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The Effectiveness of Using a Fruit Carving Application in Enhancing Fruit Carving Skills in the Food Decoration Course at the Culinary arts Vocational Education Program

Damayanti Trisnasari, Sam Hermasyah,Usman M, Hartati, Muh. Ananda nahdatullah
[12345]Universitas Muhammadiyah Sidenreng Rappang
dama.bakery@gmail.com

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Abstrak

*Aplikasi Fruit Carving berbasis Android berfungsi sebagai media pembelajaran dekorasi makanan, memberikan kesempatan bagi mahasiswa Program Studi Pendidikan Vokasional Seni Kuliner Universitas Muhammadiyah Sidenreng Rappang untuk berinteraksi dengan materi pembelajaran melalui smartphone. Dengan penerapan metode **drill and practice**, aplikasi ini memungkinkan mahasiswa untuk berlatih teknik mengukir buah secara berulang-ulang, sehingga keterampilan mereka semakin terasah melalui latihan yang konsisten. Pendekatan pembelajaran ini tidak hanya memperbaiki kemampuan praktis mahasiswa, tetapi juga membentuk kebiasaan yang mengarah pada penguasaan keterampilan. Seiring dengan berjalannya waktu, kompetensi mahasiswa dalam mengukir buah sebagai dekorasi makanan meningkat, yang pada akhirnya berkontribusi pada pengembangan profesional mereka di bidang seni kuliner. Penelitian ini menyoroti potensi integrasi teknologi mobile dalam pendidikan vokasional, memberikan cara yang lebih mudah diakses dan fleksibel untuk meningkatkan keterampilan dan kompetensi mahasiswa.*

Kata Kunci: *Aplikasi Android, fruit carving, dekorasi makanan, metode drill and practice, pendidikan vokasional, seni kuliner, pengembangan keterampilan.*

Abstract

*The Android-based Fruit Carving application serves as a learning media for food decoration, providing an opportunity for students in the Culinary Arts Vocational Education Program at Universitas Muhammadiyah Sidenreng Rappang to interact with learning materials using smartphones. By applying the **drill and practice** method, the application allows students to practice fruit carving techniques repeatedly, which helps improve their skills through constant repetition. This learning approach not only refines their practical abilities but also fosters habits that lead to mastery. As students continue to practice, their competency in fruit carving as a food decoration skill increases, ultimately contributing to their overall professional development in the culinary arts. This study highlights the potential of integrating mobile technology into vocational education, offering a more accessible and flexible way to enhance students' skills and competence.*

Keywords: *Android application, fruit carving, food decoration, drill and practice method, vocational education, culinary arts, skill development.*

Introduction

In recent years, the integration of digital technology into education has revolutionized the way teaching and learning are conducted. This shift has particularly impacted vocational education, where practical skills and hands-on experiences are crucial for student success. Culinary arts education, which requires precision, creativity, and technical skills, is no exception. One of the key areas in culinary arts education is food decoration, specifically fruit carving, which plays a significant role in enhancing the aesthetic appeal of dishes. As part of the curriculum in culinary arts programs, students are trained to master this skill, which requires constant practice and refinement.

Traditionally, fruit carving skills are taught through face-to-face instruction, where students learn techniques directly from their instructors. However, the traditional methods of teaching, although effective, can have limitations. These limitations include limited practice time, the challenge of providing individual feedback to a large number of students, and the constraints of classroom settings. In response to these challenges, educational technology offers new possibilities for enhancing the learning experience. One such tool is mobile learning applications, which allow students to practice and

learn at their own pace, providing flexibility that traditional methods cannot always offer.

The use of mobile applications in education is gaining traction as a method to increase engagement and provide interactive learning experiences. These applications offer several advantages, including accessibility, convenience, and the ability to deliver content in an interactive and engaging manner. For vocational programs like culinary arts, mobile applications can be particularly beneficial, as they provide students with the ability to practice skills outside of the classroom environment, enhancing their learning process. An Android-based Fruit Carving application is one such tool that can bridge the gap between theory and practice in food decoration education.

