

Development of Desert E-Magazine Media in Independent Learning of Culinary Students

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Abstract. This study aims to analyze (1) student independence. (2) Learning Outcomes in E-Magazine media of Dessert material. (3) Learning Independence with Learning Outcomes in E-Magazine media of Dessert material. The research location is at the Culinary Laboratory, Faculty of Engineering, Medan State University. We used a correlational descriptive research design. The population in this study is culinary arts students in the class of 2022. We select the research sample using a random sampling method, which includes a total of 30 participants. We conducted the research from May to August 2024. Questionnaires were used to collect information on learning independence, and observation rubrics were used to measure learning outcomes related to E-Magazine media on dessert material. There are several ways to look at the data, including charting the data, tests for normality and linearity, tests for tendency, and hypothesis tests with product moment correlation. The study results indicated that learning independence and learning outcomes using E-Magazine media fell into the category of "sufficient," with respective scores of 70.00 percent and 46.66 percent. Based on Dessert, there is a strong link between learning independence and learning outcomes in E-Magazine dessert media. The correlation coefficients are $r_h = 1.008$ and $r_t = 0.361$, and the significance level is $\alpha = 0.05$. This means that $r_h > r_t$ is $1.008 > 0.361$. This means that the higher the learning independence, the higher the learning outcomes on the E-Magazine Dessert media.

Keywords: Media, E-magazine, Dessert, Catering.

1 Introduction

In today's digital era, independent learning is one of the most important methods in increasing student independence in the learning process [1-4]. Independent learning allows students to access materials anytime and anywhere, at a learning pace that suits individual needs. This learning model is particularly relevant in vocational education, such as culinary arts, where practical and innovative skills are the main focus. Various fields of education are increasingly using digital learning media, like e-magazines, to support interactive and dynamic learning. According to [5], well-designed digital-based learning media can facilitate the learning process in a more engaging and

effective way compared to traditional media. Bates [3] also emphasized that digital media can help teachers present more relevant material for the digital generation, especially the current Gen Z era, so that it can increase learning motivation and facilitate deeper interactions.

In the field of Culinary Arts, the use of engaging and accessible learning media is essential to support the mastery of practical skills, such as cooking techniques, cake decorating, and kitchen management [6-8]. E-Magazine dessert as a digital learning medium offers various advantages, such as ease of access, presentation of content in multimedia format, and interactive features that can increase student understanding and motivation to learn. Dessert typically serves as a final course or a meal's dessert. These dishes usually have a sweet taste and can be formed into a wide variety of foods, such as cakes, puddings, ice cream, fruits, or even traditional desserts. In some cultures, desserts can also include savory desserts or slightly sour ones, depending on local preferences. In addition, E-Magazine Dessert allows the delivery of information that is constantly updated, in accordance with the latest trends in the culinary world, so that students can always get up-to-date information [9-12].

Bates [3] states that text-based and multimedia digital media, such as e-magazines, can increase student involvement in independent learning, especially when the media is equipped with interactive features such as videos, quizzes, and discussion forums. This media also allows personalization in learning, where students can choose the topics they want to learn more deeply, according to their interests and needs [13-20]. Although digital media has been widely utilized in education, research specifically investigating the effectiveness of E-Magazine in supporting independent learning within the field of Culinary Arts remains limited. This study aims to design and assess the use of E-Magazine as a self-directed learning medium to enhance the learning quality of culinary students, particularly at Universitas Negeri Medan.

2 Research Methodology

This research employs the Research and Development (R&D) method to create E-Magazine learning media focused on Dessert topics for Culinary students and to assess its effectiveness in facilitating independent learning. The development process follows the ADDIE model (Analysis, Design, Development, Implementation, Evaluation), which includes five main stages. Below is a detailed explanation of each stage and the steps carried out in this study.

