



A Framework for Self-Instructional Learning Media in the Visual Communication Design Process

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Abstract. The ability to manage and analyze information and knowledge that supports the design process is a critical skill for designers. In their learning process, students experience different moments in discovering their own understanding. Self-instructional learning media can be utilized as a pedagogical strategy to encourage independent learning and serve as a self-management training program. This study aims to identify criteria for designing learning media that promote independent learning in managing the design process. The research employs a qualitative approach through a sample of practical courses in the Visual Communication Design program, with research subjects including design activities and students. Data collection techniques involved questionnaires and observations. The research findings indicate that providing step-by-step procedures for learning a design process through self-instructional learning media can stimulate students to actively and independently engage in the process, choosing exploratory approaches that align with the unique characteristics of the design projects they undertake. This self-instructional media offering adaptable, personalized experiences, supporting students in their creative exploration, design solutions and expected that students will eventually be able to independently identify the most effective methods for themselves.

Keywords: Design, Self-Instruction, Learning.

1 Introduction

Alongside the ease of data access in the era of technology and information, a challenge arises in how to process this data into new information and meaning. In the design process, data access facilitates the design stages; however, students possess varying abilities in processing this data. Generally, the design process consists of two stages: understanding the problem through research and formulating relevant alternative solutions [1]. One of the challenges in teaching design projects is how students can independently navigate the complex and often non-linear design process.

During this process, students frequently encounter difficulties in analyzing problem data and formulating solutions that meet the project requirements. Additionally, contemporary students' learning styles, which tend to be more independent and personalized, necessitate a learning approach that allows them to adapt methods to their personal needs [2]. Amid the growing use of technology that transcends time and

location, self-instruction has emerged as a potential learning strategy to encourage students to manage their own learning processes, in accordance with their needs and flexibility, thereby fostering the ability to autonomously find design solutions [3].

Self-instructional learning media enable students to take control of their learning processes, adapt to different projects, and stimulate the creation of design solutions tailored to their learning needs. The design of self-instructional learning media, which stimulates meaningful learning and the reflective construction of knowledge, provides opportunities to facilitate the identification, selection, organization, or synthesis of information managed within the design process [4]. This approach plays a significant role in promoting sustainable communities by fostering independent critical thinking, allowing students to apply design principles focused on sustainability—whether in environmental, social, or other design fields. In the current era of digital education, self-instructional learning media also open opportunities for students to access personalized and flexible learning experiences. Consequently, learning media not only support learning effectiveness but also ensure that instructional methods are adaptable to individual student needs, encouraging the implementation of design solutions that are both relevant and sustainable.

This study aims to identify the criteria for self-instruction-based learning media that can promote students' independence in managing the design process, their ability to process data into a sequence of information, independent learning, and the development of thinking skills for managing the design process. The organization of information and knowledge through self-instructional learning media opens opportunities to optimize the learning process and also examines how personalized learning can be integrated into the design process to enhance learning effectiveness.

2 Research Method

This study is a qualitative investigation aimed at obtaining a depiction of natural conditions [5]. regarding the learning process, with the results subsequently used for the development of a prototype of the learning media. This study involved students from the Visual Communication Design program who were enrolled in a project-based design course. The research aimed to examine their learning experiences and interactions throughout the design process to inform the development of self-instructional learning media.

Data collection was conducted through two primary methods: direct observation of classroom activities and interviews with students. The observational method was used to analyze how students engaged with the design process, their problem-solving strategies, and their level of independence in completing design tasks. Meanwhile, student interviews provided deeper insights into their experiences, challenges, and perspectives on self-instruction and independent exploration in design learning. These methods were chosen to capture both behavioural patterns and personal reflections, ensuring a comprehensive understanding of how students navigate the learning process.

The collected data were analysed using a descriptive approach, which involved systematically organizing, presenting, and interpreting the findings. The analysis was carried out in several stages. First, observational field notes and interview transcripts were compiled and categorized based on emerging themes related to self-instructional learning, student engagement, and challenges in the design process. Next, thematic analysis was conducted to identify key patterns and recurring themes from both observational data and interview responses, which were then coded and classified into relevant categories, such as learning autonomy, problem-solving approaches, and adaptability to flexible learning media. The categorized data were subsequently synthesized to extract critical aspects that should be incorporated into the design criteria for self-instructional learning media. These findings were cross-referenced with existing theories in design education to ensure alignment with established pedagogical principles. Finally, the study formulated design criteria that emphasize practicality, flexibility, and interactivity to support an effective self-instructional learning experience. These criteria were refined through iterative discussions before being integrated into the conceptual framework for learning media development.

