Design Principles of Learning Messages in E-Learning

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A R T I C L E   I N F O

A B S T R A K

Beberapa hal yang masih kurang diperhatikan dalam konten atau pesan yang terdapat pada e-learning. Oleh karena itu, dibutuhkan perencanaan atau penataan pesan yang baik dengan mengacu pada prinsip desain pesan pembelajaran. Kajian ilmiah ini bertujuan untuk menganalisis penerapan prinsip desain pesan pembelajaran dalam media e-learning. Pendekatan dalam penelitian ini menggunakan pendekatan deskriptif kualitatif dengan jenis penelitiannya yaitu analisis isi deskriptif. Tahapan penelitian analisis isi meliputi perumusan tujuan analisis, konseptualisasi dan operasionalisasi, pembuatan lembar koding (coding sheet) atau kisi-kisi instrumen, penentuan populasi dan sampel, proses koding, input data, dan analisis. Pengumpulan data dalam penelitian dilakukan menggunakan metode studi dokumen, dengan instrument penelitian berupa lembar coding yang berdasarkan definisi penerapan prinsip-prinsip desain pesan pembelajaran. Teknik analisis data menggunakan analisis deskriptif kualitatif. Hasil analisis penelitian menunjukkan bahwa isi pesan menggambarkan, bahwa dalam e-learning besmart mata kuliah pengembangan e-learning sudah menerapkan prinsip kesiapan dan motivasi, prinsip penggunaan objek pemusat perhatian, prinsip partisipasi peserta didik, prinsip perulangan, dan prinsip feedback. Namun belum menerapkan tes kemampuan awal sebagai salah satu bentuk prinsip kesiapan.

A B S T R A C T

Some things still need more attention in the content or messages contained in e-learning. Therefore, good message planning or arrangement is needed concerning the principles of learning message design. This scientific study aims to analyze the application of learning message design principles in e-learning media. This study uses a qualitative descriptive approach with the type of research that is descriptive content analysis. The stages of content analysis research include formulating analysis objectives, conceptualization, and operationalization, coding sheet or instrument grids, population and sample determination, coding process, data input, and analysis. Data collection in the research was carried out using the document study method, with the research instrument in the form of coding sheets based on the definition of applying the principles of learning message design. The data analysis technique uses descriptive qualitative analysis. The results of the research analysis show that the contents of the message illustrate that in e-learning besmart, the e-learning development course has applied the principles of readiness and motivation, the principle of using the object of focus of attention, the principle of student participation, the principle of iteration, and the principle of feedback. However, it has not implemented the initial ability test as a form of readiness principle.

1. INTRODUCTION

E-Learning or internet-enabled learning is a breakthrough in information and communication technology (ICT) used in learning and learning activities (Alyahya & Nasser, 2019; Prasistayanti et al., 2019). E-learning media offers new changes in the learning process by displaying interesting and varied messages, views, and interactivity in the form of modern technology (Effendi & Pratama, 2021; Rivalina, 2017). Learning using e-learning uses websites, social media, and teleconferences (Ichsan et al., 2020; Jamal, 2020). In practice, learning using e-learning is not just uploading teaching materials. Still, it can also conduct an evaluation process, manage the learning process, and establish good communication between teachers, students, and parents. In its development, the e-learning system can be divided into two parts: dynamic e-learning and static e-learning. The e-learning system can be said to be dynamic if students can learn in an environment that is not much different from the classroom atmosphere at school and allows students to interact with teachers and friends via e-mail, chat, or other means of communication (Muhammad et al., 2020; Riskiono & Pasha, 2020). Meanwhile, it will be said to be static if, in the e-learning system, students and teachers cannot interact directly, where students can only download the

necessary materials and the admin can only upload material files. Using e-learning allows teachers and students to learn anywhere and anytime, with various conveniences presented.

The reality shows that besmart e-learning has yet to show significant effectiveness. Based on observations, students need more motivation in reading material and collecting assignments. It indicates a need for more active student participation in using e-learning. Such conditions are caused by the less attractive arrangement of messages, views, interactivity, and material feedback in e-learning. Studies show that using e-learning material or content is an important problem to overcome (Alenezi, 2020). In addition, the quality of the development of learning messages still needs to improve (Maatuk et al., 2022). It has yet to be known with certainty whether the content applied in e-learning has or has not applied the principles of learning message design. Message design is an important component in learning systems but needs more notice. The problem with today's message-delivering media is that they are less effective at transferring information to users because the message design is less attractive (Bahaa, 2017). Incompatibility in the design of learning media with the presentation of the material will cause online learning to show no significant results (Rahmi & Azrul, 2021). The challenge of using e-learning in the future is technical support for content development based on the principles of learning message design (Kebritchi et al., 2017; Rhim & Han, 2020; Yu, 2021).

