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Optimazing to use of Artificial Intelegence in the Development of Teaching Materials for Marketing Management Course Based on Gedget Application

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A B S T R A C T

This study analyze the practicality of digitizing teaching materials and utilizing gadgets to assess learning in artificial intelligence marketing management courses. The study was conducted at the Faculty of Economics, Universitas Negeri Medan and included 65 respondents as a research sample obtained using purposive sampling method. The development methodology used is DDD-E model. The data collection methods used are observation, literature review, and questionnaire. The research data was then analyzed using descriptive qualitative analysis. The results of this study show that the teaching materials and learning assessment of artificial intelligence marketing management course based on gadget applications are actually applied, which can be seen from the calculation results of each survey indicator measured from the aspects of ease of use of the application, ease of use of the application, time efficiency of using the application, and innovation level of the application.

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INTRODUCTION

With the rapid development of technology in education, everything exists in a digital version. The use of technology in education is done through various elements such as e-school, e-learning, online learning, virtual learning, web-based learning, digital books, etc. (Haslinda, All, 2022). Common applications of this technology can now be seen in various digital libraries, both in schools, universities, and public libraries. e) Auto-assessment is the ability to create tests and auto-corrections. f) Personalized learning. g) Educational games are games that are designed for learning, but can also provide play and fun. There is an urgent need to utilize technology in the development of teaching materials and learning assessment to make it easier for students to learn the material. This design of improved quality of learning is an attempt to improve the quality of students and ultimately improve the quality of education in Indonesia. In that sense, the development of digital teaching materials and learning assessment for marketing management is necessary. The objective is to improve the quality of learning and ultimately the quality of marketing graduates and to promote the use of technology in learning, which will be of great benefit to both student teachers and entrepreneurs. Therefore, the problem posed in this study is whether to utilize artificial intelligence based practical gadget applications to digitize marketing management course materials and assessment of learning.

THEORETICAL REVIEW

Artificial intelligence learning systems can analyze data on a person's learning progress and provide additional or repeated material if necessary, Mufidhoh (2023), Mulenaar (2021). This means that students with different levels of understanding can learn more effectively in class because they receive the appropriate level of support for each. Overall, the role of artificial intelligence in student learning has great potential to change the educational paradigm, Mufid (2022), Puthik (2019). Learning outcomes are the mastery that students achieve when they participate in an education and learning program according to set goals. Firnanda (2022) also found that using visual educational media can increase students' motivation to learn, which in turn impacts on improving students' learning outcomes. Use of project-based and problem-based learning is very popular among students to improve their skills, therefore, it is expected that educators can ensure innovation in learning, Faqiroh (2020), Saragih (2023). From the opinions above, it can be seen that the use of digital teaching materials can help increase practicality in learning, so that it can have an impact on increasing motivation in learning and ultimately can improve learning outcomes.

Arly 2023 found in its research that artificial intelligence (AI) could play a key role in supporting students with learning disabilities and helping them reach their full potential. On the emotional side of students, the use of artificial intelligence (AI) helps them to increase their confidence in their learning outcomes, as human artificial intelligence technology can support learning in a fun and comfortable environment, thereby increasing self-confidence and reducing anxiety. In the same year, Fauziyati said that the impact of the use of artificial intelligence in education offers great potential for improving efficiency

and effectiveness, as long as it is used wisely and properly integrated into the learning system. As with most education systems, computers can be used primarily as educational tools for the purposes of reinforcement, early learning, stimulating and motivating learning, or a variety of other possibilities. Computers are flexible and offer many advantages, as they can input video, audio, and graphic elements. Laili (2019) conducted a study to develop teaching materials for e-modules and successfully developed a project-based learning e-module on the installation of electric motors. Test results show that the module effectively improves students' learning outcomes based on their cognitive and psychomotor learning outcomes. This can be seen in the range of pre-and post-test scores achieved by students (Rahardja, 2019), (Putri 2023). Based on the results of several studies above, it is known that Artificial Intelligence has had a big impact on the development of teaching and learning materials in the current digital era. AI can help teachers prepare teaching materials that are innovative and practical to use. This is also a basis for researchers to see the level of practicality of using AI in preparing teaching materials and learning assessments, especially in Marketing Management courses, as well as seeing how practical the application-based teaching materials that have been developed are in terms of student perceptions.