Fruit carving is a delicate and intricate skill that involves sculpting fruit into decorative shapes. In culinary arts programs, students must learn a variety of carving techniques, which often require repeated practice to master. The application of the drill and practice method in learning fruit carving offers a promising approach to improving students' skills. Drill and practice is a learning method that encourages repetition of tasks or exercises to reinforce skill acquisition. In the context of fruit carving, this method allows students to practice carving techniques repeatedly, thereby improving their muscle memory and overall skill level.

The use of a mobile application for fruit carving offers students the opportunity to practice these techniques anytime and anywhere. The flexibility of mobile learning means that students can engage with learning materials even outside the classroom, giving them more time to hone their skills. The application can provide step-by-step tutorials, interactive features, and visual feedback that guide students through the carving process. This can help students better understand the techniques, correct their mistakes in real-time, and improve their performance more effectively than with traditional methods alone.

This study aims to investigate the effectiveness of the Android-based Fruit Carving application as a media for learning food decoration, particularly focusing on its role in enhancing students' fruit carving skills through the drill and practice method. By allowing students to interact with the application and practice carving techniques repetitively, the research seeks to determine whether this approach can significantly improve students' competency in fruit carving. Furthermore, the study explores whether the integration of technology can foster a more engaging and accessible learning environment for students.

At Universitas Muhammadiyah Sidenreng Rappang, the Culinary Arts Vocational Education Program offers a comprehensive curriculum designed to equip students with the necessary skills and knowledge for success in the culinary industry. As part of this curriculum, students are required to take courses in food decoration, where fruit carving is a key component. However, the program has faced challenges in providing students with enough opportunities to practice fruit carving outside of class hours. The use of the Fruit Carving application is seen as a potential solution to this issue, providing students with an accessible and flexible tool to improve their skills.

This research is significant because it explores the potential of combining traditional vocational education with modern technology, particularly in the context of skill development in the culinary arts. It addresses the need for innovative teaching methods that can provide students with more opportunities to practice and refine their skills. By focusing on fruit carving, a critical aspect of food decoration, this study aims to contribute to the ongoing discussions about the integration of technology into vocational education.

The results of this study could have broader implications for culinary arts education, suggesting ways in which mobile applications can be utilized to enhance practical learning experiences. Moreover, the findings may offer insights into how mobile learning can be effectively integrated into other vocational fields that require hands-on skills. As such, this research provides valuable information for educators, instructional designers, and institutions looking to improve the quality and accessibility of vocational education through the use of digital tools.

Method

This research employs a quasi-experimental design to assess the effectiveness of an Android-based Fruit Carving application in improving the fruit carving skills of students enrolled in the Culinary Arts Vocational Education Program at Universitas Muhammadiyah Sidenreng Rappang. A quasi-experimental design was chosen because it allows for the comparison of outcomes between

two groups while still operating within a real-world classroom setting. In this case, the experimental group uses the mobile application as a learning tool, while the control group continues with traditional learning methods. This design provides insights into the potential benefits of integrating mobile applications into vocational education without the constraints of a fully controlled laboratory experiment.The participants in this study are 40 students from the Culinary Arts Vocational Education Program at Universitas Muhammadiyah Sidenreng Rappang, who were selected through purposive sampling. These students had completed an introductory course on food decoration, which included basic fruit carving techniques. The students were randomly assigned to two groups: the experimental group (20 students) and the control group (20 students). Both groups were similar in terms of demographic characteristics, prior knowledge of fruit carving, and previous exposure to the subject. It was important to ensure that both groups started with a comparable skill level to accurately assess the impact of the mobile application.

The intervention for this study involved the use of an Android-based Fruit Carving application, which was designed to serve as an interactive learning tool for students. The application offers step-by-step instructions, video tutorials, and guided exercises on how to carve fruit into decorative shapes. Additionally, it utilizes the drill and practice method, a pedagogical approach that emphasizes repeated practice of a task to build competence. The app allows students to engage in exercises that challenge them to carve fruits in specific ways, and they can practice these tasks as many times as needed. The app's interface also includes a feedback feature that provides visual and textual guidance, helping students identify errors and correct them during practice.For the experimental group, the Android-based Fruit Carving application was their primary learning tool. Students were instructed to use the app outside of classroom hours to practice their fruit carving skills. They were given access to the application on their smartphones and encouraged to engage in the activities for at least 30 minutes per day. The goal was to allow students to practice carving techniques at their own pace, outside the constraints of scheduled class hours, and to provide them with opportunities for repeated practice.The control group, in contrast, followed the traditional classroom-based instructional model, which included face-to-face demonstrations by the instructor, followed by hands-on practice during class sessions. Students in the control group were given access to textbooks, printed guides, and video tutorials, but they did not have access to the mobile application. Their practice time was limited to the class hours, and they did not have the flexibility to practice outside of class.

