Analysis of Learning Needs for Visual Communication Design Students for the Latest Graphics Teaching Materials

ABSTRACT

This research aims to analyze the learning needs of students in the Visual Communication Design Program in developing teaching materials for the latest graphics topics. The research methods employed include qualitative and quantitative descriptive analysis methods. The research steps involve identifying learning needs through data collection, data analysis, and the interpretation of graphic learning materials, through interviews, observations, questionnaires, and literature review. The findings of this research will provide comprehensive insights into students' perspectives and preferences regarding the Graphics course. The collected data will be used to support the development of teaching materials that are more aligned with students' needs and relevant to current industry trends. This research is expected to make a significant contribution to improving the quality of education in the Visual Communication Design Program and preparing students to face the challenges in the ever-evolving world of graphic design. The research shows that students need teaching materials on graphic topics that are easy to understand, contain the latest and industry-relevant content, and have clear and engaging visualizations. Based on these findings, the researcher suggests that the development of graphic teaching materials should prioritize students' learning needs as the primary target.

Keywords: Needs Analysis; Development; Teaching Materials; Graphics.

1. INTRODUCTION

The field of Visual Communication Design is one of the creative domains that is constantly evolving, especially in this digital era. The rapid development of technology and design trends places a demand on students in the Visual Communication Design Program to have an understanding and skills that are relevant to the latest developments in the graphic industry. Visual communication design is a crucial area within the creative world. In pursuing a career as a designer, students in the Visual Communication Design Program must possess good knowledge and skills in this field[1]. Learning visual communication design involves the use of visual elements such as colour, shape, line, texture, and space to convey messages or information. When creating a design, a designer must consider the objectives, target audience, and context of the design[2].

Given the importance of design skills for a designer, knowledge of design theory, including design principles, design elements, design techniques, and proficiency in using design software, is vital. This is due to the diverse applications of visual communication design, such as visual identity design, packaging design, poster design, and more. Therefore, a designer's ability to apply their knowledge and skills will have a direct impact on the quality of the design outcomes [3, 4]; Cross et al., 1994). Thus, being a visual communication designer requires a combination of theoretical knowledge, practical skills, and good soft skills. Students in the Visual Communication Design Program must possess all of these to excel in the profession[5].

In recent years, we have witnessed a drastic transformation in the graphic industry. Modern graphic designers must not only have a strong understanding of traditional design aspects but also be capable of integrating the latest technology into graphic products. However, a question arises as to what extent students in the Visual Communication Design Program have acquired the necessary understanding and skills to face these challenges. Textbooks are one of the most important learning resources for students in the Visual Communication Design Program. Textbooks provide knowledge and information related to design theories and principles and offer real-world examples of the applications of these theories [6]. By reading textbooks, students can gain knowledge about the history and development of visual communication design, as well as learn various design techniques and theories that are relevant.

Textbooks also provide exercises and assignments related to the covered material, allowing students to apply the knowledge they have acquired in practice. Furthermore, textbooks can serve as

references for students when working on assignments or projects assigned by their professors. Textbooks often provide information about graphic design software used in the field, enabling students to learn how to use such software effectively. Therefore, textbooks can help students in the Visual Communication Design Program acquire strong knowledge and skills in this field. As a result, students should regularly read textbooks and apply the knowledge gained in practical work to ensure they are prepared for a career as a visual communication designer.

In addition, textbooks used as reference materials in learning should also reflect these developments. The importance of student readiness and the relevance of textbooks in coping with the latest developments in the graphic industry cannot be ignored.

Furthermore, textbooks are a critical resource in student learning. The availability of relevant and effective textbooks that accurately depict current concepts and techniques in graphic design is also a crucial issue. Are the textbooks currently being used capable of covering the latest issues in the graphic industry? Can these textbooks effectively support student learning? In this context, this research seeks to identify the main issues that need to be addressed, such as student learning needs, textbook relevance, and the integration of current concepts and techniques in the graphic industry. However, in practice, there are often obstacles in graphic education at the university level, such as the absence of graphic textbooks or supplementary materials that do not align with student learning needs. This leads to students struggling to understand the graphic content being taught and affects their learning outcomes. Therefore, a precise analysis of student learning needs in developing up-to-date graphic teaching materials is necessary. Thus, it is expected to address the common challenges encountered in graphic education and assist students in acquiring better knowledge and skills in this field. Therefore, this research aims to address a number of underlying issues that underscore the importance of this study.