2.1 Analysis

We conducted the analysis stage to determine the learning needs of culinary students within the framework of independent learning. This stage involves several activities: a) Needs Analysis: Through surveys and interviews with 30 culinary students and 3 lecturers, an analysis was carried out regarding the type of learning media desired, the most effective material format, and what skills are most difficult to learn independently. Students require flexible and interactive learning media that offers practical and relevant content. b) Curriculum Analysis: Ensure that the content of E-

Magazine Dessert is in line with the culinary curriculum, especially for materials that focus on practical skills such as cooking techniques, cake decorating, and kitchen management.

2.2 Design

In this phase, the E-Magazine Dessert is designed based on the findings from the needs analysis. The activities conducted during the design stage include:

- a. Content Determination: We design the content of E-Magazine Dessert to include articles, video tutorials, and interactive quizzes. We adapt dessert materials to subjects from the culinary curriculum, including processing techniques, dish structuring, and the latest culinary trends.
- b. Visual Design: We use graphic design principles to combine text, images, and videos to create an attractive visual appearance for E-Magazine desserts. Desktop devices and smartphones can easily access the design.
- c. Storyboard: Before development, storyboards are created to organize the arrangement of materials and features that will be included in E-Magazine Dessert.

2.3. Development

The development stage is carried out by realizing the design into an E-Magazine Dessert that is ready to use. Activities at this stage include:

- a. Content Development: Write articles, create tutorial videos, and design quizzes and other interactive activities. The content was developed by a team consisting of culinary lecturers and students.
- b. Validity Testing: Prior to implementation, the E-Magazine Dessert undergoes evaluation by material experts and media experts to ensure its content quality and functionality. Material experts verify the accuracy of the content in alignment with the curriculum, while media experts assess the design and layout of the E-Magazine.
- c. Revision: Based on the advice of experts, revisions are made to the content and design.

2.4 Implementation

After the development stage was completed, the E-Magazine dessert was piloted to culinary students. The implementation phase includes:

- a. Trial: E-Magazine was piloted on 30 Culinary Arts 2022 students at the Culinary Laboratory. Students are asked to use E-Magazine dessert as a medium for independent learning for two weeks.
- b. Lecturer Assistance: Students can still consult with lecturers regarding the use of E-Magazine Dessert or materials that have not been understood, but it is preferable to use the media independently.
- c. Data Collection Instruments: The instruments used in the implementation stage are questionnaires and observations. The questionnaire is used to measure the level of

satisfaction, ease of use, and effectiveness of E-Magazine Dessert. Observation was made to observe how students utilize the features in E-Magazine Dessert.

2.5 Evaluation

We conduct the evaluation phase to gauge the effectiveness of the E-Magazine Dessert as a learning medium. We conduct this evaluation in two formats:

- a. Formative Evaluation: Performed at each development stage (following the design and development phases) to ensure that the E-Magazine Dessert aligns with its objectives. We utilize feedback from experts and test users to make improvements before implementing the final product on a larger scale.
- b. Summative Evaluation: Conducted after a two-week trial of E-Magazine usage. We analyze the questionnaire data to evaluate the media's effectiveness in promoting student self-directed learning. The evaluation covers aspects such as accessibility, satisfaction with the visual design, effectiveness in enhancing material comprehension, and its impact on motivation for independent learning.

2.6 Research Subject

The research subjects consist of:

- a. 30 Culinary students at the Culinary Laboratory who were respondents in the E-Magazine Dessert trial.
- b. 3 expert lecturers involved in content validation and media development.
- c. Media and graphic design experts who provide input related to the appearance and functionality aspects of E-Magazine Dessert.

2.7 Research Instruments

The tools utilized in this study include:

- a. Questionnaire, the study was designed to assess students' perceptions of the E-Magazine Dessert, with a focus on ease of use, visual design, content effectiveness, and satisfaction with its interactive features.
- b. Interviews, we conducted semi-structured interviews with selected lecturers and students to gain deeper insights into the utilization of E-Magazine Dessert in the learning process.
- c. Observation, through observation, researchers can see firsthand how students use E-Magazine Dessert in the independent learning process.

