance services are particularly significant because this phase is a critical transition period in the formation of self-identity and future orientation. Adolescence is seen as a crucial period in determining the direction of adult life, even though psychologically individuals at this stage still tend to think unrealistically about their future and career (Suherman, 2009). The fluctuating emotional development characteristics of adolescents, cognitive changes, and complex social dynamics have the potential to influence the quality of students' career decisions (Agustina 2024).

From a career development perspective, Super's life span, life space theory places adolescents in the exploration phase, which is the phase when individuals begin to recognise alternative careers, gather information, and test various possible work roles (Aryani, 2017). Super formulated the concept of a career rainbow that describes the interconnection of various roles in an individual's life, such as the roles of student, worker, family member, and community member, which develop dynamically throughout the life span. The stages of career development proposed by Super include the growth stage (growth), exploration stage (exploration), establishment stage (establishment), maintenance stage (maintenance), and classification (decline) (Nisa, J., 2015) asserts that junior high school students are in the capacity phase towards exploration, where curiosity about the world of work, further education, and mapping their potential begins to develop intensively. Therefore, strengthening career understanding in junior high school is the foundation for career maturity in the next stage of development.

However, various studies show that career problems among junior high school students are still dominated by poor career planning and decision-making skills. Salimah et al. (2019) argue that the main source of students' career problems lies in their limited skills in determining career choices that are in line with their educational direction, as well as the emergence of conflicts with their social environment and doubts in making choices. Pribadi (2021) adds that variations in adolescent career development cause some students to experience confusion in choosing further education paths or jobs that are in line with

their interests and abilities. The mismatch between interests, abilities, and career choices has the potential to hinder job satisfaction and future success in life (Putri, 2025).

Career understanding is a key concept in career guidance interventions. Career understanding is defined as an individual's process of recognising themselves, understanding job alternatives, and setting professional goals in a conscious and focused manner (Zamroni, 2016). Rahman, A (2024) emphasises that good career understanding enables individuals to choose a career that aligns with their talents, interests, and personal potential. Hendriani, (2024) views career understanding as the process of selecting career goals by considering opportunities, constraints, and various available alternatives.

Furthermore, Hasan et al. (2019) explain that career understanding is a systematic effort to help students set educational and career goals for the future. This process includes self-evaluation, goal setting, planning, and implementation of career plans (Agustina, 2024). Sahin (2025) emphasises that career decision-making requires integration between self-understanding, knowledge of the world of work, and the ability to use appropriate reasoning to match individual characteristics with job requirements.

Within the theoretical framework, aspects of career understanding include self-concept, exploration, decision-making, planning, and implementation (Khairun, 2016). Meanwhile, Putro (2019) formulates three main dimensions of career understanding, namely self-understanding, knowledge about work, and the ability to use correct reasoning in connecting one's potential with the world of work. This third aspect is the main foundation for the development of career guidance programmes in schools.

Although the urgency of career understanding among junior high school students has been emphasised theoretically, the practice of career guidance services in schools still faces various limitations. The results of field studies in this research draft show that junior high school students' career understanding is still at a low level, particularly in terms of career planning and further education decision-making, and that students still rely heavily on their parents' choices. On the other hand, guidance and counselling teachers face obstacles in developing innovative counselling media that are appropriate for the characteristics of today's students, so that services are still dominated by conventional methods of lectures, discussions and question and answer sessions.

In fact, guidance and counselling services are essentially a communication process between counsellors and students. The effectiveness of this communication is greatly influenced by the media used in the service (Supriyanto, 2024). Guidance and counselling media serve as a means to clarify messages, increase student attention, and strengthen understanding of the service material. Limitations in the use of media that are relevant to technological developments have the potential to reduce the effectiveness of career services in schools.