The analysis of student learning needs is conducted by identifying the demands and expectations of students regarding the teaching materials to be developed. The results of this analysis will serve as the basis for developing graphic teaching materials that align with student learning needs and help improve the quality of graphic education. By understanding student learning needs, the teaching materials to be developed can better meet their demands and expectations. Additionally, the goal of this research is to identify the level of understanding and skills of students, evaluate the available textbooks, and analyze student learning needs to design appropriate learning guides. It also aims to formulate recommendations and suggestions for the Visual Communication Design Program to enhance the curriculum and teaching based on the research findings. This research is expected to provide a deeper understanding of student learning needs in the Visual Communication Design Program related to current graphic teaching materials to produce relevant learning guides that will advance the field towards greater competence and innovation.

Related literature has extensively emphasized the importance of understanding and adapting to the latest developments in design and the graphic industry. According to Lupton and Phillips, (2008)in their book "Graphic Design: The New Basics," graphic designers must constantly grasp the evolution of technology and design trends to remain relevant in an ever-changing world. Furthermore, Baldwin and Roberts, (2006) highlight the role of textbooks as essential tools in conveying design concepts. These books underscore how current design concepts and techniques in the graphic industry need to be conveyed through relevant textbooks.

Moreover, previous research indicates that graphic design education should integrate the history of the graphic industry with contemporary developments to provide students with a more comprehensive understanding[9]. Meanwhile, Moholy-Nagy, (2001)illustrates how innovations in typography and layout have had a significant impact on the development of the graphic industry. All of this literature demonstrates how the graphic industry requires a strong understanding of current developments and how textbooks play a vital role in transmitting this knowledge to students. Thus, this research aims to bridge the gap between student understanding, relevant textbooks, and the latest developments in the graphic industry. With this approach, it is expected that this research will provide valuable insights for the development of a Visual Communication Design curriculum and teaching methods that are more responsive to the dynamics of the graphic industry.

2. METHODOLOGY

The research methodology employed in this study involves a combination of qualitative and quantitative descriptive analysis methods, focusing on data description and interpretation. The following steps were undertaken: 1) Identification of learning needs and data collection. This phase involved identifying the learning needs through data collection; 2) Data analysis: The collected data were analyzed using content analysis techniques. Additionally, quantitative methods were employed

through surveys or questionnaires to determine the overall level of student learning needs and calculate the averages of their responses. 3) Interpretation of graphic learning materials: Conclusions were drawn from the results of the data analysis. Data were collected through interviews, discussions with course instructors, and discussions with design practitioners. Additionally, observations were conducted during graphic industry activities to gain further insights. Pertinent aspects such as the curriculum, Indonesian National Competency Standards, learning product content, graphic industry trends, book standards, and learning objectives were examined through literature review. This interpretation aimed to understand the perceptions and views of students regarding their learning needs and how these needs relate to the development of teaching materials.By adopting a combination of qualitative and quantitative methods, this research provides a more comprehensive and holistic understanding of the learning needs of students in the Visual Communication Design Program, particularly in the Graphic course. It also generates sufficiently robust data to support the development of more relevant and effective teaching materials.

3. RESULTSAND DISCUSSION

3.1 Results

In developing a graphic teaching book, the need for content material to be included in the book is essential. The material must be relevant to the topic and aligned with the standards set by the educational institution, specifically the Visual Communication Design Program. Additionally, the material must be presented in a manner that is easily comprehensible to students and enriched with various elements to enhance its effectiveness. The research activities conducted aimed to address the question of what the learning material needs for a graphic teaching book are. This was achieved through the identification of user needs, analysis of questionnaire data, and an examination of graphic learning materials, culminating in the development of new material based on the findings and interpretation of graphic learning material.

3.1.1 Identification of Learning Needs and Data Collection

To determine the learning needs in graphic design, an initial identification was conducted with the users, namely the instructors. This identification was carried out through interviews and discussions. From this identification, data on the learning needs required by students were collected, enabling the development of the teaching book to align with these needs.

