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The Development of Flipped Classroom Learning Design Assisted by Digital Storytelling Media in the Photography Course for Visual Communication Design Students in The Bachelor's Program at STIE Asia Malang

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Abstract. This study aims to develop a flipped classroom instructional design assisted by digital storytelling media for the Photography course for undergraduate students of Visual Communication Design at STIE Asia Malang. The approach of project-based learning integrates the use of technology and active learning methods to enhance the effectiveness of learning. The Research and Development design used the instructional design proposed by Degeng & Degeng (2018). It divided into three phases of instructional design formation, namely 1) analysis of learning conditions, 2) development of learning strategies, 3) development of outcome measurement procedures. The results of the study show that this instructional design is effective in increasing student engagement and active participation. Students are more involved in the learning process, more motivated, and better able to apply the knowledge they have gained in real projects. Additionally, their learning outcomes significantly improved in both conceptual understanding and practical application. The efficiency of this design is also evident from the optimization of learning time, where students can utilize out-of-class time to study the materials, while in-class time is used for more interactive discussions and collaborative projects.

Keywords: Flipped Classroom Learning Design, Digital Storytelling Media, Photography Course

Introduction

In the digital era, information and communication technology have significantly impacted the field of education. Furthermore, technology has facilitated access to information and opened up new opportunities in various fields, including photography. It aligns with one of the principles in the standard learning process, which is the development of information and communication technology

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to enhance the efficiency and effectiveness of learning (Minister of Education and Culture Regulation Number 103 of 2014).

In the rapidly evolving digital era, education has undergone significant transformation in terms of the use of technology in learning. One increasingly popular approach is the flipped classroom, where students gain access to learning materials before class through digital sources such as instructional videos, and class time is utilized for discussion, collaboration, and application of concepts. According to Ubaidillah (2019), flipped classroom learning is a model where students predominantly learn the subject matter at home by watching instructional videos, making classroom teaching and learning more effective for task completion, and discussions on material or issues not yet understood by students. Therefore, by using pre-recorded videos and learning materials, instructors can reduce the amount of time spent on direct content delivery in class, allowing them to focus more on deeper and interactive learning aspects.

However, the implementation of digital education also has challenges; firstly, access to and availability of technology are crucial factors in ensuring that all students can easily access learning materials. Secondly, the skills and readiness of teachers in designing and delivering digital learning materials are also key to the successful implementation of flipped classroom. Furthermore, evaluation and assessment of learning in the context of flipped classroom also need to be adjusted to align with a student-centered approach.

In this context, further research is needed to deeply understand how the implementation of flipped classroom can be optimized in this digital era to maximize student learning potential. Effective solutions and strategies to address challenges that arise with the implementation of this approach also need to be identified. Thus, research on flipped classroom in the context of digital education is relevant and important to meet the demands of educational development in the current digital era.

In addition to the approach elements that need to be considered in this development, suitable learning media for the current era are also required. Digital storytelling videos are multimedia mediums that combine narrative, visual, and audio elements to deliver stories or messages in an engaging and persuasive manner (Strijker, 2018). The use of digital storytelling videos has a significant impact on the teaching and learning process. Wang and Chen (2020) claim that the use of digital storytelling videos in learning has been identified to increase student interest and motivation, strengthen their understanding of learning materials, and enhance student engagement in the learning process. Furthermore, it can also be an effective tool to expand learning accessibility by allowing students to learn independently and flexibly through various electronic devices (Kim & Park, 2019).

Media can be one of the solutions to overcome stagnation in Indonesia. Lecturers need media to communicate information designed during the learning process to be more realistic, where static images transform into moving images (animations) accompanied by sound (audio) and can be presented in multidimensional forms. One of the technologies currently widely used in education is Digital Storytelling (DST). Digital storytelling is the use of digital technology to tell stories or convey messages. This technology can facilitate individuals in conveying stories or messages in an interesting and interactive way. Maddin (2012) explains that DST is the art of storytelling by combining various

digital multimedia, such as text, images, narrative recordings, audio, video, and music, to produce compelling short films to present information about a topic. DST has several advantages, such as; (1) DST can be used in various learning styles of students; (2) DST can be used in several fields of study including language, social sciences, arts, and sciences; (3) DST can enhance students' understanding of concepts and learning motivation. With DST, it can be utilized as a learning media for photography in the Visual Communication Design Department.

Supporting elements are also considered in the approach towards optimal learning goals. Project-Based Learning (PBL) has been recognized as an effective learning method in promoting student-centered learning and the development of practical skills in real-world contexts. In the context of photography learning, PBL offers an interesting and meaningful approach to facilitate the development of students' photography skills. Through PBL, students not only gain theoretical understanding of photography but also have the opportunity to apply their knowledge in relevant practical projects. PBL also encourages collaboration and communication among students. PBL provides opportunities for students to work in teams, share ideas, and solve problems together in the context of photography projects (Thomas, 2019).

However, to ensure the success of PBL in photography learning, it is important to design projects that align with students' needs and interests and adjust the difficulty level of the projects to the students' skill level. Additionally, teacher support in providing guidance and constructive feedback is also important to ensure the success of PBL. Thus, PBL is a highly effective approach in photography learning as it allows students to learn through direct experience, promotes collaboration and communication, and develops their creativity. By designing relevant and meaningful projects, teachers can enhance students' photography learning experiences and prepare them for success in the real world.
Photography or photo media is a method of creating images of an object by capturing the reflection of light from the object using light-sensitive media (Leo, 1989). Harsanto (2017) says that the development of the world of photography today is very fast and rapid.