The design of learning messages is very important for designing effective learning media because of the potential to increase student interactivity with messages or media (Lundgren et al., 2022; Ofori & Lockee, 2021; Ramlatchan, 2019). It indicates that the use of e-learning in the learning process must be adapted to the principles of learning message design to arrange the display or presentation of messages related to micro matters, such as visual materials, sequences, pages, and screens separately to make it more attractive (Azrul & Rahmi, 2021; Wahyudi, 2019). Structuring learning messages solves learning problems caused by structuring unstructured learning messages in learning media. The link between the design of learning messages and learning media is mainly to organize messages or material contained in learning media (Alodianada et al., 2019; Rahmi & Azrul, 2021). This effort contains information that the meaning of designing is the activity of selecting, determining, and developing optimal ways to achieve the learning process and results achieved. Structuring learning messages is a way to help students interpret learning messages because of its function as helping students get messages, helping students process message content, helping students connect or construct new structures of previous knowledge, and ensuring the messages conveyed have the desired benefits (Permana & Sujana, 2021; Widyaningsih et al., 2020). To achieve this function, the use of learning media needs to pay attention to the principles of structuring learning messages, namely the principles of readiness and motivation, the use of attention-focusing tools, active participation of students, repetition, and feedback.

Structuring learning messages through multimedia in introductory lessons can increase motivation and short-term learning outcomes (Lauc et al., 2020). Several studies have previously revealed that applying message design principles through mobile audio-visual media with illustrations, audio, video, and text can attract students' attention (Alyahya & Nasser, 2019; Firmansah, 2022). The results of other studies also reveal that the design principles of learning messages applied in e-learning will produce interesting and interactive learning media (Ramlatchan, 2019; Wahyudi, 2019). Based on some of these research results, the principles applied in using e-learning can help smooth the learning process. In previous studies, no studies specifically discussed message design principles in e-learning at the tertiary level. So this research is focused on this study to identify and describe the application of the principles of learning message design in e-learning besmart in e-learning development courses.

2. METHOD

This research belongs to descriptive qualitative research focusing on content analysis. Descriptive content analysis research is intended to describe in detail a particular message. The stages of content analysis research include the formulation of analysis objectives related to what you want to know through content analysis, namely to identify and describe the application of learning message design principles in e-learning besmart in e-learning development courses; conceptualization and operationalization, formulating research concepts and operationalizing them so that concepts can be measured through the five principles of learning message design; making coding sheets or instrument grids, reducing operationalization to coding sheets. The coding sheet includes what you want to see and how to measure it; determination of population and sample, population and a sample of this study e-learning besmart e-learning development courses; coding process, coding all contents into coding sheets that have been prepared; data input and analysis, input data from coding sheets and data analysis.

In general, the unit of analysis is divided into three, namely the sampling unit, the recording unit, and the context unit. The sample unit is part of the object chosen by the researcher to be studied. The unit of record is the aspect of the content on which the recorder or analysis is based. Meanwhile, the context

unit is the context the researcher provides to understand or give meaning to the research results. So, the sample unit of this study is the part contained in the e-learning besmart e-learning development course. This study's recording unit (recording unit) displays text, words, sentences, numbers, video, audio, images, and photos in besmart e-learning. The context units in this study are the principles of learning message design which consists of 5 principles, namely the principles of readiness and motivation, the principle of using a focus tool, the principle of student activity, the principle of feedback, and the principle of repetition. Data collection in the research was carried out using the document study method, with the research instrument in the form of coding sheets based on the definition of applying the principles of learning message design. The research instrument grid can be seen in Table 1.

Table 1. Coding Sheet

No	Message Design Principles	Indicator
1	Readiness and Motivation	Presents learning objectives
		Presents an initial aptitude test
		Presenting illustrations
		Presenting communicative language
2	Use of the Focusing Device	Presents color
		Presents illustrations
		Use of fonts
		Presenting videos
		Layout
3	Active Participation of Learners	Presents a communication forum
		Presenting exercises, assignments, quizzes
4	Feedback	Displays the answer key
		Displays learning outcomes
5	Loop	Summary or conclusion
		Presents repeatable video and audio

The data obtained in the study were then analyzed by not testing hypotheses or the relationship between variables but by describing in detail a text message, word, sentence, number, video, audio, image, or photo. So that researchers only identify and describe parts of a message contained in e-learning besmart e-learning development courses.

