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Development of a Mobile Menu Book as a Media For Learning Food Service in Tourism Schools

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ABSTRACT

The important to remember that technological progress is unpredictable, and the landscape of immersive and interactive systems may have seen significant progress. Developers and innovators are constantly exploring and experimenting with new possibilities, making the future of immersive technology exciting and full of potential as a means to improve education. The research seems to adopt a mixed-methods approach, utilizing both qualitative methods for needs analysis and design stages, and quantitative methods for testing the product's effectiveness. By involving both teachers and students in the development process, the application can better meet their specific needs and preferences. The validation data collected from the assessment by validators suggests that the application has been well-received and is considered valid for use in food service learning. With an average percentage of 85.25% in the valid category, it implies that the application meets the required standards and requirements for an effective learning tool. Overall, the Android-based learning media application holds the potential to contribute significantly to the field of education, particularly in cooking learning. As technology continues to advance, similar applications tailored to other industries and fields of study can also play a crucial role in addressing the increasing demand for skilled human resources in various industries.

Introduction

As technology continues to improve, these immersive and interactive systems are likely to become even more sophisticated and valuable for investigating human sensory perception. From fundamental scientific research to practical applications in fields like healthcare, education, and entertainment, the potential for understanding and leveraging sensory perception in virtual environments is bound to grow significantly (Akbar, 2021), (Audie, 2019). The 21st century is the

era of globalization which is accompanied by an era of knowledge and world changes that are very fast. To deal with very fast world changes, education in the age of knowledge (21st century) must develop habits of thinking, researching, and solving problems (Yulia et al., 2018), (Posumah et al., 2021).

Vocational education is designed to equip students with specific skills and practical knowledge that are directly applicable to various industries and job roles. The primary aim of vocational high schools is to produce graduates who are job-ready and capable of meeting the demands of the business and industrial sectors. These schools typically offer specialized training and hands-on experiences, allowing students to gain expertise in specific trades or fields(Wardina et al., 2019), (Crompton & Burke, 2018) Tourism vocational high school culinary study program is a science that studies the art of preparing, cooking, and food service besides learning about entrepreneurship, nutrition in food, and serving dishes. The learning media used in cooking courses based on the preliminary analysis has several drawbacks, namely the media tends to be monotonous and less varied because the learning media presented is too textual and less interactive (Kuntadi et al., 2019). Therefore, to optimize learning, learning media is needed so that learning is maximized.

The results of the preliminary analysis on the instructional media subjects that are often used are PowerPoint (65.2%), printed books (15.8%), learning videos (8%), real media (7%), and electronic modules (4%). In addition, the material presented does not describe the steps in the practicum so students often feel bored and lack concentration (Klimova, 2019) To improve the quality of education, there is a need for innovation and breakthroughs in learning, one of which is excellent service learning media. Industrial developments that are out of sync with the provision of sufficient human resources, especially for the management and tourism industries, have resulted in an increasing need for human resources in these fields (Dede et al., 2019). Absolutely, the role of a teacher extends beyond merely imparting knowledge; they are also learning managers responsible for creating a positive and conducive learning environment for their students. Effective classroom management plays a vital role in fostering a comfortable and engaging learning atmosphere.

Based on this, to help teachers convey material in the era of globalization it is necessary to modernize learning media, so the authors The research on "Development Of A Mobile Menu Book As A Media For Learning Food Service In Tourism Schools" is highly relevant and timely, especially in the era of globalization where modernizing learning media is essential to keep up with the changing educational landscape. The objective of developing an Android-based learning media application for food service in tourism schools aligns with the need to enhance the learning process and promote high-order thinking skills among students.

Media continues to evolve and become more interconnected in our daily lives, understanding its

role, impact, and ethical considerations becomes increasingly critical. Media literacy and critical thinking skills are essential tools for individuals to navigate and interpret the vast amount of information and messages conveyed through various media platforms (Yildiz, 2020). Media is a means of connecting and good communication between the two sides and is used by all levels of society. Learning media is a tool that functions and can be used to convey learning messages. By integrating learning media effectively into the educational process, teachers can create a more engaging, efficient, and student-centered learning environment. However, it's crucial for educators to strike a balance and use learning media in a way that complements and enhances their teaching strategies rather than replacing valuable human interactions and instructional methods (Anyan et al., 2020) .

