

# TRANSFORMING LEARNING EXPERIENCES IN ART AND DESIGN APPRECIATION: A RESEARCH ON E-LEARNING DESIGN AND DEVELOPMENT

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Received: 18-10-2023 Accepted: 03-11-2023 Published: 20-12-2023

## **Abstract**

The paper focuses on the design and development of an e-learning course in art and design appreciation. Using the ADDIE model, the study explores the integration of the See Think Wonder approach in the e-learning context. The research aims to enhance learners' engagement, understanding, and appreciation of art and design. The study consists of analysis, design, development, implementation, and evaluation of art and design appreciation e-learning. The findings indicate that the See Think Wonder approach positively impacts the e-learning environment by increasing learner engagement, critical thinking skills, and emotional connection to artworks. The approach facilitates active participation, critical discussions, and improved observation and interpretation of artworks. The e-learning platform offers flexibility and accessibility, enabling learners to study at their own pace. Multimedia elements and interactive activities enhance the learning experience. Evaluation results support the effectiveness of the course, with learners recognizing the value of the See Think Wonder approach in enhancing art and design appreciation. It improves their confidence in analyzing artworks and deepens their understanding of artistic elements and principles. The research contributes to the field of art and design education by highlighting the potential of e-learning in transforming learning experiences. It provides insights for educators and instructional designers seeking to enhance art and design education through digital platforms.

**Keywords:** *see think wonder, addie model, e-learning, art and design appreciation*

## **1 INTRODUCTION**

In the realm of education, fostering creative thinking is recognized as a fundamental aspect of nurturing innovative and adaptable individuals (Amabile, 1997). As in the future knowledge, innovation and technology are the key driver of future economy, hence the ability to think creatively is essential for problem-solving, generating new ideas, and approaching challenges with fresh perspectives.

With the rapid advancement of information and communication technology (ICT), E-learning has emerged as a leading educational approach in recent years. E-learning refers to a structured course or learning experience that is delivered electronically, utilizing various electronic resources such as computers and the internet. E-learning can be conducted within and outside the traditional classroom setting (The Economic Times, 2023).

E-learning encompasses a wide range of educational components. It can involve live or pre-recorded lecture content, multimedia elements such as videos, quizzes, simulations, games, and interactive activities. These elements contribute to a dynamic and engaging learning environment, fostering active participation and enhancing knowledge retention. In this paper the scope e-learning discussed are pre-recorded lectures video, game quizzes and interactive activities.

The integration of E-learning in education has brought forth numerous benefits. First it is flexible, learners can access the educational materials at their convenience, place and time promoting self-paced learning and personalized instruction. Furthermore, E-learning provides opportunities for collaborative learning, allowing students to interact with peers and instructors in virtual communities, regardless of geographical barriers.

As E-learning continues to evolve and expand, it holds immense potential for transforming education and enhancing the learning experience. It offers innovative approaches to instruction and opens new avenues for knowledge acquisition and skill development. Harnessing the power of E-learning can revolutionize education, making it more accessible, engaging, and tailored to individual needs.

To enhance the educational experience within E-learning, it is imperative to prioritize the teaching of creative thinking in class. One of the methods to nurture creative thinking is through artful thinking. Artful thinking is a pedagogical approach introduced by the Harvard School of Education in 2016 This method uses arts to help students develop thinking dispositions that support thoughtful learning (Tishman & Palmer, 2006). One of artful thinking exercises is see, think, wonder. The See Think Wonder exercises play a crucial role in fostering creative thinking by promoting active observation, analysis, and questioning of one's surroundings. By actively engaging students in the process of observing and reflecting on artworks, the See Think Wonder thinking routine stimulates their creativity and cultivates their critical thinking skills.