2.8 Data Analysis

We quantitatively analyzed the collected data from the questionnaires using descriptive statistics to examine the distribution of respondents' answers for each measured aspect. In the meantime, qualitative data from interviews and observations was analyzed using qualitative methods to find the main themes that came up in how students and teachers used the E-Magazine Dessert.

- a. Visual Design Satisfaction Level: Of the 30 respondents, 25 students (80%) were very satisfied, 3 students (16%) were satisfied, and 2 students (4%) were quite satisfied. The findings indicate a high level of satisfaction among most students with the visual design of the E-Magazine Dessert.
- b. The Effectiveness of E-Magazine Dessert in Material Comprehension: As many as 60% of students felt that E-Magazine was very effective, 30% felt that it was effective, and 10% felt that it was quite effective. We calculated the average effectiveness level to understand students' overall perception of E-Magazine Dessert as a learning medium.

3 Results and Discussion

3.1 Needs Analysis

The analysis results indicate that Culinary Arts students require learning media that is accessible anytime and anywhere while also supporting independent learning. They prefer content that includes practical materials, tutorials, and up-to-date information about the culinary industry. Additionally, they highly favor interactive and visually engaging media.

3.2 E-Magazine Design

Based on the results of the analysis, E-Magazine is designed with key features such as: 1) Content in the form of articles presented with text, images, and tutorial videos, 2) Interaction through quizzes or online discussions, 3) An easy-to-understand layout with an attractive and aesthetic design.

3.3 Design Development of Dessert E-Magazine

We develop the E-Magazine Dessert media using a digital platform, which is easily accessible through computers and smartphones. The content is updated from various reliable sources and is systematically arranged according to the culinary curriculum. The visual design is made as attractive as possible to increase students' interest in learning.

3.4 Implementation

The E-Magazine that has been developed is piloted to culinary students at Medan State University. Students are given 2 weeks to use the media in independent learning.

3.5 Evaluation

The evaluation was conducted using a questionnaire distributed to students after utilizing the E-Magazine Dessert. The results revealed that most students were satisfied with the E-Magazine, finding it helpful in understanding the material and

feeling more motivated to learn independently. They also provided suggestions for future improvements, such as including more detailed content and enhancing interactive features (see Table 1).

Table 1. Evaluation Results of Ease of Access to E-Magazine by Culinary Students

Aspects	Category	Number of Students	Percentage (%)
Easy Access to E-Magazine	It's very easy	35	70%
	Easy	12	24%
	Quite difficult	3	6%
	Very difficult	0	0%

Most students (70%) stated that e-magazines are very accessible. This shows that this medium has been well designed from a technical point of view, including its compatibility with various devices, such as laptops and smartphones. In addition, support for an internet connection that does not always have to be fast allows students to access content flexibly. However, there are about 6% of students who experience slight difficulty in accessing e-magazines, which can be caused by limited internet access in their area or less supportive devices. Therefore, in the future it is necessary to improve the technical aspect so that more students can access this media easily.

Table 2. Results of Evaluation of E-Magazine Satisfaction by Culinary Students

Assessment Aspects	Category	Number of Students	Percentage (%)
Satisfaction Level with E-Magazine Visual Design	Highly satisfied	40	80%
	Satisfied	8	16%
	Quite satisfied	2	4%
	Dissatisfied	0	0%

The majority of respondents (80%) expressed high satisfaction with the visual design of the e-magazine, indicating that the appearance of this learning medium is appealing and aligns with students' aesthetic preferences. The interactive design, effective color usage, and intuitive layout facilitate easy access to the required materials. Additionally, 16% of students reported being satisfied, while only 4% felt moderately satisfied. Feedback from those moderately satisfied likely pertains to improvements in navigation or the visual clarity of certain design elements (see Table 2).