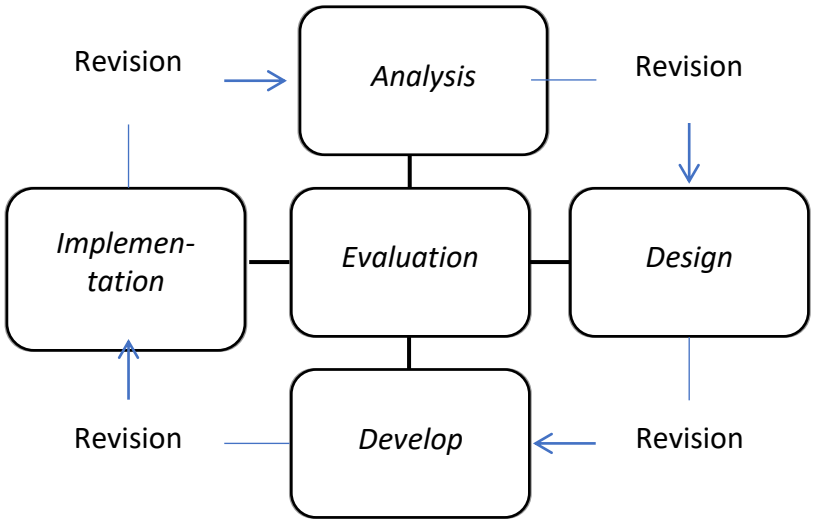
Advances in information technology, particularly Android-based mobile devices, have opened up enormous opportunities for the development of more contextual, flexible, and engaging guidance and counselling media. Android is a Linux-based operating system that provides an open environment for application development and enables the integration of various multimedia features in a single platform (Nurhayati, 2025). These characteristics make Android applications potentially useful as interactive media in parenting guidance services, especially considering the high level of device ownership and usage among junior high school students.

Pedagogically, the use of technology-based interactive media is believed to increase learning engagement, facilitate career information exploration, and help students understand themselves better with various educational and employment alternatives. In the context of career guidance, interactive media not only serves as a conveyor of information, but also as a vehicle for self-reflection, exploration of interests, and strengthening of the career decision-making process.

Based on theoretical studies and empirical conditions, there is a gap between the limited understanding of junior high school teachers and the limited career guidance media used in schools. Therefore, it is necessary to develop Android-based interactive media specifically designed to support career guidance services and improve the career understanding of junior high school students. This study aims to develop, test the feasibility, and test the effectiveness of Android-based interactive media in improving the career understanding of junior high school students in Yogyakarta, based on Super's career development theory, modern career guidance concepts, and the regulatory framework for guidance and counselling in Indonesia.

RESEARCH METHODOLOGY

This study utilised a research and development (R&D) approach to develop and test the effectiveness of Android-based interactive career guidance media for junior high school students, conducted at a public junior high school in Indonesia. The development process followed the ADDIE model, which consists of the analysis, design, development, implementation, and evaluation stages.



During the analysis stage, a needs assessment was conducted to identify students' level of career understanding, existing career guidance practices, and the availability of learning media in schools. The results of the study showed limited use of interactive media and inadequate student competence in self-understanding, job knowledge, and career decision-making. The design stage focused on formulating learning objectives, compiling career guidance materials, and designing the application interface and navigation, with learning content compiled in accordance with the core dimensions of career understanding, namely self-knowledge, job knowledge, and career reasoning. During the development stage, an Android-based application titled Mengena was developed. This material was produced and then validated by career guidance content experts and learning media experts to evaluate its accuracy.