Candra and Nugroho (2017) said that the photography profession is divided into three, namely 1) commercial photos, 2) journalistic photos, and 3) fine art photos. Commercial photo photographers work to meet the needs of the advertising industry, sales, demonstrations for mass media, and special publications. The industry divides the photography profession into smaller compartments and breaks down advertising photographers and photojournalists into even smaller specializations, such as landscape, wild life, fashion, and others.

Photography works are one element of graphic design. Its function is the same as pictures, paintings, or decorative ornaments, which is to provide decoration or illustration. In learning photography, the use of digital storytelling in photography learning activities can enhance understanding, creativity, and motivation of students, and prepare them to become more competent photographers in the future.

The underlying problem addressed in this research is to meet students' learning needs by enhancing the delivery and practice of materials. Therefore, this study focuses on developing teaching materials in the form of digital storytelling videos within a flipped classroom learning model for photography courses. These

elements are complemented by a PBL approach strategy to enhance students' achievement of learning objectives more effectively.

Learning Design Planning

The classroom learning design, tailored to several steps outlined by Degeng & Degeng (2018) in their book "Ilmu Pembelajaran" (The Science of Learning), includes: examining the objectives and nature of learning content, assessing learning sources or materials, examining the characteristics of learners, determining the content and learning objectives, establishing strategies to organize learning content, determining strategies for delivering learning content, establishing learning management strategies, developing assessment procedures and learning outcomes. The development of learning design in this research is adapted to the use of popular online learning media, which are engaging for Generation Z and Alpha. This learning design has been tailored to the use of digital storytelling in learning, utilizing various features that support the learning process.

Implementation of Learning Design

1. Examining Objectives and Nature of Learning Content
   Flipped Classroom method and Project-Based Learning (PBL) strategy encompass several important aspects. First, the learning content should include basic photography concepts. Second, problem-based photography projects should be an integral part of the learning content, where students are tasked with taking photos related to specific themes or issues. Third, learning resources such as books, articles, online tutorials, and relevant visual references should be provided to support students' understanding of photography concepts. Fourth, interactive learning activities such as group discussions, presentations, and analysis of photographic works should be conducted to facilitate student understanding through reflection, discussion, and hands-on experience. Lastly, formative and summative assessments should be designed to evaluate student learning achievements.
2. Examining Learning Sources or Materials
   This study focuses on the learning materials should cover basic photography concepts such as shooting techniques, visual composition, lighting, and photo processing, learning materials should focus on problem-based photography projects, where students are tasked with taking photos related to specific themes or issues. Learning resources such as books, articles, online tutorials, and visual references should be provided to support students' understanding of photography concepts and inspire their photographic works. Materials should be designed considering students' needs and interests and integrating appropriate technology to support learning.
3. Examining Learner Characteristics
   The needs and characteristics of Generation Z and Alpha learners in the current digital-savvy era show unique characteristics that need to be considered in learning design. Generation Z, born between 1997 and 2012, and Generation Alpha, born after 2012, have grown up in a digitally dominated environment. They have different learning preferences, interactive, and fast. Both generations tend to prefer learning using digital technology, such as social media, mobile applications, and online learning platforms. As researchers and educators of the current era, it is also important to provide flexibility in

learning, both in terms of time and place, so that students can learn according to their preferences and learning rhythms.

4. Establishing the Content and Objectives of Learning
   The achievement of this photography course is that participants are able to create and analyse a single or series of digital-based photographic works and present digital photo works in an exhibition together. Meanwhile, this development focuses on designing learning that can run effectively and efficiently by considering the needs of students from various factors. The use of media and the flipped classroom method form the basis of the researcher's observation results regarding the characteristics of learners in the current era.
5. Establishing Strategies for Organizing Learning Content
   The implementation of this method emphasizes the efficiency of learning material that can be accessed before classroom meetings and before practical photography sessions. In flipped classroom, students are provided with learning material to study outside the classroom, often in the form of videos or online materials. In terms of learning evaluation, flipped classroom also allows teachers to provide direct and focused feedback to students during class time. By optimizing learning time in class and facilitating interaction between students and teachers as well as among students, flipped classroom offers a more engaged, collaborative, and adaptive learning approach in line with the demands of learning in the current digital era.
6. Establishing Learning Content Delivery Strategies
   The background of this research mentions that the short and inefficient learning time in delivering material and practice becomes a constraint in the learning process. Digital storytelling is used as a learning media developed by researchers to assist the effectiveness of this photography learning. The enthusiastic delivery and attractive interface of these instructional videos are a special attraction for students in learning. These instructional videos are presented briefly and objectively so that students can understand them easily and access them anywhere before the class begins.
7. Establishing Learning Management Strategies
   The management strategy in this learning design is arranged using project-based learning (PBL) to measure and facilitate learning in class. PBL was chosen because it is suitable for photography courses that produce a photo work as their final outcome. Project-based learning motivates the students to be active learners engaged in authentic projects relevant to the real world. It facilitates deep understanding of concepts and application of skills. By working on real projects, students are expected to solve complex problems, collaborate with peers, communicate effectively, and use their creativity to find solutions.
8. Development of Assessment Procedures and Learning Outcomes
   The final step in designing this learning is to measure the results of using the flipped classroom design. This measurement aims to determine the effectiveness and efficiency of learning in the photography course. This step is taken in the trial of the product, which is divided into three parts: small-scale, medium-scale, and large-scale. The results of this trial are also conducted during classroom research and the results of the photos that have been taken.

Instructional Media

Emerging from the community art movement of the 1980s, Digital Storytelling was initially introduced as short narrative films (Lambert, 2013) through workshops at the Center of Digital Storytelling (CDS) in Berkeley, California. The use of multimedia tools such as images, soundtracks, and video clips embedded into text or stories directly contributed to and led to the development of digital written stories (Ahmed, 2019). Video plays a key role in Digital Storytelling, as it can capture the attention of both children and adults.