## **2 LITERATURE REVIEW**

### **1.1 See Think Wonder (STW)**

The See Think Wonder (STW) routine is a questioning and investigation-centered approach that aims to stimulate curiosity and guide inquiry through the art of asking meaningful questions (Gumulya, 2022). This routine focuses on developing the skill of asking good questions, fostering responsiveness to puzzles and ambiguities, and encouraging the identification and exploration of problems. At its core, the STW routine revolves around three

central questions: "What do you see?", "What do you think?", and "What do you wonder?" This routine initiates by describing the observations of what is seen, then proceeds to engage in thoughtful reflection and speculation about the observed phenomena.

An example on how to appreciate a painting with see think wonder approach are explained explained in the following adopted from (Harvard, 2016; National Gallery of Art, 2019).



Instructional Strategy: Enhancing Creative Thinking with See Think Wonder Thinking Routines with Abstract Painting

Objective: To stimulate creative thinking and foster artistic appreciation through the exploration of Wassily Kandinsky's painting, "Improvisation 31."

**1. Preparing the Environment:**

- Display a high-resolution image of Kandinsky's "Improvisation 31" painting.
- Provide art materials such as paper, pencils, and colors for sketching or note-taking.

**2. Introduction:**

Explain the See Think Wonder thinking routine and its purpose in exploring artwork.

**3. See Phase:**

- Students are instructed to observe the painting carefully, paying attention to its colors, lines, shapes, and overall composition. Identify the objects, mood, setting, people and the actions that are happening on the painting.
- Encourage them to jot down or sketch their observations, focusing on unique or intriguing elements.

**4. Think Phase:**

- Guide students to reflect on their observations and generate interpretations that go beyond the obvious by connecting all the things that they have observed.
- Encourage them to explore different perspectives and possibilities.

- Ask thought-provoking questions, such as:
- How does the painting make you feel? What emotions does it evoke?
- What do you think inspired the artist to create this piece?
- Why do you think the artist combines all the elements in the painting?
- How would you interpret the use of colors, shapes, and lines in this painting?
- Provide historical facts about the painting. The painting "Improvisation 31 (Sea Battle)" holds historical significance as it was created during a tumultuous period near World War 1 when the artist, Wassily Kandinsky, had to return to his home country. This artwork exemplifies Kandinsky's distinct approach of utilizing color as the primary medium to convey emotions, rather than merely serving as a supporting element to the subject matter. By emphasizing the expressive power of color, Kandinsky pioneered a new artistic language that transcended traditional representational art, influencing subsequent generations of artists and contributing to the development of abstract art.

#### **5. Wonder Phase:**

After knowing the background story about the painting, students are encouraged to generate open-ended questions and wonderings about the painting.

Stimulate students' curiosity by asking questions like:

- What if the colors were inverted? How would that change the overall effect?
- What other elements could the artist have included to enhance the sense of improvisation?
- How might this artwork inspire other forms of creative expression?

#### **6. Group Discussion:**

- Facilitate a group discussion to share students' observations, interpretations, and questions.
- Encourage students to build on each other's ideas, explore diverse perspectives, and challenge assumptions.
- Foster a supportive and collaborative environment that values creativity and imagination.

#### **7. Creative Exploration:**

Provide students with opportunities to engage in creative activities inspired by painting. They can create their own artwork using various media, experiment with abstract forms, or write poetry inspired by the emotions evoked by the painting.

## **8. Reflection and Expression:**

- Allocate time for students to reflect on their creative process and express their thoughts and feelings about their own artwork or creative endeavors.
- Encourage them to articulate connections between their work and Kandinsky's "Improvisation 31."

## **9. Summarization:**

- Conclude the session by summarizing key insights, reflections, and creative outcomes from the group discussion and individual explorations.
- Highlight the importance of creative thinking in art appreciation and personal expression.

### **1.2 ADDIE Model**

ADDIE stands for Analyze, Design, Develop, Implement, and Evaluate. The five phases of the ADDIE model represent a dynamic, flexible guideline for building effective training and instructional materials. The ADDIE model is a five-phase course development process that was first created for the U.S. Military during the 1970s by Florida State University (Gumulya et al., 2022). The five components of the ADDIE model are Analysis, Design, Development, Implementation, and Evaluation

According to (Sam et al., 2022; Wibawa, 2017) In the Analysis phase, the instructional problem is identified, and the instructional goals, success metrics, and overall objectives are established.