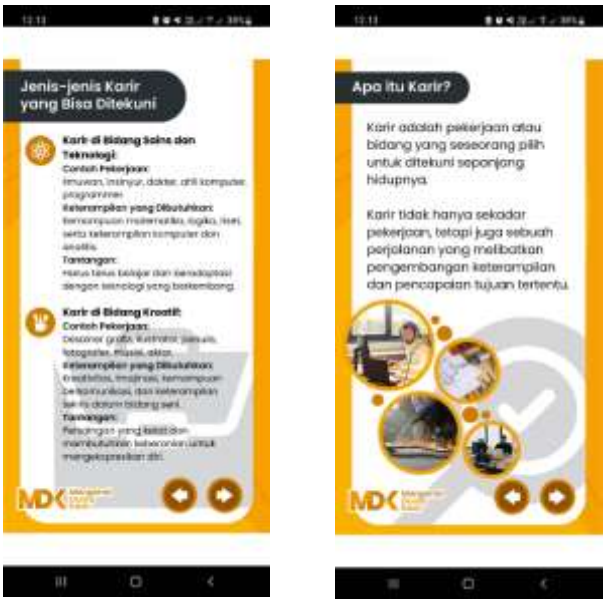
RESULTS AND DISCUSSION

RESULTS

The results of this study indicate that the research objectives have been successfully achieved. The implementation of an interactive Android-based career guidance application has resulted in a significant improvement in students' career understanding. Based on an effectiveness test involving 110 junior high school students, the average pretest score was 59.93 (SD = 5.754), while the average posttest score increased to 73.81 (SD = 6.617), resulting in an average increase of 13.88 points. A paired sample t-test

confirmed that this increase was statistically significant ($t = -16.399$, $df = 109$, $p < 0.001$). These results indicate that the developed application is effective in improving students' career understanding and fulfils the main objectives of the study.

The appearance of the learning media developed can be seen in the image below:



DISCUSSION

The findings of this study provide empirical evidence that the Android-based interactive career guidance application, Mengenal Dunia Karier (Getting to Know the World of Careers), is a feasible, practical, and effective medium for improving junior high school students' understanding of careers. The discussion is structured based on three main indicators used in the evaluation of the developed product, namely feasibility, practicality, and effectiveness, as well as theoretical implications for technology-supported career guidance and learning.

First, the very high feasibility ratings obtained from media and content experts (scores of 55 and 66, respectively) indicate that the developed application meets important instructional and technical quality standards. From an instructional design perspective, the alignment between learning objectives, content structure, and multimedia presentation supports the principle that learning media should be designed based on clear pedagogical objectives and learner characteristics. The career guidance material embedded in the application is systematically organised according to the core dimensions of career understanding, self-understanding, knowledge about work, and career reasoning, which are widely recognised as fundamental components in the student career development process. Therefore, the high feasibility score reflects the coherence between the theoretical construction of career development and its operationalisation in digital learning media.

In addition, a thorough evaluation of the interface design, language clarity, and software functionality shows that this application adheres to the principles of usability that are essential for the adoption of educational technology. Well-structured navigation and visual presentation reduce cognitive load and allow students to focus on learning tasks rather than technical operations. This supports the view that effective educational media must integrate content quality with user-centred design to facilitate meaningful learning experiences.

Secondly, the very high practicality ratings given by five school counsellors, with scores ranging from 68 to 73, indicate that this application is not only theoretically appropriate but also operationally applicable in a real school context. The counsellors found the application easy to use, flexible, and compatible with existing guidance and counselling service procedures. This finding is particularly important because the successful implementation of digital guidance tools depends heavily on their acceptance and perceived usefulness by practitioners. When counsellors view technological tools as supportive rather than disruptive to their professional routines, the likelihood of sustained use in schools increases substantially.

From a service delivery perspective, this application enables individual and group counselling activities, thereby expanding the range of pedagogical strategies available to counsellors. The possibility for students to access the application independently also expands the scope of career guidance beyond scheduled counselling sessions. This supports the contemporary perspective in guidance and counselling that emphasises the importance of continuous and independent career exploration, especially during early adolescence, when students begin to form career aspirations and initial educational plans.

Third, the effectiveness results provide the strongest empirical support for the value of the developed application. A statistically significant improvement in students' career understanding, as reflected in an increase from an average pretest score of 59.93 to an average posttest score of 73.81, with an average increase of 13.88 points ($t = –16.399$; $p < 0.001$), indicates that the intervention produced a substantial learning effect. The magnitude of this increase indicates that the application made a meaningful contribution to students' acquisition and integration of career-related knowledge, rather than merely producing superficial changes.