METHODOLOGY

The design used in this study was adapted from the Ivers Barron DDD-E model. The development of the product involves four phases: "Deciding" sets the objectives of the learning materials and learning assessment; "Designing" is creating the initial program design; "Developing" is assembling the media elements and creating the multimedia display; and "Evaluating" is reviewing the entire multimedia development process.

This study was conducted in the Business Education Program at the Faculty of Economics, Universitas Negeri Medan. The population of this study included all students in the Business Education course at Unimed Faculty of Economics, totaling 204 students. The sample for this study was drawn using a purposive sampling method according to the criteria of students who had just completed the Marketing Management course. The sample of this study includes 65 students in the fourth semester of a business education course. Observation and questionnaires are used as data collection methods. The questionnaire distributed is a questionnaire to test the practicality of the developed digital teaching materials. The data was evaluated using descriptive data analysis aimed at testing the degree of practical suitability of the developed media. It is a practical test to verify the usability in terms of ease of use. The resulting total score range of the Likert scale is converted into a value criterion that determines the degree of practical suitability of the teaching materials application. The indicator grids used in the field test are Material, Animation, Image, Audio, Evaluation, and Accessibility. The formula used in the field test of this study is:

$$\mathbf{Vp} = \frac{TSEp}{S-max} \text{ X } 100\% \qquad \ldots\ldots\ldots\ldots\ldots\ldots(1)$$

Information:

Vp = Validity of Feasibility
TSEp = Total Score
S-max = Maximum Expected Score

Once the utility value is known, the following criteria can be used to determine the explanation for the utility results: The formula used in the utility test in this study is:

Tabel 1. Feasibility Categori

Information	Category	Information
75,01% - 100%	Very Practical	Can be used without revision
50,01% - 75,00%	Practical	Can be used with minor revisions
25,01% - 50,00%	Less Practical	It is recommended not to use
00,00% - 25,00%	Impractical	Unusable

Source: Arikunto 2019

RESEARCH RESULTS

The results of this research phase can be described as follows:

Decide

Decision During the decision phase, several steps are carried out, such as conducting initial observations, setting learning objectives, identifying teaching materials and learning assessments. The initial observations were made by carrying out a curriculum and student analysis. The curriculum analysis was carried out to ascertain the type of curriculum used in business education courses at Unimed's Faculty of Economics and to identify the competencies assigned to the Marketing Management course. The curriculum data is taken from the academic section and is also based on the form data of the Business Education Study Program. It is known that the Business Education Study Program consists of 7 courses or up to 16 credits, with Marketing Management course as the foundation course. The curriculum used is the Independent Learning Independent Campus (KKMBKM) and OBE curriculum. Meanwhile, as tasks, 6 KKNI tasks are used, with project-based learning and case studies as the core tasks. From the student analysis, it can be seen that students in the 4th semester of the Business Education Program have just completed the Marketing Management course and in this semester are taking the Service Marketing Management course, which is its continuation of the Marketing Management course.

Learning objectives are determined based on the performance of graduates of the study program. Learning objectives consist of attitudes and values, general and specific competency standards, and knowledge. For the Marketing Management course, concept mapping is carried out based on the CPL of the study program. When formulating these competency standards, basic competencies are formulated that are included in the 12 sub-outcomes of the Marketing Management course. The course materials and learning assessments are developed by introducing theories appropriate for marketing in the digital age and 5.0. This is in line with the development of marketing, which continues to move with the development of technology. Old marketing concepts have been

replaced by the birth of the Internet and digitalization. Therefore, marketing theory needs to incorporate the digital advances introduced in this course.

Tabel 2. Formulation of Sub CPMK for Marketing Management Course

NB	Sub CPMK	Sub CPMK Statement
1	Sub CPMK 1	Able to analyze marketing concepts in the 5.0 era
	Sub CPMK 2	Able to develop marketing plans
2	Sub CPMK 3	Able to create value, customer satisfaction and loyalty
	Sub CPMK 4	Able to analyze consumer behavior
3	Sub CPMK 5	Able to analyze STP *Strategies (Market Segmentation, Target Market and Positioning Analysis)*
	Sub CPMK 6	Able to analyze pricing strategies
	Sub CPMK 7	Able to analyze marketing mix strategies
	Sub CPMK 8	Able to analyze promotional strategies
	Sub CPMK 9	Able to analyze brand equity
	Sub CPMK 10	Able to analyze CSR *(Corporate Social Responsibility)* Strategy
4	Sub CPMK 11	Able to analyze Product and Service Marketing
	Sub CPMK 12	Able to analyze the competitive global marketing in the digital era