Several questions need to be asked on this stage such as (De Bell, 2015): 1. Who are the target students and what are they like? 2. What are the problems and what needs to be solved? 3. What are the problems and what needs to be solved? 4. What are the learning goals and the desired outcomes? 6. What prior knowledge do the students have? 7. What is the best tool to deliver this information? 8. When is the best time to convey this information? The output of this stage is a learning plan and an analysis of the students' needs.

In the Design phase, the focus is on the target audience, and the program matches the level of skill and intelligence that each student/participant shows. In this stage all the information gathered in the analysis stage is used to design the learning materials. This stage requires careful attention to detail and time. The design phase helps teachers determine specific learning outcomes, content structure, learning experiences, knowledge and skills to be acquired by

students, appropriate tools to be used, learning materials to be created, and the duration of the learning process. The output of this stage is a detailed description of the learning design and assessment rubrics.

In the Development phase, teachers develop the content and learning interactions outlined in the design phase. In this stage, activities include creating visual content, graphics, recording videos, and developing exercises. The output of this stage is that all learning materials have a physical form.

In the Implementation phase, the program is delivered to the target audience, and in the Evaluation phase, the effectiveness of the program is assessed. The output of this stage is detailed information on what needs to be enhanced or corrected.

The paper discusses the development of e-learning teaching art and design appreciation with see think wonder thinking routine developed with ADDIE model for Product Design Student year 1. The paper raises the following research questions:

1. Analyze: What are the needs and goals of product design students learning about art and design appreciation?
2. Design: What is the blueprint of the e-learning, including the overall structure, instructional strategies, assessment methods, and multimedia elements?
3. Development: How are multimedia elements, writing contents, interactive activities, and assessments developed with the see think wonder thinking routine?
4. Implementation: How do students access e-learning?
5. Evaluation: What are the learners' feedbacks?

The objective of this research is to present a model for developing e-learning courses about art and design appreciation, specifically focusing on incorporating "see, think, wonder" activities. Given the abstract nature of art and design appreciation, the integration of "see, think, wonder" exercises aims to foster creative thinking among learners. The authors seek to provide an exemplary approach to enhance e-learning experiences in art and design, ultimately encouraging students' imaginative thinking abilities.

### **3 METHODS**

This study employs a case study approach to develop e-learning about art and design appreciation subject for product design students in which the interactive activities are designed with the see think wonder thinking routine. Case studies are the right research method when

the research objective is to gain an in-depth understanding of a particular situation or to explore a specific research question (Yin, 2002).

The learning goals are to enhance students' ability to make connections, generate new ideas, and view problems from multiple perspectives. The case study focuses on the implementation of e-learning using the ADDIE (Analysis, Design, Development, Implementation, and Evaluation) model.

The research design entails the selection of a targeted group of product design students as participants, who will actively participate in interactive activities utilizing the See Think Wonder thinking routine. The development of the e-learning course will adhere to the systematic steps of the ADDIE model. Data collection will encompass diverse methods such as surveys, interviews, and observation of students' engagement with the e-learning materials. Qualitative analysis techniques will be applied to analyze the gathered data, uncovering discernible patterns, themes, and valuable insights pertaining to the augmentation of creative thinking.

By providing a detailed description of how the e-learning for art and design appreciation is developed, this research seeks to provide valuable insights into how the See Think Wonder thinking routine can be employed as a means to foster creative thinking in the e-learning context. The findings of this study will contribute to the existing literature on innovative instructional strategies and their impact on promoting creative thinking skills in the field of art and design education.

## **4 RESULTS**

The research result will be explained based on the ADDIE model.

### **4.1 Analysis**

The e-learning is designed for product design student year 1 semester 2. Based on interviews with the program head and a review of the product design curriculum, the following learning goals have been identified for the art and design appreciation course

- Students are able to critically analyze and interpret artworks and designs. They study elements of visual language, such as line, color, form, texture, and composition, and develop skills in identifying and discussing these elements in various artworks.