3 Result and Discussion

Learning activities need to be supported by the presence of learning media in order to create instructional stimuli that attract and retain the learner's attention. Learning media have the potential to optimize the learning process, offering several benefits, including:

1. Helping to build and maintain focus;
2. Learning materials can be repeatedly read and understood, allowing students to better master the learning objectives;
3. Students become more actively engaged in their own learning activities, such as observing, performing, demonstrating, and documenting their work.

Each design project has its own unique characteristics according to the problem it addresses, although the design methods used generally share similar stages. In the design process, students must engage in extensive experimentation and reflection. Independent learning allows them to develop self-management skills and self-regulated learning, which enhances academic performance and motivation [6]. This is critical because students can choose the learning methods that are most effective for them without depending solely on direct instruction from lecturers. Self-instructional learning media provide a systematic guide to achieving learning objectives and help explain the design process steps in an organized manner.

3.1 Self-Instruction in Design Learning

Self-instruction is a learning approach that allows students to study materials independently with minimal assistance from instructors. In the context of design learning, self-instructional media can function as a systematic guide to the design process, enabling students to access, understand, and apply design principles without relying entirely on lecturers. The ability to manage information and knowledge is a key

element in the design process, encouraging students to explore independently, create solutions, and solve design problems autonomously [7].

Self-regulated learners play a crucial role in the learning process, as they possess the ability to recognize when they have acquired knowledge or skills and when they have not, in contrast to their passive classmates. Students with self-regulated learning capabilities actively seek information and take the necessary actions to master it [8]. In this context, self-instructional learning media serve as a valuable tool to support independent and self-directed learning. These media enable students to access learning materials flexibly, develop their own learning strategies, and enhance critical thinking and problem-solving skills without relying entirely on direct instruction from educators.

3.2 Personalized Learning

Personalized learning is a process where learning materials and methods are tailored to the needs, preferences, and learning styles of each student. According to the theory of personalized learning, every individual has a unique way of absorbing information and processing it into knowledge. Personalized learning offers an effective strategy that can enhance motivation, engagement, and comprehension, thereby optimizing learner satisfaction, efficiency, and overall learning outcomes, however, despite its potential, implementing personalized learning continues to be one of the greatest challenges in contemporary educational systems [9]. Recent studies have shown that personalization is highly relevant in today's education, where students tend to learn independently, use technology, and adjust learning methods according to their interests and needs [2]. By applying personalization in self-instructional media, students can navigate and understand the visual communication design process according to the specific requirements of their projects, resulting in more flexible and efficient learning. This personalized approach enhances their ability to explore diverse design methodologies, adapt creative solutions, and engage more deeply with the nuances of visual messaging.

In the context of visual communication design, where the ability to communicate ideas effectively through visual means is paramount, personalized learning media empower students to develop design solutions that are not only functional but also creatively aligned with project goals. This adaptability is crucial in responding to evolving industry standards and audience needs, fostering design practices that contribute to more sustainable communities by addressing social, cultural, and environmental challenges through effective visual communication. Furthermore, the integration of new learning media into the design process supports the development of digital skills necessary in today's rapidly changing design landscape, enabling students to produce more innovative, relevant, and impactful designs.

3.3 The Design Process in Visual Communication Design Learning

Observations of design process activities conducted in the classroom reveal that students do not encounter difficulties in finding data and information needed to identify background problems. The primary challenge lies in the analysis process, specifically how to connect the data and identify gaps or issues. Interviews and observations indicate that the greatest challenge in the design process is the problem identification

stage. This step involves articulating the rationale behind the chosen topic, presenting data, concepts, and relationships between variables relevant to the topic. In problem identification, the formulation of the background is key to understanding the urgency of the selected topic and its relevance to contextual needs.

The research findings indicate that students experience difficulties in formulating research problems, writing theoretical frameworks, developing research frameworks and hypotheses, as well as structuring research methods [10]. Other challenges include: 1) explaining the problem in detail in the background, 2) explaining the importance or urgency of the research, and 3) presenting a comprehensive theoretical review [11]. This can also be attributed to students' limited communication and reasoning skills when expressing their ideas in written form [12].