Overall, Android's open-source nature, customizability, and extensive developer community have contributed to its popularity and global success. Its versatility and adaptability have enabled it to thrive in various mobile device categories, making it the operating system of choice for a vast number of users and developers alike (Abd Ghofur, 2020). To create Android-based learning media using a platform available on the internet or the Play Store application on a smartphone, namely Unity. unity is a website that can be used to help the application development process. By using Unity the application development process will become easier and visual 3D. unity is one of the online builders available on the internet. unity can support the process of making Android-based applications. Learning materials filled in the Unity application are visual images of food and their explanations, a selection of chefs, and interactive quizzes.

Method

This research is the mixed-methods approach allows you to complement rich qualitative insights with quantitative data to validate the efficacy of the learning medium and make data-driven decisions throughout the development process. Moreover, it is crucial to document and transparently report the research methodology, data collection process, and findings to ensure the study's credibility and reproducibility. A well-executed mixed-methods research approach can provide a comprehensive understanding of the learning medium's impact and its potential benefits in the context of food service education in vocational high schools

There are 4 phases or steps in this research on Figure 1, namely:

first phase (Jayatilleke et al., 2019), researchers can ensure that the development of mobile menu books as learning media for food service in tourism vocational high schools is grounded in a deep understanding of the educational context and specific learning needs. The needs analysis and literature review serve as the foundation for subsequent phases of the model, guiding the design, development, and evaluation of the mobile learning intervention.

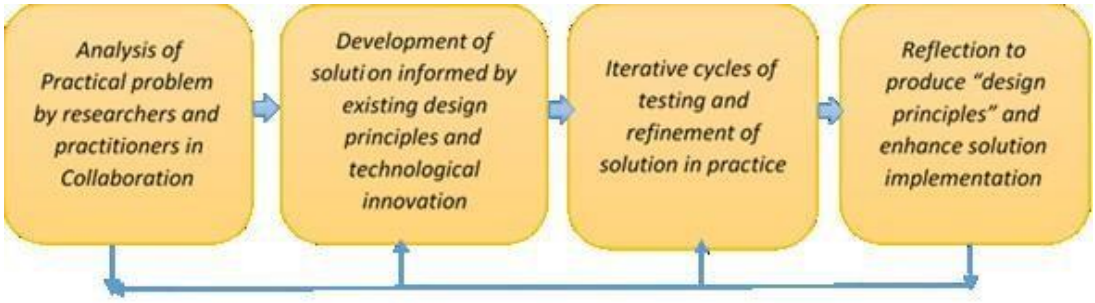

Fig 1 : Design-Based Research Cycle (Reeves, 2006).

The second phase is "solution development" (Efrain et al., 2021)in this study, namely developing a mobile menu book product as a medium for learning food service in tourism vocational high schools. The third phase is material validation and media expert validation for the development of a mobile menu book as a learning medium for serving dishes in tourism vocational high schools.

The final phase is " By emphasizing documentation and reflection in the design process, interested practitioners and researchers can benefit from the knowledge and experiences gained through the development and evaluation of the learning intervention. This process promotes a culture of continuous improvement in educational design and supports evidence-based practices in teaching and learning (Irwansyah et al., 2018)in phase 4 this produces scientific research work based on mobile menu book design Android-based dishes.

Result and Discussion

Analysis of the need for the development of mobile menu books as a medium for teaching dishes in tourism vocational high schools can be found through field study activities by conducting direct observations or surveys and through focus group discussion (FGD) activities on the needs analysis for the development of mobile menu books as a medium for teaching dishes. at a tourism vocational high school. The results of this analysis were collected by 10 teachers of grades XI and XII from 3 vocational high schools in the 2022-2023 school year. Based on the results form of a questionnaire, it was found that the majority of teachers use technological media in the teaching and learning process. Alongside technology-based learning media, traditional textbooks are still used by some teachers. However, a significant number of teachers utilize technology-based learning media such as PowerPoint (PPT) presentations and videos.

The internet is a source for teachers in obtaining interactive learning media data. The teacher also mentions that the learning model is still conventional, but some have also implemented a students discovery learning in model. therefore, Given the widespread use of smartphones among students, creating interactive android-based learning media is a relevant and practical innovation.

Such media can leverage the familiarity and convenience of smartphones, providing students with easily accessible and engaging learning materials. By embracing technology as a learning medium and incorporating interactive androidbased learning media, educators can enrich the learning process, foster independent study habits, and prepare students for the digital-age workforce.