- Students demonstrate the ability to do appreciation for aesthetic qualities in art and design. They learn to recognize and appreciate beauty, craftsmanship, innovation, and emotional impact in artworks and designs.
- Students demonstrate the ability to make a solid argument about the artworks and designs. They learn how to develop their ability to articulate their perspectives on artistic and design choices.
- Students demonstrate the ability to draw inspiration from different artistic styles, expressions, and forms in their own design projects.

The interviews with the head of the program revealed that learners often perceive the process of learning historical facts about works of art and design as tedious and lacking practicality in the real world. They struggle to connect the lessons with real-world contexts, expressing a preference for multimedia content over lengthy textual explanations when studying history. Furthermore, students find it challenging to actively engage in interactive discussions and often limit their responses to only answering the questions they have been asked.

## 4.2 Design

The course is designed for 16 weeks and consists of 11 weeks asynchronous and 7 weeks of synchronous. The summary of the blueprint as follow:

<b>Week</b>	<b>Topic</b>	<b>Instructional Strategies</b>	<b>Assessment Methods</b>	<b>Multimedia Elements</b>
<b>1</b>	See Think Wonder thinking routine to critically analyze and interpret artworks	Asynchronous: What are to see in artworks? What are to think in artworks? What is active note taking?	Active note weekly assessment	Animated video lecture
<b>2</b>		Asynchronous: What are to wonder in artworks?	Active note weekly assessment	Animated video lecture



3	<p>Asynchronous: How to do research about works of art?</p> <p>How to create an argument about works of art?</p>	<p>Active note weekly assessment</p>	<p>Animated video lecture</p>	
4	<p>Art in the early 19<sup>th</sup> century</p>	<p>Synchronous: Lecturer presentation about: Romanticism Painting Style</p> <p>See Think Wonder-based visual analysis exercises. Raden Saleh Penangkapan Diponegoro 1847</p>	<p>Student participation on the See Think Wonder-based visual analysis exercises.</p>	<p>Mural discussion board</p>
5		<p>Synchronous: Group discussion sharing research findings on Raden Saleh's painting</p> <p>Create argument about the significance of Raden Saleh's works in the context of Indonesian art</p>	<p>Student participation on online group discussion</p>	<p>Mural discussion board</p>
6	<p>Art in the early 20<sup>h</sup> century</p>	<p>Synchronous: Lecturer presentation about: Romanticism Painting Style</p> <p>See Think Wonder-based visual analysis</p>	<p>Active note weekly assessment</p> <p>Student participation on the See Think Wonder-based</p>	<p>Mural discussion board</p>

		exercises. Persistence of Memory by Salvador Dali 1931	visual analysis exercises.	
<b>7</b>		Synchronous: Group discussion sharing research findings on Salvador Dali's painting  Create argument about the significance of Dali works in the context of Modern Art	Active note weekly assessment  Student participation on online group discussion	Mural discussion board
<b>8</b>	Mid term	Asynchronous: Create a video presentation comparing 2 paintings with see think wonder thinking routine	Video presentation rubric assessment	Upload assignment
<b>9</b>	See Think Wonder thinking routine to critically analyze and interpret design works	Asynchronous: What are to see in design object? What are to think in design object?	Active note weekly assessment	Animated video lecture
<b>10</b>		Asynchronous: What are to wonder in design work??	Active note weekly assessment	Animated video lecture
<b>11</b>		Asynchronous: How to do research about design object?	Active note weekly assessment  Quiz 2	Animated video lecture