3. RESULT AND DISCUSSION

Result

E-Learning besmart, the e-learning development course is an online learning medium for second-semester students of the UNY learning technology master's degree. E-Learning besmart analyzed using the principles of learning message design, which include the principles of readiness and motivation, use of attention-focusing tools, active participation of students, feedback, and repetition. The findings based on message design principles are as follows: the first finding is related to the principles of readiness and motivation, which are made into several categories according to the indicators described in the grid. Applying this principle is more at the beginning before entering the sub-sub-material. The following is the analysis results: First, presenting the initial objectives. In besmart e-learning, the e-learning development course already presents the learning objectives or achievements on the initial display page. However, learning the material per week has yet to be presented.

Second, presenting an initial ability test. In besmart e-learning, the e-learning development course does not present an initial ability test before entering into the provision of further material. It can be seen in the initial info. The initial information only contains introductory words, lecturer profiles, course descriptions, learning outcomes, learning methods, assessment methods, lecture links, and book reference links. The display of initial information on besmart e-learning is presented in Figure 1.
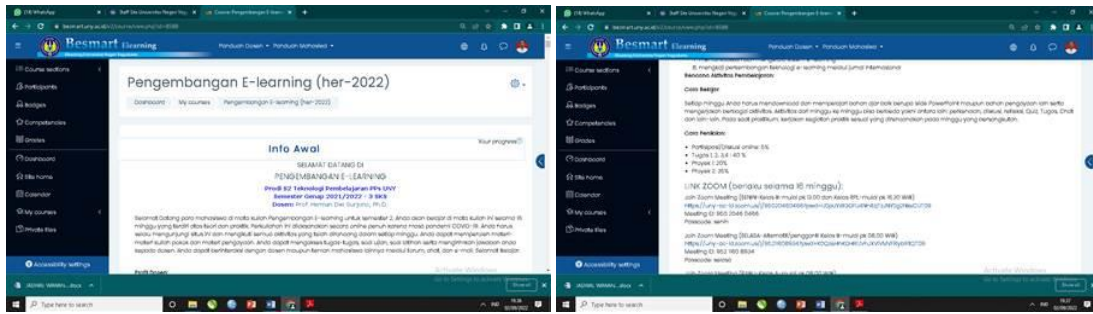
Figure 1. Initial Info Display

Third, presenting illustrations. Presentation of e-learning illustrations besmart e-learning development courses in the initial info presenting visual illustrations in the form of lecturer profile pictures. In the initial info, the text is more dominant, so when there is a display image, it is not monotonous, so it can be a motivation booster because competent lecturers will teach it. Fourth is communicative language. The application of communicative language in e-learning besmart is indicated by a sentence in the initial information section: "Welcome students to the E-learning Development course for semester 2. You will study theory and practice in this course for 16 weeks. This lecture is being held in full online due to the COVID-19 pandemic. You should always visit this site and follow all the activities that have been planned each week. You can get basic lecture materials and enrichment materials. You can access assignments, exam questions, practice questions and send your answers to the lecturer. You can interact with lecturers and fellow students through forums, chat, and e-mail. Have a good study". Another example is: "Every week, you have to download and study teaching materials in the form of PowerPoint slides and other enrichment materials and do various activities. Activities from week to week can be different, namely: introductions, discussions, reflections, quizzes, Assignments, Chat, and others. During the practicum, do the practical activities as planned for the week in question." Based on the example sentences above, using communicative language is very important to apply in e-learning. Apart from being easy to understand, it is also necessary to encourage students or readers to be motivated to read.

The second finding relates to applying the principle of using the focus tool. Several categories can be made according to the indicators described in the grid. The application of this principle can be analyzed from the beginning to the sub-subjects. Here are the results of the analysis: First, present the color. The use of color in e-learning is an important part to pay attention to, one of which is giving contrasting colors to text, images, or certain parts intended to be the focus of attention. The color sentence "Week 1: Introduction to E-Learning" uses blue color given a contrasting white background is an example of giving text and images a contrasting color so that it can be a focus tool to indicate what students will study in the first week. In addition, the sentence "Learning Resources" uses red combined with gray with an illustrated background to look contrasting and clear.