Definition of Digital Storytelling

The concept of digital storytelling was first introduced in the 1980s by Athley. Seyfi & Soydaş (2017) explain that digital storytelling is a combination of images and music that are combined to create a beautiful work. Digital tools such as images or photos, films, and music are used in learning storytelling. Digital Storytelling is an art of telling stories or narratives to others using digital media, which is a combination of images, music, stories, and sounds (Haigh & Hardy, 2011). Khasanah et al. (2023) also explains that Digital Storytelling is combining several skills such as listening skills, speaking skills, writing skills, and skills in operating programs that utilize computer technology development. Based on the above definitions, it can be concluded that the definition of digital storytelling is a digital media used to tell a story or narrative using a combination of images, audio, and text to create a long narrative that represents the content intended to be conveyed to the audience for easy understanding.

Benefits of Digital Storytelling

Digital storytelling has significant benefits in the context of modern communication. Similarly, in an educational context, the benefits of digital storytelling are vast. Digital storytelling allows the use of visual, audio, and interactive media to convey messages in a more engaging and emotionally connected way. According to Microsoft, as quoted by Heriyana and Maureen (2014), there are 6 benefits of Digital Storytelling based on the National Educational Technology Standards (NETS) 2007, namely:

a. Creativity and innovation.
b. Communication and collaboration.
c. Research and information fluency.
d. Critical thinking, problem-solving, and decision-making.
e. Digital citizenship.
f. Technology operations and concepts.

Flipped Classroom Approach

Strelan et al. (2019) state that there are many 'versions' of flipped classrooms. For example, some teachers consider assessment to be an integral part of the process, while others do not. For some people, the flipped classroom is determined by pre-class technology, while for others, it doesn't matter how pre-class material is delivered or experienced. Generally, the visual communication profession creates and manages visual productions designed to inform, educate, persuade, and even entertain specific audiences (Kamal, 2019).

As a professional in visual communication design, one is responsible for the future of visual culture (Kamal, 2019). In line with this, the University of Washington (2018) explains that the Visual Communication Design Program aims

to educate and train designers for the needs of communication and industry in society. By looking at photos of a product, one can recognize the product better than just imagining it. Before delving into the issue of photography for visual communication design (VCD), it is necessary to understand what VCD is (Kamal, 2019).

Method

The development model used in this research follows the instructional design steps proposed by Degeng & Degeng (2018). The researcher divides these steps into three phases of instructional design formation, namely 1) analysis of learning conditions, 2) development of learning strategies, 3) development of outcome measurement procedures.

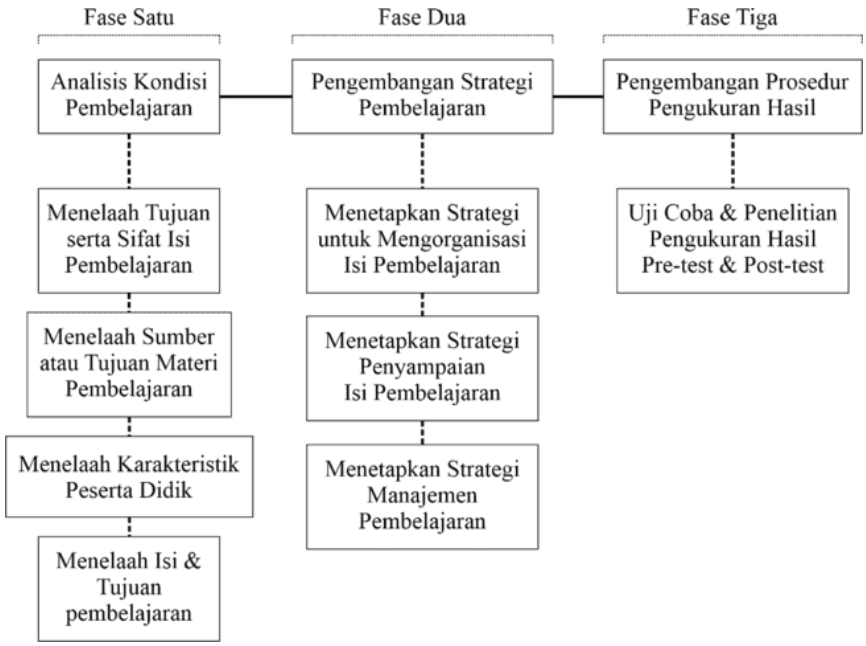


Figure 1. The Instructional Design

Analysis of Learning Conditions

The initial step in the instructional design process begins with analyzing the objectives and characteristics of the learning content, evaluating the available learning resources or materials, analyzing the characteristics of the learners, and establishing the learning objectives and content.

The researcher utilizes the second phase as a crucial area where the selection of media and methods used must align with the characteristics identified in phase one. The development of strategies focuses on methods of organizing and delivering learning materials as well as managing the learning process. This research designing instructional design considers several key factors, such as effectiveness, efficiency, and attractiveness.

The final phase in the process of instructional design formation is to measure outcomes through product testing. In addition to evaluating the feasibility of instructional design, the researcher also assesses students' learning outcomes by evaluating the results of each student's shots based on predefined assessment

criteria, thereby achieving effective and efficient instructional design in this development research.

Media expert validation in this development includes digital storytelling, which serves as a means of delivering content and media. This media validation is used to ensure the suitability of good and correct storytelling principles presented in instructional videos. This media has two different content focuses: photography and F&B still life.

Content expert validity focuses on the content material that will be delivered by the lecturer in the learning process. The purpose of this validation is to measure the alignment of the syllabus with the instructional design development.

The instrument used in this research presents design concepts and syntax in learning. The validity of this expert is related to how to deliver the material and models used in this development.