Continuously exploring and integrating innovative educational technologies can lead to more effective and inclusive learning environments that cater to the diverse needs of modern learners. Based on the results of the interview questionnaire, it has been observed that teachers have not fully embraced innovative learning media that are diverse and technology-based. This indicates the need for the development of learning media that can effectively support both teachers and students in their learning activities.

The implementation of a mobile menu book as an Android-based cooking media using a designbased research model can be a promising step towards meeting this need. The findings from the questionnaires and interviews reveal that all the teachers involved in the assessment use technology media in their food service teaching and learning activities. However, the types of technology learning media currently utilized are primarily limited to PowerPoint presentations (70%), Flash videos (15%), YouTube videos (8%), and a combination of Quiziz, Zoom, Google Meet, and Google Classroom (7%). While these are valuable tools, the limited variety of media used may hinder the full potential of technology in enhancing the learning experience.

To address this, the development of an interactive mobile menu book as an Android-based cooking media can be a game-changer. By leveraging the power of smartphones, this learning media can provide a more engaging and immersive learning experience for students. Interactive features, such as quizzes, videos, and dynamic content, can increase student involvement and understanding of the material. Moreover, a design-based research model allows for an iterative approach to development. It ensures that the mobile menu book is carefully designed, evaluated, and improved based on real-world implementation and user feedback.

This iterative process ensures that the learning media meets the specific needs of food service education in vocational high schools, aligning with the results obtained from the teacher assessment needs analysis. The focus on technology-based learning media can pave the way for more student-centered and personalized learning experiences. By combining innovative content and interactive elements, teachers can foster critical thinking, problem-solving skills, and independent learning among students. In conclusion, the results of the interview questionnaire indicate the necessity for more diverse and technology-driven learning media. The development of an Android-based mobile menu book using a design-based research model holds great potential in creating an engaging and effective learning tool for food service education. By leveraging technology and incorporating

interactive features, teachers can enhance the learning experience and better support their students' academic growth. the results of the needs assessment teachers food service regarding mobile learning based on Android apps can be seen in Table 1:

Table 1. Results of the Teacher Needs Analysis for Serving

Indicator	Response	Sample	Percentage
Teachers who have used technological	**Once**	**10**	**100 %**
media in once 10 100 % classroom	never	0	0 %
learning activities.			
The learning model is still conventional	**Yes**	**3**	**30 %**
	no	7	70 %
Learning Media in the form of Powerpoint and textbooks do not support students to study independently.	**Yes**	**4**	**40 %**
	no	6	60 %
the need for innovation in the use of technology learning media in classroom learning activities.	**Yes**	**10**	**100 %**
	no	0	0 %
Technology-based learning media is an interesting interesting medium	**Interesting**	**10**	**100 %**
	Not attractive	0	0 %
Learning activities need Android-based learning media in mobile applications that can be accessed independently anywhere at any time.	**Yes**	**10**	**100 %**
	no	0	0 %

DISCUSSION

Based on the results presented, it is evident that teachers' adoption of innovations in learning media varies, with a significant number of teachers using technology-based learning media. The fact that 100% of teachers obtain technology learning media data from the internet highlights the internet's crucial role as a valuable resource for accessing interactive learning materials. However, despite the prevalence of technology use, there are limitations in schools providing technology learning media. This may imply that while teachers recognize the importance of incorporating technology in the learning process, there might be constraints in terms of resources or access to technology in some educational settings. The finding that 100% of teachers consider it very necessary to innovate the use of technology learning media in learning activities aligns with the broader understanding that technology plays a critical role in enhancing the learning experience. As

technology continues to advance, teachers acknowledge the importance of staying current with innovative learning media to support and enrich classroom learning.

The research that suggests the effectiveness of the learning process being influenced by the type of media chosen and the learning methods applied reinforces the significance of adopting technologybased learning media. Interactive and engaging learning media can positively impact student engagement, understanding, and knowledge retention. Additionally, the integration of technology can open up new avenues for implementing various pedagogical approaches, such as studentcentered learning, flipped classrooms, and blended learning. To ensure effective integration of technology-based learning media, it is crucial for schools and educators to address limitations and provide necessary resources and training. Professional development opportunities can help teachers become more proficient in utilizing technology effectively for instructional purposes.