Fig. 1. Discussion with instructors at Studio MakkoMikki
(November 6, 2021)

Additionally, discussions in the form of interviews and consultations were conducted with expert practitioners in the field of graphic design to understand the learning needs required in accordance with industry standards and requirements. This ensured that the development of the product could meet the desired needs and be effectively utilized in the learning process.

Fig. 2. Discussion with actors and practitioners in the graphic design industry at Kopi Alps (December 22, 2021).

Data collection also involved a phase of in-depth understanding of learning needs and issues through observation of activities or processes within the graphic design industry. From the identification of issues found by instructors, practitioners, and industry actors, several challenges faced in the field of work within the graphic design industry were revealed, including:

1. Students are perceived as lacking the technical skills necessary to work in the graphic design industry, such as knowledge of printing machines and the production process in printing.
2. Students are seen as lacking communication skills required for employment in the graphic design industry, such as the ability to explain the production process and handle customer issues effectively.
3. Students are believed to lack the design skills needed for work in the graphic design industry, such as proficiency in operating graphic design software and creating designs that meet industry standards.
4. The graphic design industry is confronted with rapid technological changes, including new graphic design software and more advanced printing machines, necessitating continuous training.
5. The graphic design industry faces fierce competition from other companies and from companies offering digital products as alternatives (Discussions and Interviews, July 2022).

Meanwhile, several issues identified in teaching the graphic design course to instructors and students participating in the course, through in-depth discussions and Q&A sessions, are summarized as follows:

1. Students lack access to appropriate equipment and software for learning graphic design.
2. Students have a limited understanding of current graphic technology.
3. Students lack support from institutions, faculties, or universities in terms of curriculum development or suitable learning programs for graphic design.
4. Students have limited access to learning resources for those who want to study graphic design independently.
5. Students have limited opportunities to practice and gain practical experience in the field of graphic design.
6. Students struggle to comprehend technical concepts related to printing technology, such as offset printing, digital printing, and others.
7. Students encounter difficulties in applying the technical concepts taught in the creation of graphic design projects.
8. Students lack practical skills in graphic design, such as operating printing machines and graphic design software.
9. Students have limited insight into the latest developments in graphic technology.
10. Students have insufficient interest and motivation to learn graphic design (Discussions and Interviews, September 2022).

To complement the findings from user needs identification, a questionnaire in the form of a survey was conducted as an additional data collection method. The questionnaire in this research employed written questions to collect both qualitative and quantitative data from respondents' answers. The issues identified from the distributed questionnaires provided insights into the actual conditions and aimed to obtain deeper data to find suitable solutions for product development needs. To gain a more in-depth understanding of the issues faced by respondents, whether in terms of their responses or justifications, both closed-ended questionnaires (multiple-choice statements) and open-ended questionnaires were used.