The location of this development research took place at STIE ASIA Malang in the Visual Communication Design (DKV) study program in the second semester of the Photography course. This location was chosen because the researcher saw that this learning could be developed to be more effective and efficient to meet the needs of today's students. The research period conducted for the development of this instructional design was four meetings, where the first and second meetings were used to test the product with several respondents in class A to assess the feasibility of instructional design. The third meeting was a session where the lecturer provided learning materials without using this instructional design, so that pre-test scores could be obtained from students in class B. The fourth meeting was the implementation of the flipped classroom and digital storytelling instructional design in class B to obtain post-test scores.

Small-scale testing was conducted with two to three students of the same level using the instructional design of flipped classroom and digital storytelling. This test was conducted to assess innovation and the environment in a confined situation.

Medium-scale testing was conducted with eight to ten students of the same level using the instructional design of flipped classroom and digital storytelling before conducting large-scale testing.

Large-scale testing was conducted with 12 to 14 students of the same level using the instructional design of flipped classroom and digital storytelling before implementing it in direct classroom teaching. After evaluating the results of this large-scale testing, the researcher will proceed with the instructional design in the classroom to determine the effectiveness and efficiency of the instructional design on a larger scale.

Data Analysis Techniques

In research, observation is used to obtain direct empirical data from a specific phenomenon or context. Researchers observe the interaction between teachers and students, teaching styles used, students' participation levels, and the overall learning environment. The information obtained from this observation can provide deep insights into the challenges and potential of learning in that class, and enable the researcher to design a more focused and relevant study to the needs of students and teachers. Additionally, observation help researchers to identify variables that need to be observed or measured during the research.

Using interview techniques with teachers and students is considered very effective in developing better research products because it provides deep insights into their experiences, perceptions, and needs related to learning. Through interviews, researchers can explore teachers' and students' views on various aspects of learning, including teaching practices, student learning needs, and challenges faced in the classroom.

Analysis of learning outcome tests is compared with the learning process before the application of strategies and methods of flipped classroom and digital storytelling instructional design as its approach with the meetings using the instructional design in this research. The assumptions that are prerequisites for conducting paired sample t-tests. First, each paired measurement or data must come from the same subject. Second, the variable being tested (dependent variable) consists of continuous or interval-ratio data. Third, each subject (sample member) must be independent and not connected, meaning that the measurement for one subject is not influenced by the measurement of another subject. Fourth, the measured and calculated differences (post-pre) must have a normal distribution. Homogeneity and normality tests are used to determine whether the data has a normal distribution or not using the Kolmogorov-Smirnov method in these tests.

This Normality Test is conducted to determine whether the data is normally distributed or not. This normality test is calculated using the Kolmogorov-Smirnov formula in SPSS for the same subject on both pre-test and post. The Paired Sample T-Test is conducted to determine the research results from the Pre-Test and Post-Test scores of using the instructional design of flipped classroom and digital storytelling. The formula for calculating this test is as follows:

$$= \frac{\overline{X}_D}{\sqrt{\frac{\sum d^2}{N\,(N-1)}}}$$

- $X\bar{}DX\bar{}D$ = the mean of the differences between the first data and the second data
- dd = the difference between data and $X\bar{}DX\bar{}D$
- NN = the number of data points

This test helps in analyzing whether there is a significant difference between the Pre-Test and Post-Test scores, providing insights into the effectiveness of the instructional design approach.

Findings and Discussion

Learning Design Overview and Outcomes

This learning design follows the instructional design steps outlined by Degeng & Degeng (2018), simplified into three phases and eight steps. The first phase involves that teachers observe the students meanwhile the second phase entails determining instructional design strategies for the teaching and learning process. Additionally, the third phase involves assessing learning outcomes.

Learning Analysis

The first analysis involves examining the objectives and characteristics of the learning content to understand the classroom dynamics for analysis within the learning design. In addition to the objectives of the photography course itself, this

learning design emphasizes the needs of the students to ensure effective and efficient learning. The analysis of objectives and content characteristics is conducted to identify the type of content to be learned through classroom observations. The content of this analysis consists of facts, procedures, concepts, and principles. This content is based on the current needs of students, who are from the Z and Alpha generations.

The second analysis is an examination of learning resources, which found that the course material for this subject is conducted concurrently with photography practice. This analysis is useful for determining the approach strategies that can be used in this situation.

> In addition to explaining the material in class, we apply the photography technique in the classroom for its application. This method divides the explanation and practice time into two within the designated credit hours, and sometimes the time is insufficient and possible.(Source: Respondent 1)

In this instructional design, the learning material includes three instructional videos related to still life photography. The first video serves as an introduction to the subject and techniques of still life photography, presented interactively. The second material is the topic concerning *still life photography* techniques and aspects to consider when conducting still life photography. This material aims to facilitate students' understanding and practice. The third material consists of exercises and examples of still life photography to make it easier to understand or as self-practice activities as a guide before entering the classroom. The explanation of the material and video tutorials are integrated into one teaching material used by teachers to instruct the students. The implementation of digital storytelling learning videos helps students in learning outside the classroom, as indicated by several statements from respondents:

> Learning material is quite simple but very targeted because the material is presented using videos, making teaching and learning in the classroom more concise." (Source: Respondent 7)
>
> "The delivery technique of digital storytelling is a medium that helps us learn faster than usual, as it can be accessed flexibly without having to wait for classroom learning to begin. (Source: Respondent 8)

The selection of learning material is aligned with the Semester Learning Plan provided by the program for the photography course. Thus, a good opportunity in the teaching and learning process using a combination of media such as videos to be more effective and efficient.