Additionally, strategic planning and allocation of resources can further support schools in embracing innovative learning media. By leveraging technology in the learning process, educators can create dynamic and adaptive learning environments that cater to students' diverse needs and preferences. The use of technology-based learning media not only enhances the quality of education but also equips students with essential digital literacy and problem-solving skills needed for their future success in a rapidly changing world.

Based on the results of questionnaires and interviews on focus group discussion activities through questionnaires, an analysis of the needs of serving teachers more often uses technology learning media in class activities, namely by using ppt and video as learning media (Anyan et al., 2020). The teacher has implemented a student-centered learning model in learning activities. Based on this, teachers need innovative technology-based learning media in classroom learning activities. In other studies, it has also been proven that the use of PPT-based learning media and textbooks supports students in carrying out independent learning, but innovation is also needed in creating learning media so that they foster higher-order thinking skills, considering that in the current era, all digitalization is used. So that teachers need application-based learning media for students in independent learning that can be used at any time.

Based on the results of the validation analysis conducted by media experts on the Android-based mobile menu book learning media that was developed, the overall percentage obtained is 80%. The assessment encompasses various aspects, including appearance, color selection, button functions, output from menus, and ease of access to program processing and application use.

Table 2. Media Expert Validation Results for Android-based Mobile Menu Book Learning Media

No	Aspect	Percentage (%)
1	Language	83,33 %
2	Graphics	76,67 %
3	Program Processing	79,17 %
4	Usage	80,83 %
	Average	80,00 %

The validation indicates that the developed application has received positive feedback from the media experts. It achieved an average validation percentage of 80.00%, which is considered good. Specific aspects such as language (83.33%), usage (80.83%), and program processing (79.17%) received commendable validation scores, indicating that these areas were well-executed in the development process. However, the aspect of graphics received a validation percentage of 76.67%, suggesting that it might need some improvement. The media expert's suggestion to pay more attention to the layout indicates that further refinement or enhancements in the visual presentation could enhance the overall user experience.

The positive validation results are indicative of the effectiveness and usability of the Android-based mobile menu book learning media. It signifies that the application meets the requirements and expectations set by media experts, making it a valuable tool for supporting teaching and learning activities in food service education that we can se on table 3.

Table 3. Material Expert Validation Results for Android-based Mobile Menu Book Learning Media

No	Aspect	Percentage (%)
1	Language	89.17%
2	Material Suitability	90,67 %
3	Illustration	91,67 %
	Average	90,50 %

Addressing the feedback regarding the graphics and layout can lead to an even more engaging and visually appealing learning experience for users. This iterative approach, guided by expert validation, ensures continuous improvement and optimization of the learning media to provide the best possible learning outcomes for students and educators.

The material expert validation results for the Android-based mobile menu book learning media obtained high validation percentages. The assessment involved three validators and achieved an average validation score of 90.50%. Specific aspects were evaluated by the material experts, including language (89.17%), material suitability (90.67%), and illustration (91.67%). These aspects pertain to the quality of language used in the content, the alignment of indicators with the material, the appropriateness of animation to convey the content, and the effectiveness of illustrations in supporting learning.

The validation scores suggest that the learning media excelled in terms of material suitability and illustration, with both aspects receiving scores above 90%. This indicates that the content presented in the mobile menu book is well-aligned with the learning objectives and effectively supported by appropriate illustrations and animations. The language aspect received a validation score of 89.17%, which is still highly commendable. However, it suggests that some minor improvements or revisions may be beneficial to further enhance the clarity and effectiveness of language used in the learning media.

The positive validation results indicate that the Android-based mobile menu book learning media successfully meets the standards set by material experts. The overall high validation score of 90.50% reflects the quality and suitability of the learning materials and content.