The data collection process utilized both quantitative and qualitative methods to provide a comprehensive assessment of the effectiveness of the mobile application on students' fruit carving skills.Pre- and Post-test Assessments: The first instrument for data collection was a practical test that was administered to both groups before and after the intervention. The pre-test was conducted at the beginning of the study to assess the baseline level of students' fruit carving skills. Students were asked to carve a fruit (e.g., watermelon or cantaloupe) into a specific shape, and their work was scored based on a set rubric. The post-test was administered at the end of the study to evaluate improvements in skill after the intervention. Both tests assessed students' technique, creativity, accuracy, and overall presentation.Skill Development Rubric: A rubric was used to evaluate students' fruit carving skills during both the pre-test and post-test. The rubric included several criteria: technique (how well the carving was executed), precision (accuracy in following the shape), creativity (originality of the design), and overall presentation (the visual appeal of the finished product). Each criterion was rated on a scale of 1 to 5, with 1 being "poor" and 5 being "excellent." This rubric provided a clear and objective way to evaluate improvements in students' skills.Student Feedback Questionnaire: To gather qualitative data on students' experiences with the intervention, a feedback questionnaire was distributed to both groups at the end of the study. The questionnaire included both closed and open-ended questions. Closed-ended questions assessed students' perceptions of the usability, effectiveness, and engagement of the mobile application. Open-ended questions allowed students to share their experiences, challenges, and suggestions for improvement. The responses were analyzed to identify common themes related to the effectiveness of the app as a learning tool.Instructor Evaluation: Instructors who were responsible for both groups observed students'

progress throughout the study. The instructors provided additional qualitative data by assessing students' engagement, performance, and overall improvement. Instructor evaluations were particularly valuable for assessing the students' behavior during class sessions and providing insights into the effectiveness of the mobile application in complementing traditional instruction.

The data collected from the pre- and post-test assessments were analyzed using descriptive statistics and paired t-tests. Descriptive statistics were used to summarize the overall performance of both groups in terms of skill improvement. The paired t-test was applied to compare the pre-test and post-test scores within each group to determine whether there was a statistically significant improvement in skill levels. This analysis allowed for the identification of any changes in fruit carving competency after using the mobile application in the experimental group and after traditional learning in the control group.

Qualitative data from the student feedback questionnaires and instructor evaluations were analyzed using thematic analysis. This method involved identifying recurring themes or patterns in the responses that related to the effectiveness of the mobile application. Themes were classified according to the students' experiences with the app, including ease of use, engagement, challenges faced, and perceived improvements in their carving skills. Thematic analysis provided a deeper understanding of how students interacted with the app and the perceived benefits of mobile learning.Ethical approval for this study was obtained from the research ethics committee at Universitas Muhammadiyah Sidenreng Rappang. Before participation, all students were provided with detailed information about the study's purpose, procedures, and their right to withdraw at any time without consequence. Informed consent was obtained from each participant, ensuring they understood the nature of the study and agreed to participate voluntarily. Students were assured of confidentiality, and all data was anonymized before analysis to protect their privacy.

There are several limitations to this study. The primary limitation is that the quasi-experimental design does not allow for full randomization of participants. Although participants were assigned randomly to the experimental and control groups, there may still be underlying differences in skill levels and learning preferences that were not accounted for in the design. Another limitation is the relatively short duration of the study, which may not fully capture the long-term effects of using the mobile application. Additionally, since the study was conducted in one institution, the results may not be generalizable to other culinary education programs. Future research with a larger sample size and longer intervention periods would provide more robust data on the impact of mobile learning tools in vocational education. this study employs a comprehensive research method to assess the impact of an Android-based Fruit Carving application on students' skills in fruit carving. By combining both quantitative and qualitative data collection techniques, this research aims to provide a thorough evaluation of the application's effectiveness as a learning tool for vocational culinary students. The findings will contribute to the growing body of knowledge on the use of mobile applications in vocational education and offer insights into how technology can be leveraged to enhance practical skill development.