Design

In this phase, two designs were carried out: one was the design of a print book with teaching materials and assessments in print format, and the other was the design of teaching materials and learning assessments in the form of gadget applications. By taking this lecture, students will be able to analyze the concept of marketing management in the 5. 0 era, know the development of marketing management science from time to time, recognize, understand and become proficient in the importance of the environment in organizational operations. To understand and use marketing strategies to conquer the market. By taking this lecture, students will be able to analyze the concept of marketing management in the 5. 0 era, know the development of marketing management science from time to time, recognize, understand and become proficient in the importance of the environment in organizational operations. To understand and use marketing strategies to conquer the market.

Figure 1. Layout of Marketing Manajemen Print Book

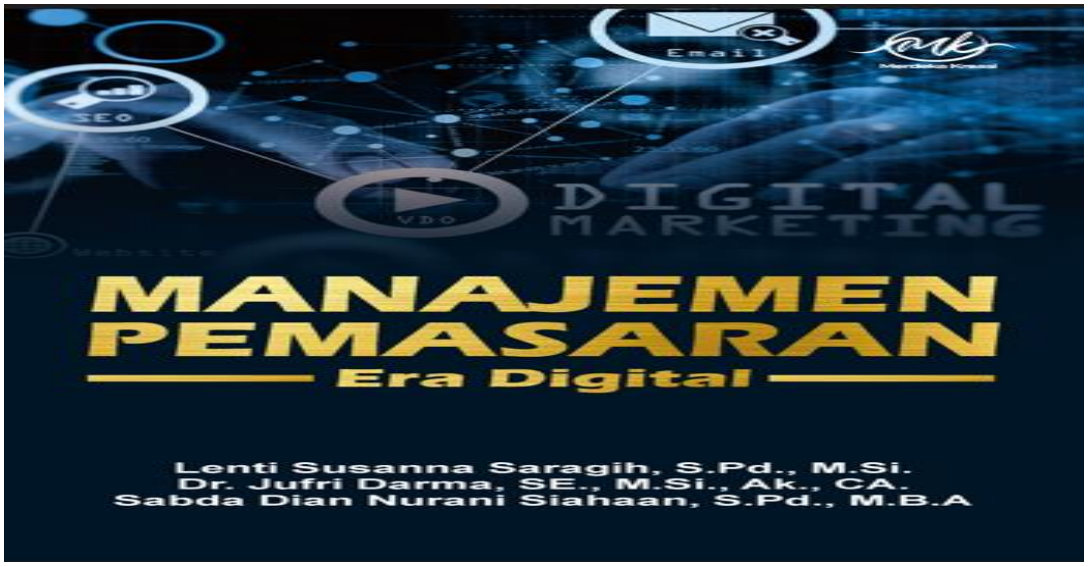
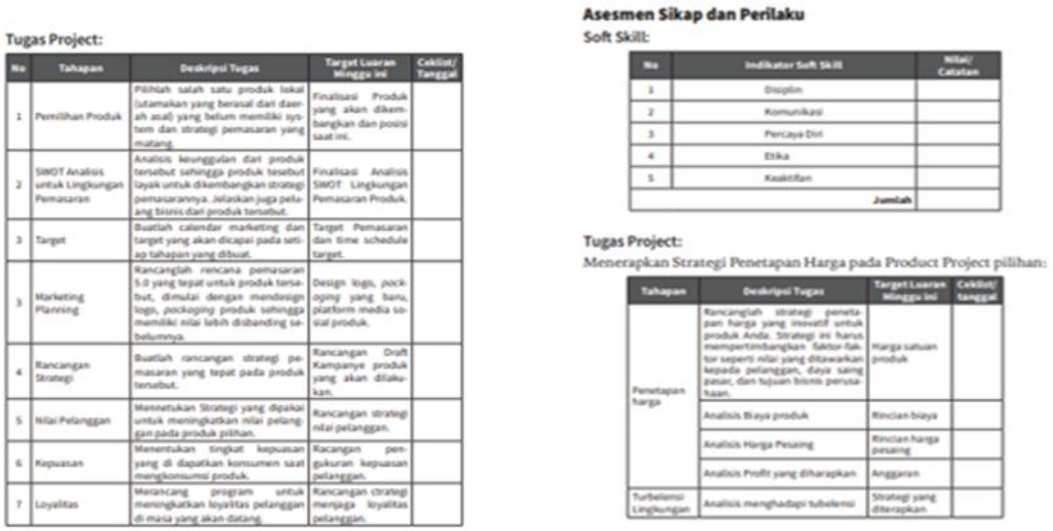