3.1.2 Analysis of Questionnaire Data

The results of data analysis from 63 respondents, who were students in the Visual Communication Design Program, revealed a strong depiction of their views, needs, and preferences regarding the graphic design course. These findings indicate the importance of this course in their education and highlight several key aspects.First, almost all students (92.1%) believe that learning graphic design is a fundamental necessity. This demonstrates their awareness of the relevance of graphic design in the world of visual communication design.Second, the majority of respondents (93.7%) consider the graphic design course to be beneficial, reflecting their recognition of its value in their academic development.Third, the importance of practical skills in the design industry is evident, with 85.7% of students feeling the need to learn about design applications.Fourth, 74.6% of students express a desire to gain hands-on experience through field practice, demonstrating their enthusiasm for facing real-world work challenges.Fifth, the primary preference for the learning method is studio practice, chosen by the majority of students (93%), indicating their preference for a practical approach to learning.Sixth, more than half of the respondents (52.4%) feel the need to use textbooks as a source of information in their learning, emphasizing the importance of relevant reference sources.Seventh, most students (65.1%) emphasize that the taught material should align with their expectations, underscoring the importance of material relevance to their needs as students.Finally, 36.5% of respondents stated that a lack of understanding of graphic design sometimes affects their activities or jobs, highlighting the challenges they face in applying graphic design knowledge in their practices.
In conclusion, the findings from this data analysis provide valuable insights into students' perspectives on the graphic design course. This strengthens the argument for the development of a more relevant and effective curriculum to meet the needs of students in the Visual Communication Design Program. By integrating student preferences and needs, the program can provide more meaningful and relevant education in preparing students for success in the competitive world of graphic design.
The presence of open-ended questions provided respondents with the opportunity to provide more detailed and in-depth answers, as well as to express the reasons or justifications for their responses. The questionnaire instrument "Analysis of Learning Needs and Graphic Knowledge" distributed through Google Forms to students participating in the Graphic Design course received 63 responses from respondents, which were then analyzed.
The variety of responses, which often included reasons or justifications, prompted a qualitative content analysis of the open and in-depth questions in the questionnaire. The data collected from the responses of the questionnaire can be seen from the distribution of answer data, which is described as follows:Based on the results of the distribution of response data from respondents in the questionnaire, it can be concluded that students in the Visual Communication Design Program have diverse attitudes and relevant knowledge related to the Graphic Design course and graphic design in general. Students understand that their knowledge of graphic design is still limited because they do not have a background in this field. However, they have a strong awareness of the relevance and importance of graphic design in the professional world they will enter. Additionally, they view graphic design knowledge as a crucial asset in the workplace and for advancing their careers.
The importance of practical content is also evident in students' perspectives, as they recognize that practical experience is key to supporting their learning. They prefer practical learning methods such as discussions, studio practice, and case studies. Students have high expectations for the graphic design knowledge they will gain during their learning process, indicating enthusiasm and motivation to grow and succeed in this field. They also understand that mastering graphic design skills is essential in their future jobs, allowing them to comprehend the print production process and apply it to solving related problems.
Moreover, students consider textbooks as a highly important and necessary source of information in the learning process. Therefore, it can be affirmed that the need for relevant and effective textbooks is crucial in supporting students' learning in the Visual Communication Design Program and preparing them for success in the competitive professional world of graphic design.

3.1.3 Analysis of Learning Materials in Graphic Design

The analysis of learning materials is an evaluation process of the learning materials used in the development of a textbook. The purpose of analyzing learning materials is to determine their suitability, and relevance to learning objectives, and to identify the strengths and weaknesses of the learning materials to be developed. The analysis of graphic design learning materials is conducted using several methods, including an analysis of the curriculum in place in the Visual Communication Design program at the Department of Arts and Design, Faculty of Arts and Design,

UniversitasNegeriMakassar. This analysis involves assessing the alignment of the curriculum with national or international competency standards and its alignment with the needs of the job market.

3.1.4 Analysis of Curriculum-Related Materials

This analysis helps determine whether the content to be presented is in line with established standards and meets the needs of graphic design education as one of the supporting courses. The curriculum of the Visual Communication Design program at the Department of Arts and Design, Faculty of Arts and Design, UniversitasNegeri Makassar, includes various courses covering design theory, design techniques, design history, graphic design, web design, animation, photography, illustration, and more. These courses help students understand the fundamental principles of design, develop creativity and technical skills, and learn how to apply design in various situations and contexts. Furthermore, the curriculum also includes practical projects that allow students to apply the theories they have learned in real-world contexts and develop a strong portfolio.

The Visual Communication Design program at the Faculty of Arts and Design, UniversitasNegeri Makassar, has a vision: "As an excellent and leading program, it prepares dynamic professionals for the integrated communication industry with a spirit of up-to-date knowledge grounded in the local cultural traditions, thereby becoming a centre for the development and study of communication and humanities in the field of visual communication design to enhance the image of products, companies, institutions, or individuals, while also playing a role as a partner in entrepreneurship for small and medium-sized industries in Eastern Indonesia"[11].

This analysis of the curriculum and its alignment with the goals of the Visual Communication Design program provides valuable insights into the relevance and effectiveness of the learning materials in meeting the needs of students and preparing them for success in the competitive field of graphic design.