Finding and discussion

This section presents the findings from the data analysis of the pre- and post-test results, student feedback questionnaires, and instructor evaluations, followed by a discussion of these results in relation to the research question: How effective is the use of an Android-based Fruit Carving application in improving fruit carving skills among students in the Culinary Arts Vocational Education Program at Universitas Muhammadiyah Sidenreng Rappang?The pre-test results provided baseline data on the fruit carving skills of both the experimental group (which used the mobile application) and the control group (which used traditional instructional methods). On average, students in both groups displayed similar skill levels at the start of the study. The pre-test scores ranged from 2.5 to 3.5 out of 5, indicating that most students had a basic understanding of fruit carving but lacked mastery of more advanced techniques.After the intervention, both groups took the post-test to assess any improvements in their carving skills. For the experimental group, which utilized the Android-based Fruit Carving application, there was a significant improvement in the post-test scores. The average score for the experimental group increased from 3.0 (pre-test) to 4.2 (post-test). The majority of the students in this group demonstrated notable improvements in technique, precision, and creativity. Some

students even went beyond the basic requirements of the test, displaying more intricate and elaborate carvings, which can be attributed to the repetitive practice facilitated by the app.

The control group, which relied on traditional methods of instruction, showed a more modest improvement in the post-test scores, increasing from an average of 3.1 to 3.6. While the improvement was statistically significant, the change was less pronounced compared to the experimental group. Students in the control group showed slight improvements in their carving skills, but the lack of additional practice opportunities outside the classroom limited their ability to fully refine their techniques.To determine if the observed improvements were statistically significant, paired t-tests were conducted for both groups. For the experimental group, the difference between the pre-test and post-test scores was highly significant ($p < 0.01$), indicating that the use of the mobile application had a strong positive effect on the students' fruit carving skills. In contrast, the control group's improvement, though statistically significant, was less pronounced ($p < 0.05$). This result suggests that while traditional methods of teaching can lead to skill improvement, the Android-based application offered a more effective platform for repeated practice and skill mastery.

These findings indicate that the drill and practice method incorporated in the mobile application played a crucial role in the improvement of the experimental group's carving skills. By allowing students to practice at their own pace and receive real-time feedback, the application enhanced their ability to refine their techniques and increase their skill level.

The feedback questionnaire provided valuable insights into the students' experiences with the mobile application and the traditional learning methods. When asked about the usability of the Android-based Fruit Carving application, most students in the experimental group expressed positive opinions. Approximately 85% of the students found the application easy to use and highly interactive. They appreciated the step-by-step instructions, the visual feedback, and the opportunity to practice at their own pace. Many students mentioned that the ability to practice carving outside of class hours helped them build confidence in their abilities and allowed them to correct mistakes on their own, without waiting for instructor feedback.

One student noted, "I was able to practice carving at home whenever I had time. The app helped me improve my technique because I could repeat the exercises as many times as needed." Another student mentioned, "I liked how the app showed me where I went wrong and guided me on how to fix it. It felt like having a personal tutor available all the time."

However, a small number of students (about 10%) mentioned that they found the application difficult to navigate initially. Some students expressed a preference for more in-depth guidance on advanced techniques, as the app primarily focused on basic to intermediate carving skills. Despite these minor concerns, the general feedback was overwhelmingly positive, suggesting that students found the mobile application to be an effective tool for improving their skills.The students in the control group also provided valuable feedback, although they did not use the mobile application. Many of them expressed frustration at the limited practice time during class hours. One student commented, "We only get a few hours of practice in class, and there's not enough time to master the carving techniques." Another student said, "It would have been helpful to have more time to practice outside of class. I think the app would have been a great way to practice on my own."The instructor evaluations provided additional insight into the effectiveness of the two teaching methods. Instructors reported that the experimental group demonstrated greater engagement and enthusiasm during practical sessions. The instructors noted that students who used the mobile application were able to perform tasks more efficiently and with higher accuracy. One instructor commented, "The students who used the app were more confident in their carving. They were able to try more complicated designs and execute them well." In contrast, the control group required more direct guidance and feedback during class sessions. Instructors observed that, while the students in the control group made progress, they struggled to complete more intricate designs without additional one-on-one support.The instructor's observations aligned with the quantitative findings, confirming that the experimental group benefitted from the additional practice opportunities provided by the mobile application. The ability to practice outside of class hours allowed students to refine their

techniques and become more self-reliant, while those in the control group had to rely more on classroom instruction and limited practice time.