Figure 2. Cover of Marketing Manajemen Print Book

The design of teaching materials and digital learning assessments is currently based on six KKNI tasks, namely, Routine Task (TR), Critical Book Report (CBR), Critical Journal Review (CJR), Mini Research (MR), Team Project (TP) and Idea Development (ID). Through team project tasks, students are challenged to create a specific product appropriate for the course. Mini research tasks require students to enter and observe the real world and compare theories gained on campus with real-world facts and current information. Case-based learning (case method), problem-based learning and project-based learning aim to stimulate students' thinking patterns and familiarize them with higher-level thinking in solving problems. Meanwhile, the design of teaching materials and digital learning assessments is carried out by utilizing *Artificial Intelligence* technology that has developed a lot.



Tugas Project:

No	Tahapan	Deskripsi Tugas	Target Luaran Minggu ini	Ceklist/ Tanggal
1	Pemilihan Produk	Pilihlah salah satu produk lokal (utamakan yang berasal dari daerah asal) yang belum memiliki system dan strategi pemasaran yang matang	Finalisasi Produk yang akan dikembangkan dan posisi saat ini.	
2	SWOT Analisis untuk Lingkungan Pemasaran	Analisis keunggulan dari produk tersebut sehingga produk tesebut layak untuk dikembangkan strategi pemasarannya. Jelaskan juga peluang bisnis dari produk tersebut.	Finalisasi Analisis SWOT Lingkungan Pemasaran Produk.	
3	Target	Buatlah calendar marketing dan target yang akan dicapai pada setiap tahapan yang dibuat.	Target Pemasaran dan time schedule target.	
3	Marketing Planning	Rancanglah rencana pemasaran 5.0 yang tepat untuk produk tersebut, dimulai dengan mendesign logo, *packoging* produk sehingga memiliki nilai lebih dibanding sebelumnya.	Design logo, *packoging* yang baru, platform media sosial produk.	
4	Rancangan Strategi	Buatlah rancangan strategi pemasaran yang tepat pada produk tersebut.	Rancangan Draft Kampanye produk yang akan dilakukan.	
5	Nilai Pelanggan	Menentukan Strategi yang dipakai untuk meningkatkan nilai pelanggan pada produk pilihan.	Rancangan strategi nilai pelanggan.	
6	Kepuasan	Menentukan tingkat kepuasan yang di dapatkan konsumen saat mengkonsumsi produk.	Racangan pengukuran kepuasan pelanggan.	
7	Loyalitas	Merancang program untuk meningkatkan loyalitas pelanggan di masa yang akan datang.	Rancangan strategi menjaga loyalitas pelanggan.	

Asesmen Sikap dan Perilaku

Soft Skill:

No	Indikator Soft Skill	Nilai/ Catatan
1	Disiplin	
2	Komunikasi	
3	Percaya Diri	
4	Etika	
5	Kreatifan	
	Jumlah	

Tugas Project:

Menerapkan Strategi Penetapan Harga pada Product Project pilihan:

Tahapan	Deskripsi Tugas	Target Luaran Minggu ini	Ceklist/ tanggal
Penetapan harga	Rancanglah strategi penetapan harga yang inovatif untuk produk Anda. Strategi ini harus mempertimbangkan faktor-faktor seperti nilai yang ditawarkan kepada pelanggan, daya saing pasar, dan tujuan bisnis perusahaan.	Harga satuan produk	
	Analisis Biaya produk	Rincian biaya	
	Analisis Harga Pesaing	Rincian harga pesaing	
	Analisis Profit yang diharapkan	Anggaran	
Turbelensi Lingkungan	Analisis menghadapi tubelensi	Strategi yang diterapkan	

Figure 3. Layout of Learning Assesment Marketing Manajemen

Development

Once the teaching materials and learning assessments are compiled and designed, the next phase is to develop the teaching materials and learning assessments. In this phase, all the prepared draft teaching materials are further developed into teaching materials and digital learning assessments. The development phase carried out continues to use artificial intelligence technologies such as Heyzine and Canva for teaching materials, Quizziz for learning assessments, and Jegal Apll for creating teaching material applications. The name of the created application is dBUSAR Application.