Second, presenting illustrative images. The difference in the presentation of illustrative images on the principle of using this concentrating tool is that it is more focused on the sub-sub-material sections. As seen in the image below, illustrative images can be a tool for attention and clarifying material. Third, the use of fonts. Using fonts in e-learning besmart in e-learning development courses uses a different text size. It is an example of applying the principle of using a concentrating device because, with a different size, it will make the student or reader see the title of each sub-sub-material presented first. Fourth, it presents the video. Presentation of animation, audio, and visualization via video can be a means of concentrating attention. The examples in the Besmart e-learning course for e-learning development include videos integrated with YouTube. Fifth, the layout. The display settings related to the layout are very important to note as related to menus, meeting sessions, and sub-materials that can be close to the contents of the material to be studied. Besmart E-Learning in the e-learning development course itself, the layout of the menus is in one view, the meeting sessions every week are also sorted in sequence, then the location of the linked material with the writing of the sub-material to be studied is also close together so that it can make it easier for students or readers to focus their attention without having to move through the display pages.

The third finding relates to applying the principle of active student participation according to the indicators described in the grid: presenting a communication forum and providing exercises, assignments, and quizzes. Active participatory learners are needed so that e-learning can be a driving force for teaching and learning activities. If no activity or activity can be carried out or done, it indicates that e-learning has not been running and functioning optimally. Besmart e-learning in e-learning development courses, there are various kinds of activities or activities aimed at students or readers participating actively.

Summarizing assignments, reviewing material at each meeting, quizzes, and discussion forums are examples that can be applied so that students can actively participate. The display of discussion forums, quizzes, and assignments presented in the besmart e-learning can be seen in Figure 2.
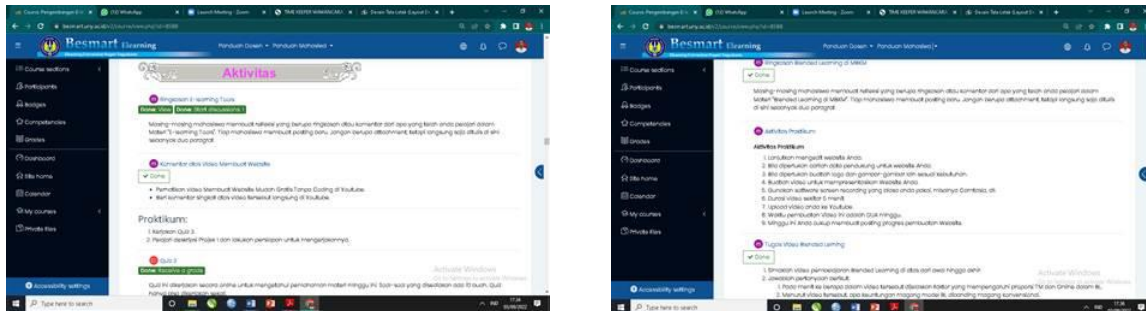

Figure 2. Display of Discussion Forums, Quizzes, and Assignments Presented in Besmart E-Learning

The fourth finding relates to feedback intended as a reciprocal of what students have done or have done. The form of application of the feedback principle is adjusted to the indicators described in the grid. The results of the analysis carried out display the key answers to the learning outcomes. The appearance of the answer key page in the form of which answers are right and wrong is an indicator of feedback. The existence of correct and incorrect answer keys is intended so that students can find out which answers are correct and can correct wrong answers. In the e-learning besmart, the e-learning development course also displays right and wrong answers when the Quiz work is complete. The display of learning outcomes done by students can be an appreciation of what has been done and achieved. The e-learning besmart e-learning development course displays learning outcomes containing the achievement score and maximum grade.

The fifth finding relates to repetition, which is intended to recall material that has been learned. For example, students need to remember. Presentation of material in e-learning that can be reviewed repeatedly will make it easier for students to recall the material that has been presented. The form of applying the iteration principle is adjusted to the indicators that have been described in the grid. The following is the analysis results: First, it displays a summary or conclusion of the material. Besmart E-Learning in e-learning development courses, there is an application of the principle of repetition. For example, the section "link admin tasks in Moodle" summarizes Moodle admin tasks. In addition, there is a material conclusion on the PDF file link. Second, it provides repeatable video and audio. E-Learning besmart in e-learning development courses for materials presented via video that can be accessed repeatedly. So, if you forget the material or things in the video, you can repeat it.