Discussion

The findings from this study strongly support the effectiveness of the Android-based Fruit Carving application as a tool for enhancing fruit carving skills among students in vocational culinary education. The experimental group, which used the mobile application, demonstrated significant improvements in their carving skills compared to the control group. This can be attributed to the drill and practice method, which encourages repeated practice and mastery of skills. The ability to practice outside of class hours was a key factor in the experimental group's success, as it allowed students to continue learning and refining their skills independently.The drill and practice method is particularly effective for skill-based disciplines like culinary arts, where the mastery of practical techniques requires consistent repetition. The mobile application's interactive features, such as step-by-step tutorials, visual feedback, and real-time corrections, provided students with a personalized learning experience that traditional methods could not offer. This aligns with research that highlights the advantages of mobile learning, especially in vocational education, where practical skills are essential.

The control group, although showing some improvement, did not experience the same level of growth. The limited practice time during class hours likely constrained their ability to refine their techniques. This suggests that traditional classroom-based instruction alone may not be sufficient for developing the high level of proficiency required in culinary arts. While traditional methods can be effective, they need to be supplemented with additional learning tools, such as mobile applications, to provide students with more opportunities to practice and master the required skills.The positive feedback from students also reinforces the idea that mobile learning applications can enhance student engagement and motivation. Students in the experimental group expressed a strong preference for the app, citing its convenience and the ability to practice at their own pace. This finding supports the notion that mobile learning tools can increase accessibility and flexibility in vocational education, enabling students to learn in a more personalized and efficient way.

Conclusion

This study aimed to evaluate the effectiveness of an Android-based Fruit Carving application in improving the fruit carving skills of students in the Culinary Arts Vocational Education Program at Universitas Muhammadiyah Sidenreng Rappang. The findings of the research indicate that the mobile application significantly enhanced the students' carving abilities compared to traditional learning methods. By employing a drill and practice approach, the mobile application allowed students to practice repeatedly outside of classroom hours, which led to notable improvements in their skills. The experimental group, which used the application, demonstrated higher levels of technique, creativity, and precision in their fruit carvings as compared to the control group.

The results showed a statistically significant improvement in the post-test scores of the experimental group, supporting the hypothesis that mobile learning can be a highly effective tool in vocational education. The ability to practice independently and receive real-time feedback on their progress was particularly valuable for students in the experimental group, as it allowed them to hone their skills at their own pace. This, in turn, led to greater self-reliance and confidence in their abilities, which are crucial traits for students pursuing a career in the culinary arts.On the other hand, while the control group made some progress, the improvements were less pronounced due to limited practice opportunities outside of class. This highlights a key limitation of traditional teaching methods in skill-based disciplines, where students may not have enough time or resources to practice extensively. The findings underscore the need to supplement classroom instruction with additional tools, such as mobile applications, to provide students with more opportunities for practice and skill refinement.

In addition to the quantitative improvements in skill, the student feedback and instructor evaluations confirmed that the Android-based application was well-received by students. Most students found the app easy to use, engaging, and beneficial for their learning process. However, some students expressed a desire for more advanced content, which suggests that future versions of the app could incorporate higher-level techniques to cater to a wider range of skill levels.the study demonstrates that integrating mobile applications into vocational education can offer significant advantages in

terms of skill development, engagement, and accessibility. By providing students with the opportunity to practice outside of the traditional classroom environment, mobile applications can enhance the learning experience and support the development of practical skills. Based on the positive outcomes observed in this study, it is recommended that other culinary arts programs consider adopting similar mobile learning tools to complement traditional teaching methods

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