The third analysis involves the analysing of the students with the participants of the Visual Communication Design (DKV) department, Class A, in the fourth semester of the academic year 2023/2024, who have adapted with the current technology. The students were heavily reliant on technology on their daily activities and learning. This finding supports the development of this learning design because technology can help accelerate the learning process.

> In addition to classroom learning, we often add the information of photography techniques through YouTube and the internet to understand them more clearly. The use of the internet in learning is quite effective and efficient in aiding us to learn photography. (Source: Respondent 2)

Based on the observational analysis above, the researcher utilized instructional videos collaboratively designed with a team of faculty members, students, and researchers to create engaging and targeted digital storytelling. This digital storytelling is used to support the learning process. The videos incorporate elements of digital storytelling that facilitate explanation and practice. The

instructional videos aim to make the flipped classroom learning process more effective and efficient in delivering instructional material.

The fourth analysis involves determining the content and learning objectives through the three stages above. After understanding the characteristics of the students and their learning analysis, it was found that learning should be flexible and accessible via mobile devices to enable students to learn according to their needs and comfort. In addition to effectiveness and efficiency in learning, learning outcomes should also align with the learning objectives, which encompass photography outcomes such as:

Table 1. The Learning Objectives

Assessment Aspect	Description	Weight
Uniqueness and Originality	Thought patterns or ideas conveyed through the photograph	25%
Visual Aspect and Appeal	Aesthetics, angle of photography	25%
Technical Aspect	Photo sharpness, contrast, focus, lighting	25%
Relevance to Theme	Appropriateness and coherence between theme, photo format, and submitted work	25%

These assessment aspects serve as the objectives of the course, which have been developed by the course instructor in collaboration with researchers, and are subsequently utilized in the design of flipped classroom and digital storytelling learning activities in the classroom. These assessment aspects have been aligned with the instructional content in the digital storytelling videos. Evaluation of student performance is conducted by the authorized course instructor responsible for assessing student work.

Determining Learning Strategies

The purpose of determining the strategy for organizing learning content in the instructional design research is to create a clear and organized learning structure that facilitates effective teaching and learning processes. By establishing the appropriate strategy for organizing learning content, learning objectives can be achieved optimally. The strategy for organizing learning content also helps improve students' understanding of the instructional material, facilitate structured and directed teaching, and streamline the learning evaluation process. The instructional design of flipped classroom and digital storytelling in the still life photography course incorporates a concise and integrated classroom organization strategy. Optimal learning processes have been previously conducted in this class, so in organizing it, we simply utilize the available group chat to facilitate communication and delivery of instructional material.

The flipped classroom model requires a platform for communication outside of class hours to maintain flexible connectivity anytime and anywhere. The distribution of materials is arranged through Google Drive, which has been provided and can be shared within the WhatsApp Group chat for the class. The distribution of learning materials is shared three days before the class to allow students time for independent study and practice. Supporting factors in this classroom organization system also consider the findings from the researcher's

observations in the first phase, ensuring flexibility in adjusting the environment, internet connectivity, and study locations for students.

Activities in class following the pre-class activities can shorten the time needed for reviewing the material each student has previously learned, thus optimizing time efficiency in class to achieve maximum results.

Determining Instructional Content Delivery Strategies

The aim of determining instructional content delivery strategies in instructional design research is to create effective, engaging, and challenging learning experiences for students. By determining the appropriate strategy for delivering instructional content, learning objectives can be optimally achieved. Good delivery strategies can increase student engagement, facilitate deep understanding of the instructional material, and optimize interaction between teachers and students. In addition, varied and innovative delivery strategies can also enhance students' interest in learning and enrich their learning experiences.

Therefore, the goal of determining instructional content delivery strategies is to create engaging, effective, and meaningful learning experiences for students. Determining strategies for delivering instructional content in this instructional design is divided into two approaches: before and during class. Before class, the material delivery process is conducted independently and online using digital storytelling, with review and practice conducted during class. The delivery process with this strategy is highly effective in the teaching and learning process of the project-based learning model in this instructional design. The effectiveness and efficiency in this instructional design can easily and quickly achieve learning goals because it involves a fairly complex process in its implementation.

This instructional design not only emphasizes the teacher's delivery methods in the classroom but also considers the needs of students to become more active participants in class. Activities in the classroom are facilitated with various supporting tools in their practical application. In practice, students are guided by the teacher to stay on point in achieving the desired photography.

Setting Learning Management Strategies

The purpose of setting learning management strategies in instructional design research is to create a conducive, structured, and efficient learning environment. By establishing appropriate learning management strategies, teachers can manage the classroom atmosphere, allocate learning time, and effectively regulate interactions between teachers and students. PjBL is an effective and efficient strategy because it begins with project planning and understanding of the material, project implementation, evaluation, and assessment. Project-based learning occurs before or outside of classroom activities. PjBL also assists students throughout the photography-taking practice.

Assessment of Learning Outcomes

The objective of assessing learning outcomes in this research is to measure the extent to which learning objectives have been achieved. This assessment provides an accurate picture of student achievement and the effectiveness of the instructional design used in achieving the predetermined learning objectives. By conducting assessments, researchers can determine the level of student achievement in the established competencies, obtain information about the success of instructional design implementation, and provide feedback for students and teachers to improve the learning process in the future.Student learning outcomes

assessment is measured through two values: pre-test and post-test, or before and after using the instructional design. These learning outcomes assessments are evaluated based on the assessment criteria established by the teacher as a reference in instruction.

Expert Validation

The validation results indicate that media experts agree with the media regarding digital storytelling. Furthermore, media experts also provided notes that the researcher should attach the subtitles in each video related to the title and highlight the important aspect for the students. Design expert claim that the integration of digital media storytelling and the flipped classroom approach creates a cohesive learning design. The expert demonstrates that the design and presentation can enhance the learning process, particularly in presenting a clear visuals and audio and motivating the students to comprehend the content efficiently. The content expert believes that the content has been determined and adjust with the students' conditions and needs. The learning design is closely aligned with the learning objectives of the photography course. The content expert notes that the success of the learning design is also dependent on the strategy and approach to enhance the effectiveness and efficiency of this learning process.