		How to create an argument about design object?		
<b>12</b>	Art & Design in the early 20 <sup>th</sup> century	Synchronous: Lecturer presentation about: Design and Emotion  See Think Wonder-based visual analysis exercises on Michael Graves' Whistling Bird Teakettle, 1985	Active note weekly assessment  Student participation on the See Think Wonder-based visual analysis exercises.	Mural board
<b>13</b>		Synchronous: Group discussion sharing research findings on Michael Grave's design  Create argument about the significance of Grave's design works in the context of design and emotion	Active note weekly assessment  Student participation on online group discussion	Mural board
<b>14</b>	Art & Design in the early 21 <sup>st</sup> century	Synchronous: Lecturer presentation about: Design and Sustainability  See Think Wonder-based visual analysis exercises on Tejo Remy's You can't lay down your	Active note weekly assessment  Student participation on the See Think Wonder-based visual analysis exercises	Mural board

		memory chest drawer, 1991		
<b>15</b>		Synchronous: Group discussion sharing research findings on Tejo Remy's design  Create argument about the significance of Remy's design works in the context of design and sustainability	Active note weekly assessment  Student participation on online group discussion	Mural board
<b>16</b>	Final term	Create design work inspired by historic art works or design objects	Project rubric assessment	Upload assignment

### 4.3 Development

- The multimedia elements are developed by making animated videos in power point. There are 30 videos.
- The interactive activities are developed through mural board.
- There are 3 different types of assessment based on the instructional strategies. For the asynchronous sessions, the students will be assessed based on the quality of their note. The students are asked to make a note based on Cornell note taking system, a note-taking and study system developed by Walter Pauk, an education professor at Cornell University, in the 1950s (Pauk & Owens, 2010). Cornell notes are divided into three columns: note-taking, cue, and summary. The note-taking column records lectures in telegraphic sentences. Based on right-column notes, questions are created immediately after class. Writing questions clarifies, reveals relationships, establishes continuity, and strengthens memory. Next, cover the note-taking column with paper and recite the notes. This enhances information retention. The summary section at the bottom summarizes the notes. The Cornell Note Taking System can improve comprehension by organizing, summarizing, and taking notes. For the synchronous sessions, students are evaluated based on the see think wonder interactive activities. They are evaluated based on teacher observation whether the students demonstrate the ability to do critical

thinking, thoughtful analysis, and engagement with the subject matter. For the midterm assessment, students will be evaluated through a rubric presentation that compares two artworks using the See Think Wonder thinking routine. The rubric will provide clear criteria for assessing their analysis, interpretation, and critical thinking skills. The presentation is accessed by considering the depth of observations, the quality of analysis, the ability to make connections between artworks and the overall presentation skills. Similarly, for the final assessment, students will be evaluated based on a project using a rubric. The project will involve creating a work inspired by historic artworks or design objects. The project rubric will outline specific criteria for evaluating their creativity, conceptualization, craftsmanship, and adherence to the historical context. It will also consider the level of innovation, attention to detail, and overall effectiveness of their work.

- The final grade will be calculated based on a composite of different components. Specifically, 30% of the grade will be determined by the mid-term grade, 40% will be derived from the average score of both asynchronous and synchronous activity assessments (which include weekly active notetaking and student participation in "see, think, wonder" activities), and the remaining 30% will be based on the final grade.

#### 4.4 Implementation

The e-learning course will be accessible through SPADA Indonesia, via the following link: <https://lmsspada.kemdikbud.go.id/course/view.php?id=3626> . It is worth noting that this e-learning initiative is part of the "Inovasi Modul Digital" program supported by the Ministry of Education of Indonesia. Synchronous sessions will be conducted using Microsoft Teams. For a visual representation of the learning experience, refer to Figure 1-9.



Figure 1 E-learning Visualization on SPADA



Figure 2 Animated PPT Video for Asynchronous Learning

Nama:  
 Nim:  
 Karya Seni:  
 Nama Seniman:  
 Arahkan Melihat:

1. Lihatlah karya seni/desain selama 1 menit penuh
2. Objek/ hal apa saja yang dapat kamu lihat pertama kali pada lukisan ini?
3. Tuliskan minimum lima kata tentang karya seni, bisa kata benda, sifat, ataupun kata kerja
4. Jelaskan secara detail apa yang kamu lihat dan ada dibagian mana dari lukisan

Apa yang kamu lihat		
Kata benda	Kata sifat	Kata kerja

Arahkan berpikir

Lihat kembali kata – kata yang berhasil diamati, hubungkan kata – kata ini menjadi suatu makna / cerita yang berarti bagi Anda.