3.1.5 Analysis of Materials Related to the Indonesian National Competency Standards (SKKNI)

Analysis is also conducted by assessing the level of compliance with national or international competency standards, as well as alignment with the needs of the job market. The analysis of learning materials related to the Indonesian National Competency Standards (StandarKompetensiKerjaNasional Indonesia or SKKNI) is a process of evaluating the learning materials used in the teaching and learning process to ensure that the content aligns with the competency standards established by SKKNI. The purpose of analyzing learning materials related to SKKNI is to determine the suitability, compatibility, and relevance of the learning materials to the competency standards set by SKKNI, as well as to identify the strengths and weaknesses of these learning materials.

In the document titled [12], a professional map for graphic design and visual communication design professions is presented. From this professional map, the scope of the graphic design/visual communication design professions is evident, encompassing three essential functions: 1) To Inform, providing information, 2) To Identify, identifying, and 3) To Persuade, persuading.

These functions involve providing information, identifying, and persuading (convincing) through the use of graphic media (print-based), digital media, and environmental contexts. These three types of media can be used individually or in an integrated manner. The scope of the professions is further divided into more general professions commonly referred to as graphic designers/visual communication designers, and more specialized professions such as brand designers, packaging designers, website designers, multimedia designers, and others. This overview indicates that this profession will continue to evolve in line with technological advancements.

The field of graphic design/visual communication design almost touches on all aspects of life, including politics, economics, social, and cultural domains. However, in the industrial landscape related to graphic design/visual communication design depicted in the aforementioned professional map, industries are generally where the presence of a graphic designer/visual communication designer is required. In these industries, the services of graphic designers/visual communication designers are in high demand, whether as designers working in design studios, creative boutiques, advertising agencies, freelance designers, or in-house designers.

The current standards cannot possibly keep up with the rapid pace of development in the field of graphic design/visual communication design. Observing what has occurred both internationally and domestically, efforts to create these guidelines are expected to anticipate the advancements in the field of graphic design/visual communication design.

The field of graphic design/visual communication design is a part of the visual arts used for communication. Several prerequisites are required for those working in this profession, including insight, skills, sensitivity, and creativity. The current standards cannot possibly keep up with the rapid pace of development in the field of graphic design/visual communication design. By observing developments in other countries and within the country, it is hoped that these guidelines can anticipate the progress of the field of graphic design/visual communication design.
In the realm of graphic design/visual communication design competency, certain prerequisites must be mastered before entering the workforce, including knowledge, skills, and sensitivity. In the field of graphic design, some basic knowledge of visual arts and specific skills/sensitivity are required before entering the workforce, such as having knowledge of production and production technology, particularly in the field of graphics.

3.1.6 Analysis of Learning Content Products

In the field of graphic design, content analysis goes beyond considering the curriculum of the relevant academic program; it also takes into account the National Competency Standards for Graphic Design and Graphic Production (Attachment "National Competency Standards for Graphic Design and Graphic Production," n.d.). The next stage involves determining whether the learning content in graphic design that will be presented in the textbook aligns with the learning needs. Regarding the analysis of competencies that students must achieve, this includes an examination of the learning content products to be presented in the graphic design textbook, which encompasses the analysis of topics, illustrations, difficulty levels, and teaching methods. The analysis of the learning content products to be presented in the textbook encompasses several aspects, such as:

1. The content to be presented is relevant to the material to be taught and aligns with the current curriculum standards.
2. The content to be presented is written in clear and easily understandable language for students.
3. The content to be presented is interconnected with other topics to facilitate students' understanding of more complex concepts.
4. The content to be presented is updated in line with the latest developments in the relevant field.
5. The content to be presented includes various types of learning activities, such as discussions, exercises, and projects, to enhance student participation and learning outcomes.

3.1.7 Analysis of Materials Related to Graphic Field Trends

In addition, an analysis of trends in the field of graphics, such as the latest technology, software used, and other aspects, is also conducted to ensure that the content to be presented in the textbook aligns with these trends. The latest technologies used in the graphics industry today include:

1. Print-on-demand (POD) software, used to print documents or products only when there is a demand from customers.
2. Prepress software, used to manage design files before printing.
3. Digital asset management (DAM) software, used to manage, search for, and distribute digital media files such as images, videos, and audio.
4. Workflow software, used to manage the printing process from design to printing and delivery.
5. Cloud-based software, used to access data and applications remotely via the internet.
6. Automation software, used to optimize production processes using automation technologies such as robotics and IoT (Internet of Things).
7. 3D Printing software, used to print three-dimensional objects using plastic or metal materials.