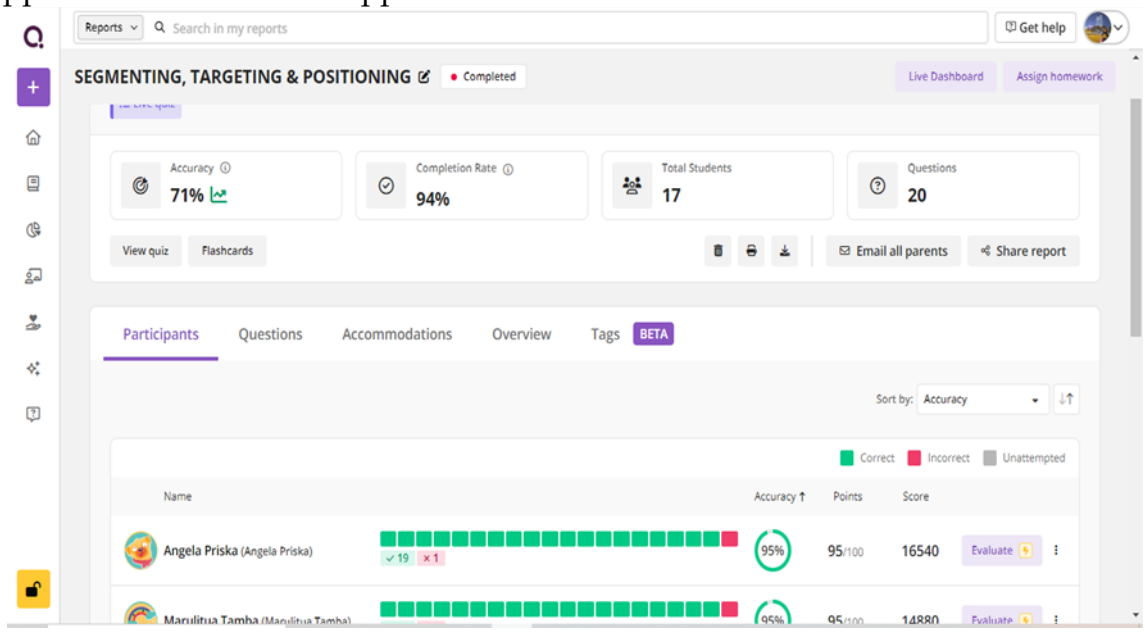


Figure 4. Layout Learning Assesment on Quizziz Application

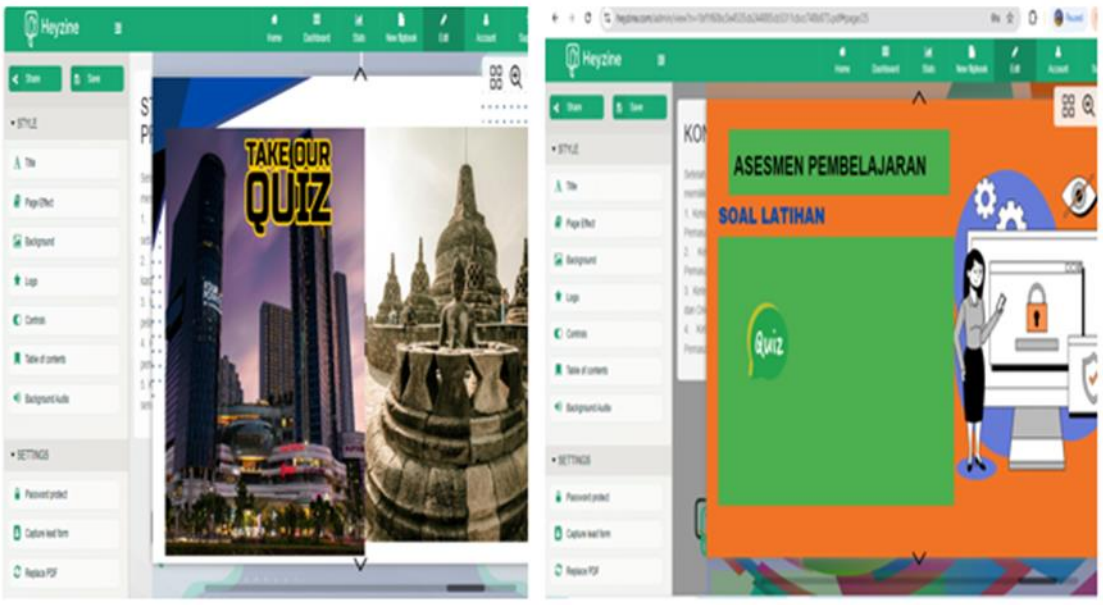


Figure 5. Develop Teaching Material with Heyzine Application

After all learning materials and assessments are entered into the Heyzine application, the next stage is the saving process. In this stage, you can also share

the flipbook file that has been developed. Then the flipbook was developed again into a teaching material and learning assessment application called the dBUSAR application.