Apa yang kamu lihat		Apa yang kamu pikirkan	
Kata benda	Kata sifat	Kata kerja	

Figure 3 Hand out for the Interactive See Think Wonder Activities

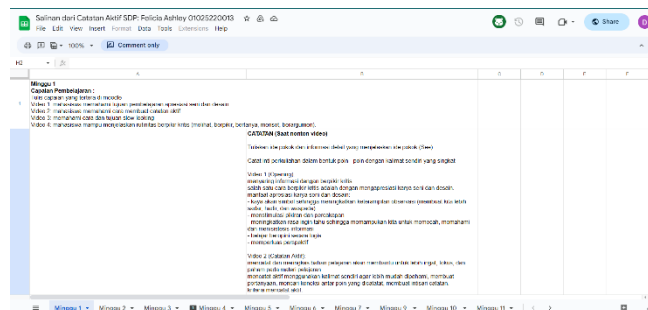


Figure 4 Active Note Taking Template for Asynchronous Learning Assessment

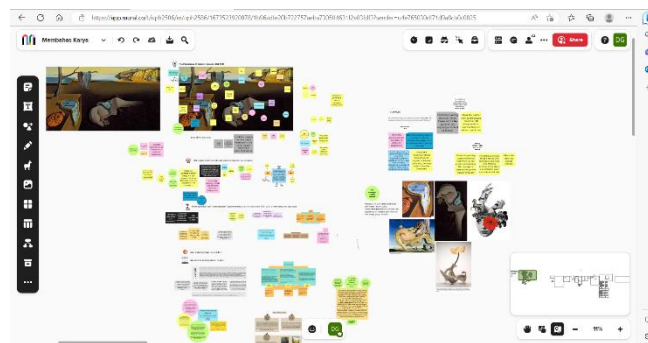


Figure 5 A Mural board for the interactive synchronous activity of “See Think Wonder.”

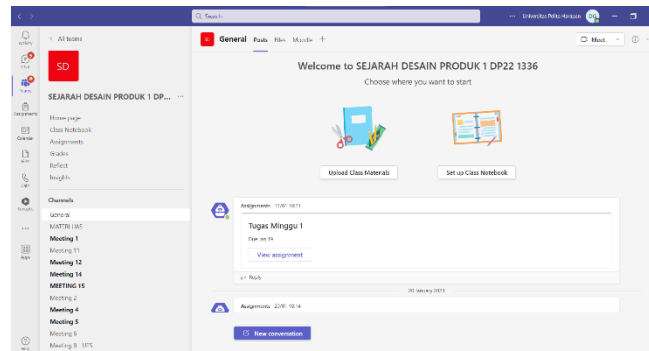
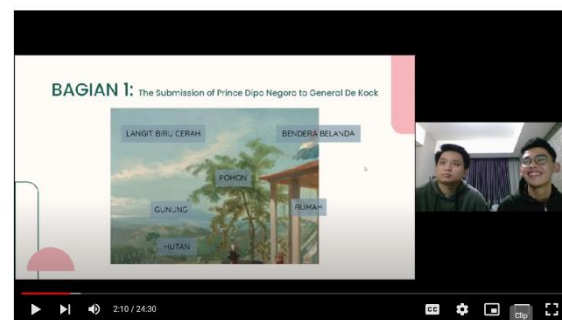


Figure 6 Microsoft Teams for Synchronous Session



UTS SDP1  
Unlisted



ANALISA KARYA SENI PENANGKAPAN PANGERAN DIPONEGORO - SEE, THINK, WONDER

Figure 7 Midterm Project: Video Presentation Comparing two paintings with See Think Wonder