Testing the Learning Design Product

Testing the learning design product using digital storytelling and flipped classroom is a crucial process before moving on to the classroom research phase. The product testing is divided into three scales with different test respondents at each level. This testing is used to evaluate the success of the learning design in improving student learning outcomes. The learning outcomes from this testing are summarized in questionnaire percentages distributed after the implementation of the learning design and the students' learning outcomes in the photography course. The test subjects consist of 20 students divided into three groups: three students in the small-scale group, seven students in the medium-scale group, and ten students in the large-scale group. The questionnaire percentages for testing this learning design are as follows:

Table 2. Testing the Learning Design Product

No.	Questions	4	3	2	1
1	The design of learning that combines elements of flipped classroom, digital storytelling, and project-based learning is effective and efficient in the classroom	19	1		
2	This learning design helps my understanding of the provided material	20			
3	This learning design helps me in practicing good and proper photography	18	2		

4	This learning design motivates me in learning before, during, and after class	17	3
	Total of respondents		20 Responden

The response from the trial testing participants of this learning design can be observed from the percentage results above, indicating that the use of this learning design could optimally assist the students in the learning activities and achieve goals more effectively and efficiently. Based on this trial, it can be concluded that this learning design is suitable for the research classrooms in further steps, specifically 90 out of the four predetermined assessment criteria.

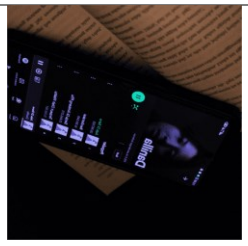
In the small-scale trial has been conducted with three trial participants who have used this learning design in their learning process. The assessment results of the student learning are above 90. This learning design can help the students to learn more effectively and efficiently from the delivery of material to its practical application. The implementation of the learning design in this small-scale trial can be continued to assess its effectiveness and efficiency on a larger scale.

In the medium-scale trial, there are seven trial participants to assess the learning outcomes using this learning design. The use of this learning design can be evaluated from the student learning outcomes that are above 90. We can see that the use of this learning design can be optimally employed on a medium scale and can be considered successful. Therefore, further trials on a larger scale can be conducted.

The final step of the trial process is the large-scale trial. The number of participants in this phase has increased from seven to ten. To understand the results of student work, the findings can be seen in the following table:

Tabel 2. The large-Scale Trial

No.	Trial Participants	The Result of the Product	Score
1	Trial Participants 11		94
2	Trial Participants 12		93

3	Trial Participants 13		95
4	Trial Participants 14		95
5	Trial Participants 15		92
6	Trial Participants 16		93
7	Trial Participants 17		93
8	Trial Participants 18		94
9	Trial Participants 19		93

10	Trial Participants 20		94

The large-scale trial concludes the experimentation of this learning design before its implementation in the classroom research. We can observe that all ten trial participants were able to produce photos that meet the criteria for still life as per the learning material. The use of this learning design is deemed to enhance understanding and application skills among photography students, warranting further implementation in the next classroom research.

The trial of this learning design is aligned with the minimum passing grade (KKM) for the photography course, which is set at 75. It can be stated that the design is suitable for classroom use. This is evidenced by the results of the small to large-scale trials, where the photos produced by students exceeded the predetermined KKM. This trial yielded an average score of 90, indicating a very satisfactory outcome**.**

Discussion

The research results in this study are calculated from the pre-test scores on similar learning material without the use of the learning design, compared to the post-test scores with the implementation of this learning design. A t-test is also conducted to determine the significant success of the learning design. The results of this learning design were obtained from 20 students or one class in the Visual Communication Design (DKV) program, specifically in the photography course class A, focusing on the still life photography material to achieve optimal learning objectives.

Learning Outcome of the Learning Design and Discussion

The pre-test analysis in this study was conducted on the still life photography material without using the learning design. The material delivery during the pre-test phase was conducted through lectures and practical sessions, without considering time efficiency and the effectiveness of delivery. The results of applying the learning material and practices in this study can be observed from the students' learning outcomes before using the flipped classroom, digital storytelling, and project-based learning design. These learning outcomes did not meet the predetermined assessment criteria, resulting in poor scores and a lack of understanding of still life photography itself. The scores from the pre-test are averaged, showing no significant improvement. Apart from the course objectives requiring above-average scores, the essence of still life photography was not adequately achieved by the students in its application.

Entering the second meeting in class A, the implementation of the flipped classroom learning design using digital storytelling media and project-based learning strategies commenced, with teachers and students fulfilling their respective roles in the classroom. The learning flow in this learning design was conducted effectively and efficiently before and during class. Still life photography practice activities were carried out during the class session after reviewing the

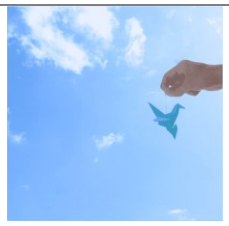
material that had been covered. Students were free to use props, themes, and devices of their choice in their photography process. The learning outcomes and scores can be seen in the following table:

Table 3. The Learning Outcomes

No.	Trial Participants	The Result of the Product	Score
1	**Trial Participants** 1		96
2	**Trial Participants** 2		94
3	**Trial Participants** 3		95
4	**Trial Participants** 4		95
5	**Trial Participants** 5		96
6	**Trial Participants** 6		97

7	**Trial Participants** 7		97
8	**Trial Participants** 8		96
9	Trial Participants 9		95
10	Trial Participants 10		96
11	Trial Participants 11		97
12	Trial Participants 12		96

13	Trial Participants 13		96
14	Trial Participants 14		95
15	**Trial Participants** 15		96
16	**Trial Participants** 16		95
17	**Trial Participants** 17		95
18	**Trial Participants** 18		96

19	**Trial** **Participants** 19		97
20	**Trial** **Participants** 20		96

The learning outcomes of using this learning design have an average score of 95. This learning design has undergone thorough preparation, and the material presented in the flipped classroom allows students to prepare all factors to produce maximum-quality photos. A descriptive analysis of assessing students' photos by each individual shows significant differences in several aspects according to the assessment criteria. These findings also consider the success of supporting factors such as a conducive environment and comfortable conditions for learning and thinking for students.