Discussion

This study aims to identify and describe the application of learning message design principles to e-learning besmart in e-learning development courses. The principles identified and described are the principle of readiness and motivation, the principle of using a focus tool, the principle of active participation of students, the principle of feedback, and the principle of repetition. The results of the identification and description of each message design principle are as follows: The first result shows that the form of applying the principles of readiness and motivation in e-learning is one of the factors underlying the success and failure of e-learning (Rafiee & Abbasian-Naghneh, 2021; Rivera, 2018). The readiness of students to face learning activities allows institutions to deliver and manage courses so that they function effectively and increase motivation and satisfaction for students (Ichsan et al., 2020; Jamal, 2020). The identification results of applying the principles of readiness and motivation in e-learning besmart e-learning development courses have presented learning objectives, illustrations, and communicative language but had yet to present an ability test as a prerequisite for students before studying the material further. Organizing content/material by providing clear learning objectives is very important to help students identify their readiness to take lessons and assist instructors in facilitating students (Marlina et al., 2021; Sukma, 2021). Readiness of learners can assist in developing effective strategies to achieve good results or increase their overall satisfaction (Mai, 2022; Suryanti et al., 2021). The presentation of communicative pictures and language illustrations is intended to maintain students' ongoing motivation in learning the material so that students get positive value from the material (Azrul & Rahmi, 2021; Mai, 2022). Elements of visual illustrations in e-learning can increase students' understanding, self-efficacy, and learning motivation (Kurniawati et al., 2022). Then, if the language is communicative, simple, and clear, it will be easy to understand, fostering motivation to learn (Panjaitan et

al., 2020; Yang, 2017). Based on the results of the explanation above, it can be concluded that e-learning besmart as an e-learning development course has applied the principles of readiness and motivation through learning objectives, presentation of illustrations, and communicative language to increase readiness, understanding, motivation, and learning outcomes.

The second finding shows that focusing attention on students to be consistent for a long time takes work. The focus of learning participants is often distracted by outside attention that should be the object of attention. If in structuring messages in e-learning using attention-focusing tools, this can affect better learning outcomes. As explained by the information processing theory that the attention of students does not last for a long time, so it is important to give accentuation to messages so that students' attention focuses on the material being studied (Permana & Sujana, 2021; Widyaningsih et al., 2020). The centering tools include color, visual illustration, the right typeface, animation insertion, and a good design layout (Pratama et al., 2021; Wahyudi, 2019). The identification results of applying the principle of the focus tool in e-learning besmart in the e-learning development course have presented colors, illustrative images, fonts, animations, audio, and video. The layout was systematic (Priyantini et al., 2021; Seo, 2022). Colors in text, images, or certain parts that contrast with the background color in the media can attract students' attention (Adiutami & Sujana, 2022). Color integration in learning media can increase students' interest and attention (Dewi et al., 2021). Interesting illustrations make it easier for students to digest the subject matter well and attract the reader's attention (Akhmad et al., 2018; Wiweka et al., 2021). Using visual illustrations in important messages to attract attention, motivate, increase understanding, and remember so that reflecting visual messages can change the behavior of readers (Bahaa, 2017; Fitra & Maksum, 2021). The accuracy of the presentation and readability of the text, both in terms of font size, font type, and text layout, can attract the attention of students so that it is easier to understand the material (Dwiqi et al., 2020; Pratiwi & Wiarta, 2021). Based on the results of the explanation above, it can be concluded that e-learning besmart in e-learning development courses has applied the principle of using attention-concentrating devices through the presentation of colors, illustrations, fonts, animation, audio, video, and layout to attract attention learners.