Figure 8 Final Term Project: Create Art Works inspired by Salvador Dali Artistic Method



*Figure 9 Final Term Project: Create Design Works inspired by Historic Design Object, Braun T3 Radio, 1958*

#### 4.5 Evaluation

The e-learning course was evaluated using a student feedback questionnaire, receiving a score of 3.54 on a scale of 1 (very bad) - 4(very good). The evaluation was conducted with a cohort of 12 product design students from the 2022 cohort. Four indicators were used to assess the e-learning course:

<b>Indicator</b>	<b>Description</b>	<b>Score</b>
Knowledge subject matter	The depth and breadth of accurate and relevant content knowledge related to art and design appreciation covered in the e-learning course.	3.84
Student & teacher interaction	The level of engagement, communication, and collaboration between learners and instructors within the art and design appreciation e-learning course.	3.57
Design instruction	The overall structure, organization, and effectiveness of instructional strategies employed in the art and design appreciation e-learning course.	3.47
Course management	The efficiency and effectiveness of administrative and technical aspects, including accessibility, organization of course materials, and management of assessments and deadlines in the art and design appreciation e-learning course.	3.33
<b>Mean</b>		<b>3.54</b>



The students also provided constructive feedback on how to enhance the e-learning experience.

- They like the see think wonder interactive sessions in mural board.
- They like doing active notes weekly with Cornell Method.
- They like the project brief, as they can see how history can be a creative input to the design process.
- The narration of the material should be made more casual.
- Ensure consistent use of terminology.
- Reduce the amount of text.
- Improve the audio quality.
- Include specific indications, such as a timer icon or instructional text, when students need to complete tasks while watching videos.

The research focused on the design and development of e-learning for art and design appreciation using the See Think Wonder thinking routine within the ADDIE (Analysis, Design, Development, Implementation, Evaluation) framework. The findings of the study shed light on the effectiveness and benefits of integrating the See Think Wonder approach in the e-learning context for art and design education.

### **1. Analysis Phase**

The analysis identified four key learning goals in the areas of analyzing, interpreting, appreciating, making arguments, and drawing inspiration from art and design works. Furthermore, interviews conducted with the program head indicated that learners often perceive the process of learning historical facts about art and design as dull and lacking relevance to real-world contexts. They express a preference for multimedia content over lengthy texts when studying history, and they tend to struggle with active participation in interactive discussions, often limiting their responses to specific questions posed to them.

### **2. Design Phase**

In the design phase, the research focused on developing a well-structured e-learning course that incorporated the See Think Wonder thinking routine. The design aimed to provide learners with opportunities to observe, analyze, and question artworks, thereby enhancing their creative and critical thinking skills and emotional connection to the art pieces. The course design also emphasized the use of creative instructional strategies, interactive activities through mural

board, and multimedia elements through animated ppt videos, to create an engaging learning experience.

### **3. Development Phase**

During the development phase, the research team transformed the design concepts into tangible learning materials. This included creating visual content, recording videos, developing interactive exercises and handouts. The development process ensured that the learning materials aligned with the principles of the See Think Wonder thinking routine and effectively facilitated learners' engagement and understanding of art and design concepts.

### **4. Implementation Phase**

In the implementation phase, the e-learning course was delivered to a group of learners. The research findings revealed that learners responded positively to the See Think Wonder approach in the e-learning environment, resulting in an increased level of student-teacher interaction with a rating of 3.57. The incorporation of the mural board provided a pressure-free environment for students to express their responses at their own pace, leading to higher levels of active participation, critical discussions, and improved skills in observing and interpreting artworks.

The learners highly appreciated the flexibility and accessibility offered by the e-learning platform, enabling them to study at their own pace and revisit course materials as needed. The students' work showcased their understanding of the benefits of applying the See Think Wonder thinking routine and their ability to enhance their creativity and design skills through the assigned projects.