According to classroom observations of the design work process, students often need guidance in advancing the design steps. During discussions and mentoring sessions, some students indicated that it would be easier if they had a clear understanding of the design work steps, although each project could have different specific steps according to the project's theme. Structured work steps are expected to help students complete design projects independently, both inside and outside the classroom.

Based on these data collection results, understanding work step instructions is one of the major challenges. This indicates the need for learning tools that can facilitate the ability to conduct research (research methodology) and develop comprehensive design work steps (design methodology). Students need to practice thinking skills focused on discovering, describing, ideating, and creating design methodologies that are suitable for their projects. Students expressed the need for learnable steps to help them understand and navigate each stage of the design process, from problem analysis to the evaluation of generated solutions. This process aligns with the stages of the design methodology proposed by [13], which includes analysis, synthesis, and evaluation. The learning objectives in the design process encompass three main competencies:

1. The ability to analyze project problems;
2. The ability to design alternative solutions;
3. The ability to create design project works.

Learning media serve as an alternative to encourage students to independently explore and discuss design project issues, where the design process itself is non-linear and often requires creative and innovative approaches. The design process includes stages from problem analysis to solution finding and final evaluation. Self-instructional learning media provide a structure that helps students understand these stages while maintaining flexibility to adapt the steps according to the specific needs of their design projects.

Self-instructional learning media in the form of textbooks involve the application of knowledge and enhance students' mastery of the subject matter [14] specifically in the design project development process. Therefore, the formulation of learning objectives related to self-instructional learning activities needs to be based on the function and steps of the design process used, helping to identify the final behavior to be achieved, including the ability to recognize and independently solve design problems. This approach aims to identify the desired final competencies, including the ability to recognize and independently solve design problems. Self-instructional learning media are

designed with three key principles—practicality, flexibility, and interactivity—which play a crucial role in fostering reflective design exploration. The learning media can take various forms, such as documents, worksheets, and logbooks, with the following content design strategies:

Practical: Bridging Theory and Application. In self-instructional design education, learning media must effectively bridge the gap between theory and practice, providing students with opportunities to apply design concepts in real-world contexts. Engaging in project-based experimentation and hands-on exercises enables students to refine their skills through reflective practice. This approach ensures that design is not solely perceived from an aesthetic perspective but is also evaluated in terms of functionality, cultural relevance, and social impact, allowing students to develop more meaningful and applicable design solutions.

Flexible: Adapting to the Design Process Needs. Self-directed learning media in design education must be highly adaptable, enabling students to tailor their learning approaches to match their individual styles and needs. This flexibility includes the freedom to explore diverse design methodologies, tools, and perspectives, as well as the ability to adjust learning steps based on the challenges encountered in their design projects. Furthermore, the integration of technologies such as AI can serve as an exploratory tool rather than a prescriptive solution, ensuring that students retain control over their creative processes rather than relying solely on automated decision-making.

Interactive: Enhancing Engagement and Collaboration. Although self-instructional in nature, learning media should still promote active interaction—between students and their work, among peers, and with faculty as mentors. This dynamic and reflective learning environment facilitates critical discussions, feedback exchange, and iterative design processes, all of which are essential for refining design solutions. Interactivity in design education further reinforces design thinking methodologies, where user involvement and iterative development are integral to broader exploratory design practices.

The practical, flexible, and interactive criteria outlined for self-instructional learning media provide an alternative framework for enhancing design education. These criteria can serve as a basis for the development of learning media that align with the exploratory and reflective nature of the design process. By emphasizing independent learning, adaptability, and engagement, these characteristics offer a structured yet adaptable approach to supporting students in their creative exploration. Further research and application of these criteria could contribute to refining instructional strategies that foster a more autonomous and innovative design learning experience.

3.4 Personalization and Flexibility in the Design Process

Self-instructional media allow for the personalization of learning, where students can adjust the steps they take according to the uniqueness of their projects. For instance, students working on complex projects can use the media to deepen their problem analysis, while those with simpler projects can focus more on synthesizing solutions. Students have control over their learning processes. This media can help students

understand key steps in the design process, such as analyzing project needs, developing creative solutions, and conducting independent evaluations of their work. The media also provide space for students to reflect and systematically record the progress of their designs, allowing them to continuously learn and improve their design performance.

Through the design process, students cultivate the ability to integrate sustainability principles, ensuring that their work not only achieves aesthetic objectives but also promotes environmental stewardship and social responsibility. This approach allows designers to create solutions that address both visual communication goals and broader sustainability challenges.