The third finding shows that active participation in the context of online learning through e-learning is not just entering and being present but requires serious and interactive participation of students with the material and media used even when apart from the online learning schedule (Çakmak, 2022; Rahmi & Azrul, 2021). Efforts that can be made to increase the activity of students in the use of e-learning include the use of features such as video conferencing, chat, discussion forums, and online tutorials, as well as providing exercises, assignments, quizzes during learning or after each material discussion (Bahaa, 2017; Kear et al., 2022). The identification results of applying the principle of active participation of students in e-learning besmart e-learning development courses have provided communication forums in the form of chats, discussion forums, video conferencing, online tutorials and exercises, assignments, or quizzes for students to work on. E-Learning can work anytime and anywhere via synchronous and asynchronous interaction via chat, discussion forums, video conferencing, and online tutorials (Díaz & Ruiz, 2021). Both types of interaction aim to involve active participatory learners because students' qualitative and quantitative participation in synchronous and asynchronous interactions has a relationship with improving performance and learning outcomes (Maatuk et al., 2022). While training activities/tasks/quizzes in e-learning encourage active learning strategies and help improve interaction, speaking, and listening skills, student performance, and participation (Ganeser, 2020; Squire, 2019). Quiz is an effective strategy for increasing student engagement and learning (Kimbrel & Gantner, 2021; Rahmi et al., 2017). Learning activities that involve students being active in blended learning will boost students' understanding of learning material (Azrul & Rahmi, 2021; Wahyudi, 2019). Based on the results of the explanation above, it can be concluded that e-learning besmart in e-learning development courses has implemented the principle of active participation of students through communication forums (chat, discussion forums, video conferencing, and online tutorials) and exercises/assignments/quiz with the aim of to increase students' understanding and active involvement.

The fourth finding shows that feedback is an effort to provide information to students about learning outcomes or progress in learning outcomes that have been achieved and deficiencies that still need to be corrected. Feedback is classified into three types: confirmative, corrective, and interpretive. Confirmatory feedback means telling the learner that the answer is right or wrong. In contrast, corrective feedback tells the learner whether the answer is right or wrong while providing the correct answer. On the other hand, interpretive feedback tells the learner the correct answer and explains why the answer is right or wrong (Alodianada et al., 2019; Bahaa, 2017; Rahmi & Azrul, 2021). With the feedback, the learner feels confident that if it is correct, then it is corrected. If students know where the error lies, if they are told the error, it will be corrected technically. Feedback can be given in the form of the correct answer key and the results of the assignments they are working on (Situmorang & Widyaningrum, 2019). Based on

the identification results of the application of the principle of feedback in e-learning, besmart, the e-learning development course already provides answer keys and learning outcomes. Students realize the importance of feedback in the e-learning platform. The results show that the e-learning system provides feedback in the form of true and false answers, and the acquisition of learning outcomes significantly influences the use of e-learning (Allaymoun & Shorman, 2022; Lauc et al., 2020). In addition, using answer keys and acquiring learning outcomes in the e-learning platform can increase motivation and learning outcomes because the feedback can increase activity and students' knowledge of the subject matter (Herian et al., 2022). Based on the results of the explanation above, it can be concluded that e-learning besmart in e-learning development courses has applied the principle of feedback through answer keys along with the processing of learning outcomes to increase activity, motivation, and learning outcomes.

The fifth finding shows that repetition is an important key to learning and effective learning. Repetition is one of the concepts that must be used in effective learning to facilitate better memory and increase motivation and engagement (Kim et al., 2017; Nugroho & Daniamiseno, 2022; Pavani, 2018). Learning activities can be represented through learning media, of course, with different formats (Iffah, 2021; Tautz et al., 2021). Ways that can be done to repeat messages with several different media formats. For example, audio media, information, or messages are read and conveyed by the educator as the narrator first. After that, students repeat it, or it can also be reversed. Looping can be done on all messages or just the core of the message. In visual and audio-visual media, messages are displayed and narrated first and then repeated by students or other visualizations (Munir et al., 2018; Nida et al., 2019). Based on the identification results of applying the principle of repetition in e-learning, besmart, the e-learning development course already provides a video that can be played back and a summary or conclusion of the material. Audio-visual media or videos uploaded online by lecturers make it easier for students to access and help repeat lecture material because they can be played back (Ebbert & Dutke, 2020; Morris et al., 2019).

The results obtained in this study are in line with the results of previous research, which also revealed that the application of message design principles through moving audio-visual media with a combination of illustrations, audio, video, and text could attract students' attention (Alyahya & Nasser, 2019; Firmansah, 2022). The results of other studies also reveal that the design principles of learning messages applied in e-learning will produce interesting and interactive learning media (Ramlatchan, 2019; Wahyudi, 2019). Based on the research analysis results supported by previous research, the principles applied in using e-learning can help the learning process run smoothly.

4. CONCLUSION

Structuring learning messages in learning media using design principles will optimize the process and learning outcomes. Lack of attention to message design principles and only focusing on the hardware does not produce the expected process and learning outcomes.

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