The analysis method of these interviews is employed to reinforce the outcomes of student learning from both the student and teacher perspectives. In the utilization of flipped classroom and digital storytelling, various opinions were conveyed by respondents regarding their experiences with these approaches. During the third session in class A, a joint evaluation and interview were conducted with the respective teachers and students.

> The flipped classroom method introduced a new aspect to the application of photography learning. Its flexibility allows us to grasp the learning material according to our needs. (Respondent 1)

> The instructional design approach has been neatly crafted and is suitable for use in photography courses or even other subjects, given its nature of providing students with flexibility in understanding the material before practice. (Respondent 15)

> Digital storytelling is presented neatly with easily understandable explanations. The layout and editing are also simple, making it easier for us to understand and practice independently. (Respondent 6)

Apart from the positive impact of the flipped classroom approach on students, there are also some arguments from interviews regarding the PjBL used in the still life subject matter. Opinions about this strategy were expressed by several students and teachers who were the main actors in the teaching and learning process.

> Project-based learning is mostly used in every course in the Visual Communication Design (DKV) program, but it's not as effective as this. The combination of each method is highly tailored to the current needs of students in this era. (Respondent 10)

Respondents expressed that the use of PjBL is highly effective in its implementation, resulting in positive outcomes. The combination of elements used in applied subjects is highly optimal for both students and teachers.

Not only students benefit from this learning design, but we as teachers are also assisted in effectively and efficiently delivering the material. The use of this learning design can also influence the outcomes of student assignments, which are already above the minimum passing grade (KKM) with an average of 75, significantly increasing to an average of over 90." (Respondent 10)

This student-centered learning design is also advantageous for teachers who play the role of instructors. The delivery through digital storytelling and in-class reviews cannot be replaced, and the teacher's role in guiding the learning process in the classroom remains essential.

The analysis of the results of this research involves a T-test on pre-test and post-test scores of students during the course of the learning process. There were 20 respondents in class A for the photography subject's still life material using a paired simple T-test with the following hypotheses:

- H0 = This signifies that if the significance level is less than 0.05, it is stated that there is a significant difference or influence from the initial data to the final data.

- H1 = This signifies that if the significance level is more than 0.05, it is stated that there is no significant difference or influence from the initial data to the final data.

Tabel 4. The Score of Pre-Test and Post-Test

NO.	RESPONDEN	NILAI	
		PRE-TEST (X)	POST-TEST (Y)
1	Responden Penelitian 1	77	95
2	Responden Penelitian 2	78	97
3	Responden Penelitian 3	76	94
4	Responden Penelitian 4	75	96
5	Responden Penelitian 5	77	97
6	Responden Penelitian 6	78	93
7	Responden Penelitian 7	75	96
8	Responden Penelitian 8	76	95
9	Responden Penelitian 9	78	98
10	Responden Penelitian 10	79	97
11	Responden Penelitian 11	77	94
12	Responden Penelitian 12	75	96
13	Responden Penelitian 13	79	93
14	Responden Penelitian 14	76	95
15	Responden Penelitian 15	78	98
16	Responden Penelitian 16	76	94
17	Responden Penelitian 17	77	96
18	Responden Penelitian 18	79	97
19	Responden Penelitian 19	75	93
20	Responden Penelitian 20	78	98

Before conducting the testing using paired simple T-test, the normality test is performed first using the Kolmogorov-Smirnov normality test, with the decision-making basis and results as follows:

- If the significance value > 0.05, then the residual values are normally distributed.

- If the significance value < 0.05, then the residual values are not normally distributed

One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residual
N		20
Normal Parameters[a,b]	Mean	.0000000
	Std. Deviation	1.618874
Most Extreme Differences	Absolute	.155
	Positive	.107
	Negative	-.155
Test Statistic		.155
Asymp. Sig. (2-tailed)		.200[c,d]

a. Test distribution is Normal.

b. Calculated from data.

c. Lilliefors Significance Correction.

d. This is a lower bound of the true significance.

Based on the normality test results above, it is known that the significance value of the distribution of the two data sets is 0.20, which is greater than 0.05, indicating that the residual data distribution is normal. Once the first step is completed, a paired sample T-test is conducted to test the influence of data X on data Y.

Paired Samples Test

	Paired Differences					t	f	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference: Lower	Upper			
PRE-TEST – POST-TEST	-18.65000	1.84320	.41215	-19.51264	-17.78736	-45.250	9	.000

The paired sample T-test indicates that the null hypothesis (H0) is accepted. The calculated p-value is 0.000, which is smaller than 0.05, meaning there is a significant difference between variables X and Y.

The researcher summarizes that from all the results shown in this learning design, there is a significant relationship that influences the outcomes. The use of this learning design is also supported by positive interview results regarding its effectiveness. The combination of these three elements, starting from the flipped classroom approach, digital storytelling media, and project-based learning strategies, makes the photography course on still life material more effective and efficient.