The observed improvement occurred in the three main dimensions assessed in this study: self-understanding, knowledge about work, and career reasoning. The self-understanding component was supported through activities that encouraged students to reflect on their interests, abilities, and personal characteristics. The job knowledge component was reinforced by structured information about various occupational fields and educational pathways. Meanwhile, the career reasoning component was facilitated by learning tasks that required students to connect personal attributes with possible future career choices. The integration of these three dimensions is essential for the development of informative and realistic career planning, especially at the lower secondary school level.

Positive learning outcomes can also be interpreted through the lens of technology-supported learning. The interactive and mobile-based nature of these applications allows students to actively engage with learning content, rather than passively receiving information. Interactive features encourage exploration, repetition, and immediate feedback, which are known to support deeper cognitive processing. In addition, the flexibility of accessing the application anytime and anywhere allows students to learn at their own pace and review material as needed, thereby strengthening understanding and memory.

The reliability and validity of the measurement instrument further strengthen the credibility of the findings on effectiveness. All 20 items were confirmed to be valid, and the reliability coefficient of 0.746 indicates acceptable internal consistency. These psychometric properties suggest that the observed increase in scores reflects real changes in students' career understanding, rather than measurement errors.

Despite the promising results, several methodological limitations must be acknowledged. The effectiveness evaluation utilised a single-group pretest-posttest design without a control group. Although the significant improvement in posttest scores provides strong preliminary evidence of effectiveness, the absence of a comparison group limits the ability to attribute the observed improvement solely to the developed application. Other factors, such as students' concurrent learning experiences or external sources of information, may also have contributed to the observed improvement.

In addition, the sample consisted of 110 students from a limited number of secondary schools within a single regional context. As a result, the generalisability of the findings to other regions, school types, or cultural contexts remains uncertain. Differences in school infrastructure, student access to mobile devices, and institutional support for digital learning may affect the effectiveness of similar interventions in other settings.

Nevertheless, in the context of this study, the convergence of high feasibility scores, strong practitioner acceptance, and statistically significant learning gains indicates that the developed Android-based interactive career guidance application has great potential to support career guidance services in lower secondary schools. These findings contribute to a growing body of evidence showing that systematically designed digital media can play a strategic role in enhancing student career development, particularly by supporting early career awareness, appropriate decision-making, and reflective thinking about future education and career paths.

Therefore, further research should focus on expanding the evaluation of this application through experimental or quasi-experimental designs involving control groups and larger, more diverse samples. Longitudinal studies would also be useful to examine whether improved career understanding persists over time and translates into more appropriate educational and career choices in later stages of students' academic journeys.

CONCLUSION

This study concludes that the interactive career guidance media developed in the form of an Android application entitled Mengenal Dunia Karier (Understanding the World of Careers) successfully answered all the research questions posed in this study. The media was systematically designed using the ADDIE development model and structured to support students' career understanding through integrated content on self-understanding, job information, and career reasoning, thus meeting the design requirements for career guidance services at the junior high school level in Yogyakarta. The feasibility of the developed media was confirmed by expert evaluation, in which the media expert assessment scored 55 and the material expert assessment scored 66, both of which were categorised as highly feasible, while the practicality evaluation conducted by five school counsellors resulted in scores ranging from 68 to 73, indicating that the media was very practical for use in school guidance services. Furthermore, an effectiveness test involving 110 junior high school students showed a statistically significant increase in students' career understanding after the implementation of the application, with the average score increasing from 59.93 (SD = 5.754) on the pretest to 73.81 (SD = 6.617) on the post-test, resulting in an average increase of 13.88 points and a significant paired sample t-test result ($t = –16.399$, $df = 109$, $p < 0.001$). These findings confirm that the developed Android-based interactive media is appropriately designed, feasible, and effective in improving students' career understanding, and therefore provides a valid and practical solution to support career guidance services for junior high school students in Yogyakarta.

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