### **5. Evaluation Phase**

The research conducted an evaluation of the e-learning course to assess its effectiveness and gather feedback from the learners on the basis of 4 indicators: Knowledge subject matter, Student & teacher interaction, Design instruction, Course management. The course get the average of 3.54 (scale 1-4). The evaluation results showed that the majority of the learners perceived the See Think Wonder thinking routine as valuable in enhancing their art and design appreciation e-learning content. There is an increased confidence in analyzing artworks, improved ability to express their thoughts and emotions, and a deeper understanding of the artistic elements and principles. The evaluation findings supported the effectiveness of

integrating the See Think Wonder approach in the e-learning context for art and design education.

Overall, the research findings demonstrated that the design and development of art and design appreciation e-learning with the See Think Wonder thinking routine within the ADDIE framework yielded positive outcomes. The study highlighted the potential of e-learning to transform learning experiences by fostering critical thinking, creativity, and engagement in the field of art and design appreciation. The findings contribute to the existing body of knowledge on effective instructional strategies in e-learning environments and provide insights for educators and instructional designers seeking to enhance art and design education through digital platforms.

## **5 DISCUSSION**

The research supports the incorporation of artful thinking strategies in art and design e-learning development. Numerous studies have highlighted the benefits of incorporating art-based thinking strategies in educational settings. For example, (Lowe et al., 2013) found that using Artful Thinking routines, including "See Think Wonder," enhanced students' critical thinking skills and increased their engagement and appreciation of artworks. This aligns with the goal of the current research, which aims to transform learning experiences in art and design appreciation through the application of the "See Think Wonder" approach in an e-learning context. (Williams & Moore, 2021) in their research also found that the See-Think-Wonder thinking routine can be a potential pedagogical tool for the promotion of critical thinking in young children. Similarly, (Ortiz, 2023) suggests that this artistic process could be used to help create other original art and during See-Think-Wonder routines emphasizing meaningful observations and questioning skills.

There are some limitations to the study, as e-learning was evaluated only once and had a limited number of 12 students. Future studies could expand the number of respondents. Furthermore, conducting comparative studies that directly compare the outcomes of traditional face-to-face art and design appreciation courses with e-learning courses using the "See Think Wonder" approach would provide valuable insights into the unique advantages and challenges of e-learning in this context.

## **6 CONCLUSION**

In conclusion, the research findings indicate the successful implementation of the e-learning course on art and design appreciation using the See Think Wonder thinking routine within the ADDIE framework. The analysis phase identified key learning goals and highlighted learners' preferences for multimedia content and interactive discussions. The design phase focused on creating a well-structured course that promotes creative and critical thinking skills through observation and analysis of artworks.

During the development phase, the research team transformed the design concepts into tangible learning materials, ensuring alignment with the See Think Wonder thinking routine. In the implementation phase, learners positively responded to the approach, with increased student-teacher interaction and active participation through the use of the mural board. The flexibility and accessibility of the e-learning platform were highly appreciated by learners.

The evaluation phase indicated the effectiveness of the course, with an average rating of 3.54 out of 4. Learners demonstrated improved confidence in analyzing artworks, expressing their thoughts and emotions, and understanding artistic elements and principles. The evaluation results supported the integration of the See Think Wonder thinking routine in art and design e-learning.

Overall, the research contributes to the existing knowledge on effective instructional strategies in e-learning environments. The study highlights the transformative potential of e-learning in fostering critical thinking, creativity, and engagement in art and design education. The findings provide valuable insights for educators and instructional designers aiming to enhance art and design learning experiences through digital platforms.

## **ACKNOWLEDGEMENT**

The author would like to express gratitude for the assistance, guidance, and collaboration of various parties involved in the preparation of this research work. The author extends their thanks to:

- Dr. Martin L. Katoppo, S.T., M.T., Dean of the Faculty of Design at Universitas Pelita Harapan
- Dr.-Ing. Ihan Martoyo, S.T., M.Sc., Head of the Research and Community Engagement Office at Universitas Pelita Harapan

This article is part of an internal research publication at UPH with the reference number PM-020-SoD/I/2023.

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