Conclusion

This research aims to develop a flipped classroom learning design that integrates digital storytelling media and project-based learning strategies. The results of the study indicate that this learning design is not only effective in improving student learning outcomes but also efficient in its use in the classroom. The effectiveness of this design is reflected in the increased engagement and active participation of students in the learning process, as well as significant improvements in learning outcomes. The efficiency of this design is evident in the optimization of learning time, both inside and outside the classroom, as well as the better utilization of resources. The flipped classroom approach allows students to access learning materials independently through digital storytelling media before classroom meetings. Digital storytelling media has ability to present materials in an engaging and interactive manner, helps students understand complex concepts more easily and enjoyably. Moreover, the project-based learning strategy applied in classroom meetings provides opportunities for students to apply the knowledge they have gained in real projects.

The findings of this research indicate that students learning with this learning design demonstrate higher levels of engagement, both cognitively, affectively, and behaviorally. They are more active in discussions, more motivated to learn, and better able to collaborate with their peers in completing projects. Furthermore, their learning outcomes also significantly improve in terms of concept understanding, knowledge application, and critical thinking skills. The efficiency of this learning design is also demonstrated by significant time savings. Students can utilize time outside the classroom to study materials independently, allowing classroom time to be optimized for more interactive and collaborative activities. Teachers can also focus more on providing personalized guidance and feedback to students.

Based on these findings, it can be concluded that the flipped classroom design with digital storytelling media and project-based learning strategies is a highly effective and efficient approach to improving the quality of learning in the digital era. In improving the learning outcomes of the photography course, there are at least three essential elements in composing this 21st-century learning design, which have been applied in this development research.

References

Abeysekera, L., & Dawson, P. (2015). Motivation and cognitive load in the flipped classroom: Definition, rationale and a call for research. *Higher Education Research and Development, 34*(1), 1–14.

Academy of Active Learning Arts and Sciences (2018). Updated definition of flipped learning. Retrieved August 8, 2019

Ahmed, A.K. (2019) Socially orientated digital storytelling among Saudi EFL learners: An analysis of its impact and content. *Interact. Technol. Smart Educ., 16,* 130–142

Asrori; Rusman. *Classroom Action Research Pengembangan Kompetensi Guru*. Pena Persada, 2020

Behmer, S (2005) Literature Review Digital storytelling: Examining the process with middle school students,

Girmen, P.; Özkanal, Ü.; Dayan, G. Digital Storytelling in the Language Arts Classroom. Univ. J. Educ. Res. 2019, 7, 55–65. [CrossRef]

Hughes, J. The role of teacher knowledge and learning experiences in forming technology-integrated pedagogy. J. Technol. Teach. Educ. 13, 277–302

Lambert, J. (2013). Digital storytelling: Capturing lives, creating community (4th ed.). New York, NY: Routledge.

Kamal, Nasrul (2019). *Fotografi dalam Konteks Ilmu Desain Komunikasi Visual*

Khasanah, F. R., Herlina, R., & Rustandi, A. (2023). The use of digital storytelling to stimulate learners' listening comprehension. *JEEP (Journal of English Education Program)/Journal of English Education Program*, *10*(2), 155. https://doi.org/10.25157/(jeep).v10i2.11693

Maddin, Ellen. "Using TPCK with Digital Story Issues in Educational Technology Digital Storytelling to Investigate Contemporary Issues in Educational Technology." *Journal of Instructional Pedagogies 7* (2012): 1– 11.

Stanley, N. Digital Storytelling, the TESOL Encyclopedia of English Language Teaching; Wiley-Blackwell: Hoboken, NJ, USA, 2018; pp. 1–7.

Smeda et al. (2014). *Smart Learning Environments.*

Robin, B. R. (2008). Digital storytelling: A powerful technology tool for the 21st century classroom. *Theory into Practice, 47*(3), 220-228.

Suherman, Cepy. (2009) .*Mengenal Dunia Fotografi*. Jakarta: Buana Cipta Pustaka.

Talbert, R. (2017). *Flipped learning: A guide for higher education faculty.* Sterling, VA: Stylus

M. Ubaidillah, Penerapan Flipped Classroom Berbasis Teknologi Informasi pada Mata Pelajaran Fiqih di MTs Al-Chusnaniyah Surabaya, (Surabaya: Jurnal Ilmu-Ilmu Keislaman, Vol. 19, No. 1, Juli 2019),

Nardi, Leo, Penunjang Pengetahuan Fotografi, (Bandung; Fotina Fotografika, 1989), h. 27

Gani & Kusumalestari, Jurnalistik Foto: Suatu Pengantar, (Jakarta; Balai Pustaka, 2014), h. 4

Lambert, Joe. (2013). Digital Storytelling : Capturing Lives, Creating Community. 4th Edition. New York: Routledge 711 Third Avenue

Seyfi, Murat & Soydaş, Ayda Uzunçarşılı. (2017). Instagram Stories From The Perspective Of Narative Transportation theory. The Turkish Online Journal of Design, Art and Communication. http://www. tojdac.org/tojdac/VOLUME7-ISSUE1.html

Heriyana, W., & Maureen, I. yolanita. (2014). Penerapan Metode Digital Storytelling pada Keterampilan Menceritakan Tokoh Idola Mata Pelajaran Bahasa Indonesia Siswa Kelas VII di SMP Negeri 1 Kedamean, Gresik, VOL

2, No, 1–9. Retrieved from http://ejournal.unesa.ac.id/index.php/jmtp/article/view/8471

Davey, N. G., & Benjaminsen, G. (2021). Telling Tales: Digital Storytelling as a tool for qualitative data interpretation and communication. *International Journal of Qualitative Methods*, *20*, 160940692110225. https://doi.org/10.1177/16094069211022529Robin,

Bernard R. 2012. The Educational Uses Of Digital Storytelling.