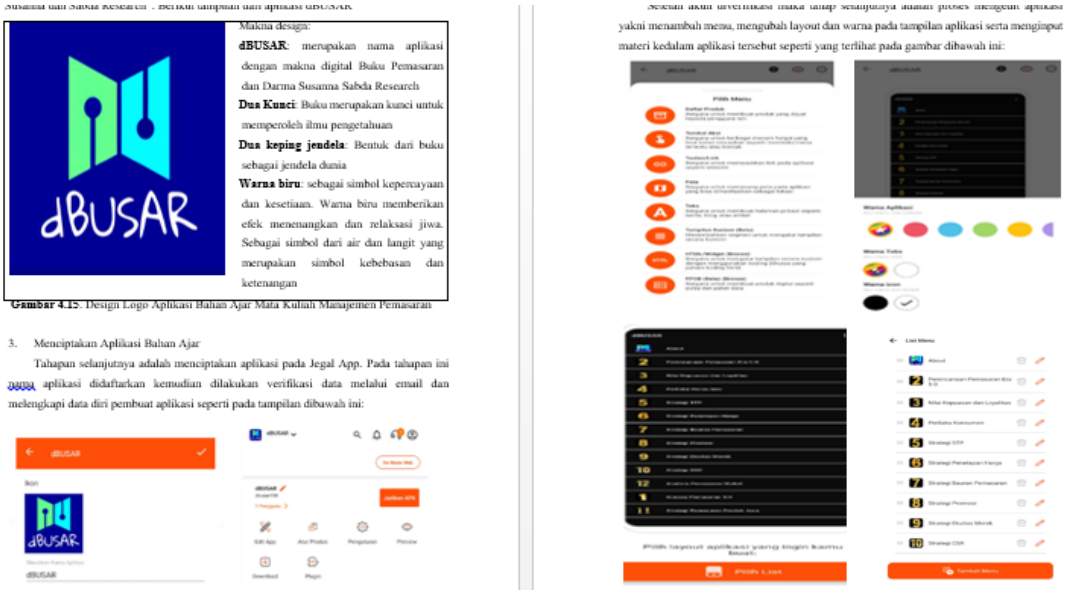


Figure 6. Stage of Process dBusar Application on Jegal App

Once the application is installed, users will be able to use the dBUSAR application. As a user, students can study the material, watch YouTube videos, discuss case studies and participate in end-of-learning assessments. To go to the next page, application users simply scroll on their device screen and will be redirected to the next page of the material. Scroll up to go to the next page and scroll down to go back to the next page. To play a student learning video, simply click on the play video button in the digital book menu. Similarly, students can complete their learning assessment by clicking on the Quiz button in the digital book. They will be immediately redirected to the prepared Quizizz link. Before taking the quiz, students should first create a Quizizz account so that they can connect to the application. They will receive their review assessment as soon as they answer the questions. For a better overview, we will present this in the form of the dBUSAR application.

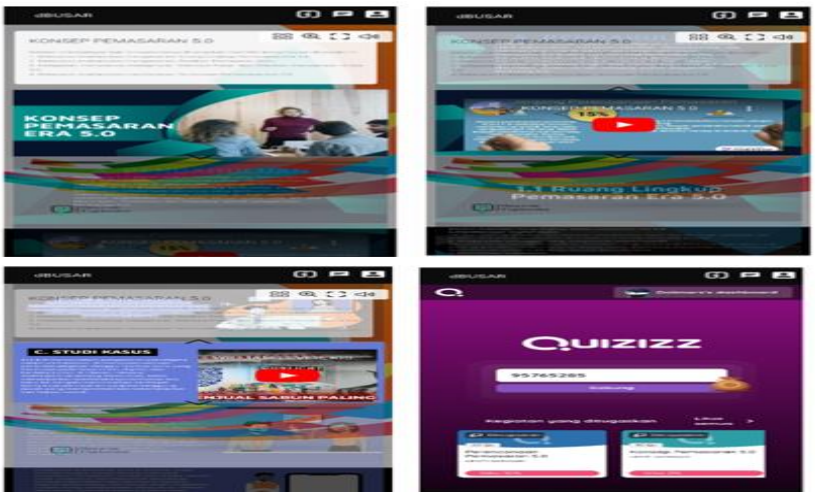


Figure 7. Layout of dBusar Application

Evaluated

Data collection on practicality testing in this study was carried out by distributing a practicality assessment questionnaire to students. The indicators used in testing the practicality of teaching materials and learning assessments of dBUASR are by testing the convenience for users, the usability of the application, the effectiveness of learning time and application innovation. After the data is obtained, tests are carried out as follows:

Table 3. Calculation of Convenience Aspects for Application Users *(Efficiensy)*

	Statement	**Total Score (TSEp)**	**Maximum Score (S-Max)**	Vp= X100%
1	Elaboration of teaching materials in accordance with learning outcomes	301	325	92,62
2	The basic concept of the material presented is clear and complete	291	325	89,54
3	The assessment presented tests students' skills	304	325	93,54
4	The material presented can increase the interaction between lecturers and students	290	325	89,23
5	The questions presented can be done by students according to the available time	288	325	88,62
	Total	**1474**	**1625**	**90,71**

Based on the data in the table above, we can see that the score obtained in terms of ease of use is 90, with 71% falling into the category of "very useful". This means that in the dBUSAR application, the elaboration of teaching materials corresponds to the learning outcomes, the basic concepts of the presented teaching materials are clear and complete, the presented assessments test the students' skills, the presented teaching materials increase the interaction between students, and the opinions and questions of the instructor and students can be dealt with in a timely manner.

Table 4 Calculation of the Usability Aspect of the dBUSAR *Application (Learnability)*

	Statement	**Total Score (TSEp)**	**Maximum Score (S-Max)**	Vp= X100%
1	The material presented is in accordance with the latest issues of the day	285	325	87,69
2	The language presented can be understood clearly and easily understood	293	325	90,15

3	The sentence structure used is easy to understand	287	325	88,31
	Total	865	975	88,72

Based on the data in the table above, we can see that the dBUSAR application has a score of 88, 72% in the "Very useful" category in terms of usability, which means that the dBUSAR application contains content that corresponds to today's latest topics, the language used in the application is clear and easy to understand, and the sentence structure used is also easy to understand.

Table 5. Calculation of the Effectiveness of Time Aspect of the dBUSAR *Application (Effectiveness of Time)*

	Statement	**Total Score (TSEp)**	**Maximum Score (S-Max)**	Vp= X100%
1	Systematic (ordered) and easily understandable presentation	286	325	88,00
2	The display of teaching materials can attract students' interest and focus	287	325	88,31
3	The assessments presented can attract students' interest and focus	278	325	85,54
4	Teaching material application design pleases students	295	325	90,77
	Total	**1146**	**1300**	**88,15**

Based on the data in the table above, it is known that judging from the effectiveness of the time to use the dBUSAR application, it obtained a score of 88.15% in the Very Practical category. This means that in terms of the effectiveness of time use, the dBUSAR application has a systematic and easy-to-understand presentation, the display of teaching materials can attract students' interest and focus, the assessments presented can attract interest and focus, and the application design is pleasing to students.

Table 6. Calculation of Innovation Aspects of dBUSAR Application (Innovation)

	Statement	**Total Score (TSEp)**	**Maximum Score (S-Max)**	Vp= X100%
1	Instructions on the app can be understood independently	281	325	86,46

2	The process of installing the dBUSAR application can be done by yourself	287	325	88,31
3	The teaching materials presented can be studied independently and anywhere	290	325	89,23
4	The dBUSAR application can be used on devices	287	325	88,31
5	Overall, the dBUSAR app is fun to use	284	325	87,38
6	The assessment presented on the application challenged me to learn the material	281	325	86,46
	Total	1710	1950	87,69

Based on the data in the table above, we can see that 87, 69% of the value from the innovation assessment falls into the "Very Practical" category. This means that the dBUSAR application is judged on its innovation, it contains instructions that can be understood independently, you can go through the installation process of the application by yourself, the materials presented encourage independent learning, the dBUSAR application is based on Gadgets that can be used, the dBUSAR application is fun to use, the assessments presented in the application encourage students to learn the material.