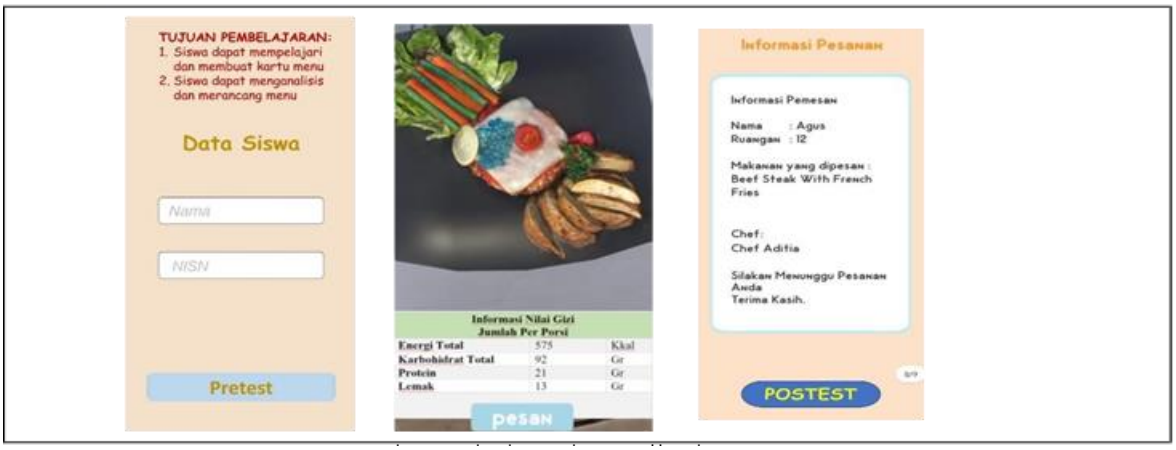

Fig 2 : Displays The Application Features

Incorporating expert feedback and addressing any areas of improvement identified through the validation process ensures that the learning media remains relevant and effective. The iterative approach of seeking validation from material experts contributes to continuous improvement and the development of high-quality learning resources for students and teachers alike.

Based on the information provided, the development of the mobile menu book application as a medium for teaching food preparation in tourism vocational high schools appears to be highly appropriate for students to use in their learning process. The mobile book application offers a

variety of learning objectives, QR code scans, and visual menu displays, providing an interactive and engaging learning experience for students. The inclusion of explanations of dishes further enhances the educational value of the application, offering students valuable insights into food preparation and culinary practices.

Additionally, the incorporation of interactive quizzes, such as pre-tests and post-tests, adds an assessment component to the learning process. These quizzes can help evaluate students' understanding and knowledge retention, enabling educators to gauge the effectiveness of the teaching material and tailor instruction accordingly. The average validation score of 85.25% from both media experts and material experts signifies a high level of quality and suitability in the development of the mobile menu book application. The fact that it falls under the "valid" or "good" category demonstrates that the application meets the expected standards and requirements set by the experts.

With its rich features and interactive elements, the mobile menu book application is well-suited to support food preparation learning in tourism vocational high schools. By leveraging technology and interactive media, the application can enhance students' engagement, understanding, and learning outcomes. Furthermore, the mobile nature of the application makes it easily accessible to students, allowing them to study and review the learning materials at their convenience. This accessibility aligns well with the modern learning preferences and habits of students, who are often accustomed to using smartphones and digital resources in their daily lives. Overall, the development of the mobile menu book application offers a valuable and effective learning tool for students in food service education. By providing a dynamic and immersive learning experience, the application can contribute to the enhancement of students' culinary skills, knowledge, and high-order thinking abilities, preparing them for success in the hospitality and tourism industries..

Conclusion

Based on the results of the research and validation conducted, it can be concluded that the development of the mobile menu book as a media for teaching dishes in tourism vocational high schools has been successful. The mobile menu book application has been deemed valid and effective as a learning media, falling into the "good" category. The validation data collection, which involved assessments from media experts and material experts, yielded an average percentage of 85.25% in the valid category.

This high validation score indicates that the Android-based mobile menu book learning media application meets the necessary standards and requirements set by the experts. The successful development of the mobile menu book application implies that it fulfills its intended purpose as a valuable learning tool for students in food service education. With its interactive features, such as

learning objectives, QR code scans, visual menu displays, explanations of dishes, and interactive quizzes, the application offers an engaging and comprehensive learning experience. Moreover, the positive validation results highlight the quality and suitability of the learning materials and content within the application. The inclusion of various interactive elements, combined with its mobile nature, makes it a practical and accessible resource for students to use in their learning activities. The validation process also reflects the application's alignment with the needs and preferences of students, as well as its effectiveness in supporting the learning objectives of food preparation in tourism vocational high schools.

In conclusion, the Android-based mobile menu book learning media application has been successfully validated and deemed suitable for use in cooking learning. It represents an innovative and effective tool to enhance teaching and learning experiences in the field of food service education, supporting students in acquiring culinary skills and knowledge essential for their future careers in the hospitality and tourism industries.

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