3.5 Criteria for Self-Instructional Learning Media

To design appropriate self-instructional learning media for use in the design process, it is essential to consider several characteristics and criteria that support the design process, flexibility, value creation, and the reflective development of students' abilities. The media must facilitate learning that not only teaches technical skills but also stimulates students' critical and creative thinking, along with reflection on their processes and outcomes. Based on the research findings, several proposed criteria are as follows:

Process-Based and Design Stages. The self-instructional learning media should be designed to focus on the stages involved in the complex design process. The design process itself is not linear but tends to be iterative, requiring both divergent and convergent thinking. Therefore, the media should provide a flexible structure, allowing students to follow and adjust each stage according to project needs. Effective media will guide students through the fundamental stages of analysis, synthesis, and evaluation [13], while allowing the flexibility to adapt these steps. Students can access various design tools, such as problem-solving matrices or brainstorming frameworks, to help them analyze problems, generate creative solutions, and evaluate outcomes.

Flexibility in Personalized Learning. Each student has different learning styles and preferences in addressing design problems, so the media must offer alternative approaches and tools that allow for personalization of the learning process, personalized learning models can help to meet individual needs and goals. For instance, the media could provide learning pathways that allow students to choose areas of focus according to their strengths and weaknesses.

Value Creation and Project-Based Learning. Self-instructional learning media should help students understand that the design process is not only aimed at producing functional solutions but also at creating value. Good design always considers the needs of users, the social context, and the broader impact of the solution. Therefore, the media should include elements that support value-based thinking, where students are encouraged to reflect on how their design solutions not only solve problems but also make meaningful contributions to users or society at large [2].

Stimulating Reflective Learning. One of the keys to design learning is reflective learning, where students are trained to self-evaluate their processes and outcomes. The media should include spaces for critical reflection on each stage of the design process. This can be realized through journals or design work logs, where students periodically document the progress, challenges, and solutions encountered throughout individual or group projects. Such reflection not only encourages students to assess their successes or failures but also helps develop a deeper understanding of how to process information and make design decisions. Research shows that graphic design students readily develop the ability to describe, analyze, and make judgments based on their design experiences [7].

Developing Independence and Self-Reliance. Self-instructional media guide students in planning their own projects with clear steps, identifying potential issues, and providing tools to solve them independently. The media emphasize the importance of iteration and revision in the design process, thus training students to make improvements to their work based on feedback and personal reflection.

Interactive Components and Digital Technology. In the digital era, self-instructional learning media can incorporate interactive technologies that enhance students' active engagement. Interactive media may include digital platforms that allow students to access materials independently, conduct self-assessments, and collaborate with peers. Digital components also enable automatic feedback and formative assessments, where students can receive instant responses to their work. This helps students continuously correct mistakes or improve the quality of their design projects.

By meeting these criteria, self-instructional learning media can serve as a tool to prepare design students for professional challenges and to create innovative, high-value solutions.

4 Conclusions and Suggestions

The design process is not fixed but iterative and non-linear. Through the development of learning media, the aim is to encourage students to discover and recognize their own design processes. Continuously, they will identify various aspects of design that need revision, conduct reflection, and receive feedback. Steps in the design process will emerge with appropriate stimuli. Self-instructional learning media, through a personalized approach, can adjust the learning process according to the uniqueness of each design project, fostering students' abilities to organize data, explore ideas, and engage in reflection. This personalized learning approach also has the potential to facilitate non-linear thinking, where students can move between problem analysis, solution synthesis, and outcome evaluation according to project needs. By integrating a personalized approach, self-instructional learning media can adjust the learning process to the specific needs of each design project, fostering students' ability to organize data, explore creative solutions, and engage in critical reflection.

In the context of visual communication design, this flexible learning model enables students to create design solutions that are not only effective in communicating messages but are also aligned with the principles of sustainability, encourages designers to consider environmental, social, and cultural impacts when creating visual solutions, ensuring that their work contributes to long-term positive change. Moreover, within the framework of digital education, this self-instructional media offering adaptable, personalized experiences, supporting students in their creative exploration and design solutions.

Future research should focus on designing learning media that integrate interactive digital features into these self-instructional platforms to enhance student accessibility and engagement. This would make the learning process more relevant to the needs of today's students, who are more comfortable with digital technology and personalized learning. Trials are required to obtain data on the outcomes of using this workbook in the learning process. These trials can be conducted on students with different project themes.

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