DISCUSSION

According to the results of the practical test, the dBUSAR digital teaching materials are found to be very practical. This is evident from the results of the questionnaire evaluation distributed to 65 respondents who used the dBUSAR application. The practicality of the teaching materials utilization and learning evaluation is evaluated based on four evaluation aspects: the aspect of ease of use, the aspect of ease of use of the application, the aspect of the effectiveness of the application's usage time, and the aspect of the ingenuity of the application. The survey results show that the dBUSAR application is very easy to use at a rate of 90, 71% and has high usability at a rate of 88, 72%. In addition, the dBUSAR application is very practical from the perspective of efficiency of use at a rate of 88, 15%, and the dBUSAR application is known to be very innovative at a rate of 97,69%. From the results of the study, it can be concluded that the use of AI applications in the development of teaching materials and assessment of learning levels is very practical. This means that educators can take advantage of available AI technology to create practical teaching materials.

This is in line with the statement by Mufid et al. (2022) Artificial intelligence is widely used for the purpose of automatic evaluation and grading of questions through online platforms, and AI systems work according to pre-programmed instructions, eliminating the need for educators and trainers to manually create questions and correct answers, and learning from the habits of users. The proper and responsible use of artificial intelligence can improve the

quality and accessibility of education, allowing students to learn in a more personalized and effective way. The use of personalized learning, automatic assessment, virtual tutors, intelligent content, voice assistants, and digital teaching materials can help students learn independently (Yuangga & Sunarsi, 2020, Yunandah, 2022). This means that displaying videos in the teaching materials makes the content easier to understand, makes the teaching materials easy to use anywhere, quizzes are helpful for evaluation, makes the teaching materials enjoyable for students, etc. This is in line with the findings of Firnanda (2022), who also found that the use of visual educational media increases students' motivation to learn and impacts on improving students' learning outcomes. The same is also stated by Fitri (2021) stated that the E-modules were developed using the 3D Pageflip Professional application with a final EXE program format and a module framework consisting of module covers, module location maps, and learning activities per sub. It includes chapters with examples and exercises and a final formative test with materials, videos, animations, and practical simulations for students to use.

CONCLUSIONS AND RECOMMENDATIONS

The research findings were developed using the DDD-E model: Decide, Design, Develop, Evaluate. The resulting application is called dBUSAR and contains 12 key topics, namely: 1) Marketing Concept Era 5.0, 2) Marketing Planning Era 5.0, 3) Value, Satisfaction, Customer Loyalty, 4) Consumer Behavior, 5) STP Strategy, 6) Pricing Strategy, 7) Marketing Mix Strategy, 8) Advertising Strategy, 9) Brand Equity Strategy, 10) CSR Strategy, 11) Marketing Strategy for Products and Services, 12 Global Marketing Analysis.

The apps used for developing teaching materials and assessing course learning with AI apps based on gadget apps are Chat GPT, Video Maker, Toonme, Heyzine, Quizizz, Pictori AI, Canva, and the AI apps used for designing teaching materials apps are, JegalApp. Based on practical tests with 65 respondents using teaching materials application and learning assessment of Marketing Management course using artificial intelligence application, it can be seen that dBUSAR application is actually used for learning. Based on the research findings, it is suggested that the use of teaching materials and digital learning assessment could be expanded to other subjects. Also, there is a need to improve the quality of digital learning facilities and infrastructure in the Faculty of Economics, such as opening up internet access and improving its usability, and developing on-campus discussion venue facilities that are convenient for students. Based on the findings in this research, it is known that teaching materials and learning assessments developed using Artificial Intelligence are very practical for students to use in learning both online and offline. So further developments are needed in teaching materials and learning assessments in each course. This aims to increase student learning motivation. Apart from that, it is also necessary to further develop the form of project assignments in learning assessment which will ultimately be able to produce course outcomes that can be applied in society.

FURTHER RESEARCH

Further research should focus on expanding the implementation of the dBUSAR application to a wider range of subjects beyond Marketing Management to evaluate its effectiveness across various disciplines. Additionally, studies could explore the long-term impact of AI-based teaching materials and assessments on student performance, engagement, and critical thinking skills. It is also important to investigate the integration of emerging AI technologies to further enhance the personalization and adaptability of learning experiences. Future research could assess the scalability of digital learning infrastructure improvements within the Faculty of Economics and beyond, identifying best practices for optimizing internet access, usability, and collaborative learning spaces. Furthermore, research could explore student and faculty perceptions regarding the adoption of AI tools in education, aiming to identify potential challenges and opportunities for continuous improvement.

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