Table 3. Results of Evaluation of the Suitability of E-Magazine Access by Culinary Students

Assessment Aspects	Category	Number of Students	Percentage (%)
Content Suitability to Learning Needs	Perfect fit	38	76%
	Appropriate	10	20%
	Quite suitable	2	4%
	Not suitable	0	0%

A total of 76% of students found the content of the e-magazine to be highly suitable for their learning needs in culinary studies (see Table 3). This indicates that the material provided is relevant and effectively supports their understanding of topics such as cooking techniques, cake decoration, and kitchen management. Additionally, 20% of students considered the content fairly appropriate, while 4% felt it could be further improved. This suggests an opportunity to enhance the e-magazine by incorporating more practice-oriented materials or adding specialized topics aligned with the latest trends in the culinary field.

Table 4. Results of the Evaluation of the Influence of E-Magazine Access by Culinary Students

Assessment Aspects	Category	Number of Students	Percentage (%)
The Influence of E-Magazine on Independent Learning Motivation	Significantly improved	32	64%
	Increase	14	28%
	No changes	4	8%
	Decreased	0	0%

The evaluation results revealed that 64% of students experienced a significant boost in their motivation to learn independently after using the e-magazine (see Table 4). This demonstrates that the media effectively encourages students to be more active in learning outside the classroom and to develop the necessary skills independently. Additionally, 28% of students reported a moderate increase in motivation, while only 8% observed no change. Notably, no students reported a decline in motivation, indicating that the e-magazine generally has a positive impact on fostering students' independent learning.

Table 5. Evaluation Results of Ease of Access to E-Magazine by Culinary Students

Assessment Aspects	Category	Number of Students	(%)
The Effectiveness of E-Magazine in Helping Understand the Material	Highly effective	30	60%
	Effective	15	30%
	Quite effective	5	10%
	Ineffective	0	0%

As many as 60% of students felt that e-magazines were very effective in helping them understand culinary materials, with another 30% feeling that it was quite effective (see Table 5). Features such as articles, video tutorials, and interactive quizzes are considered to make a significant contribution in making the learning process easier. Students can more easily understand concepts that were previously difficult through direct visualization and more interactive explanations compared to conventional learning media. However, 10% of students feel that e-magazines are only quite effective, perhaps because of different learning preferences or the existence of material that they feel still needs more detailed explanations.

Table 6. Results of Evaluation of E-Magazine Access Satisfaction by Culinary Students

Assessment Aspects	Category	Number of Students	Percentage (%)
Satisfaction Level with Interactive Features	Highly satisfied	33	66%
	Satisfied	12	24%
	Quite satisfied	5	10%
	Dissatisfied	0	0%

A total of 66% of students expressed high satisfaction with the interactive features offered in the e-magazine, such as quizzes, video tutorials, and discussion forums (see Table 6). These features enable students to actively engage in the learning process, allowing them not only to read the material but also to practice and participate in discussions. Furthermore, these features support students in independently assessing their understanding of the material. An additional 24% reported being satisfied, while 10% felt moderately satisfied. We can use the feedback from these respondents to improve interactivity by adding more quizzes or offering more detailed simulations (see Table 7).

Table 7. Evaluation Results of Recommendations for the Use of E-Magazine by Culinary Students

Assessment Aspects	Category	Number of Students	Percentage (%)
Recommendations for Using E-Magazine for Next Semester	Highly recommend	34	68%
	Recommend	14	28%
	Simply recommend	2	4%
	Not recommended	0	0%

4 Conclusion

The study results demonstrate that e-magazines are an effective independent learning tool for culinary students, significantly supporting the learning process. Most students expressed satisfaction with its accessibility, visual design, and interactive features. Additionally, e-magazines have been shown to boost motivation for self-directed learning and enhance students' understanding of course material, particularly practical skills that are challenging to master through conventional methods.

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