3.1.8 Analysis of Literature Review Materials

Next, an analysis of the literature review of graphic materials was conducted by comparing them with the content of the materials to be developed in the textbook. Some relevant book titles related to the graphic industry include:

1. "Digital Workflow in the Graphic Industry" by Dameria (2003)
2. "Designer's Handbook in Print and Digital Printing Production" by Anne (2012)
3. "Designer's Guide in Print and Digital Printing Production," also by Dameria (2005)
4. "Printing Technology: Fundamentals, Processes, and Materials" by Emblem, (2012)
5. "Introduction to Printed Electronics" by Suganuma, (2014)

6. "The Complete Book of Silk Screen Printing Production" by [18]
7. "Handbook of the Silk Screen Printing Process" by [19]
8. "The Complete Photo Guide to Printmaking" by J. Michelle Doty
9. "Printmaking for Beginners: A Complete Introduction to Printmaking Techniques" by Robert Adam
10. "Printing: The Techniques and History of the Art of Printmaking" by J.A. Cox

All of these books provide useful and engaging information about the field of graphics, covering aspects of technology, history, and techniques used. The analysis was conducted by determining relevant content from these books to ensure that students receive truly effective material. This helps in determining appropriate teaching methods and developing an effective learning plan. The analysis was carried out with the aim of determining relevant content in line with established standards and ensuring that the content presented can be used to achieve learning objectives. In this analysis, an evaluation of the content in existing books was conducted and compared to the current curriculum. Afterwards, a development plan for the textbook material was created, including content that needs to be added, modified, or removed based on the analysis results.

3.1.9 Analysis of Materials Related to Textbook Standards

The textbook standards for graphic design that will be developed are criteria used to determine the quality of a textbook to be published. Naturally, these standards can vary between different educational institutions. Here are some common standards used in this development, including:

1. Content Standards that encompass relevant content in line with the current curriculum, effective teaching methods, and a level of difficulty appropriate for the competencies to be achieved.
2. Presentation Standards that include an engaging design, clear structure, and the use of clear and understandable language.
3. Technical Standards that cover print quality, paper quality, and the quality of illustrations used.
4. Safety Standards that include copyright protection.
5. These standards are often established by government authorities or authorized organizations to ensure that published textbooks meet the set standards.

3.1.10 Analysis of Materials Related to Learning Objectives

Next, the content of graphic design learning materials in the textbook is diversified to align with the levels and learning objectives that have been established. In the graphic design course, the levels and learning objectives consist of two levels: basic and advanced. The learning objectives at the basic level are to provide a fundamental understanding of graphic technology and production processes, as well as to impart basic skills in using printing equipment. At the advanced level, the learning objectives are to enhance skills in graphic product design and explore more advanced graphic technologies, such as digital and offset printing.

Based on these levels and learning objectives, the topics to be organized related to the basic level, fundamental understanding of graphic technology and production processes include:

1. History of graphic design.
2. Types of printing: offset, digital, letterpress, gravure, etc.
3. Principles of printing: from the printing plate-making process to the printing process itself.
4. Print media: paper, cardboard, vinyl, etc.
5. Inkjet and toner.
6. Pre-Press processes: Design, layout, film and plate production processes.
7. Press processes: Printing processes, finishing, and printing machine maintenance.
8. Post-Press processes: Binding, cutting, and finishing processes.
9. Print quality and industry standards.

In this topic, equipment used in graphic production processes, such as offset printing machines, digital presses, cutting machines, binding machines, etc., will also be discussed. Meanwhile, the advanced-level content topics in graphic product design include:

1. The use of graphic design software such as Adobe Illustrator and Photoshop to create complex and detailed designs.
2. Understanding the printing technology used, such as offset, digital, and screen printing, and how designs should be tailored for each technology.

3. Understanding colour and colour printing techniques, including colour separation, CMYK, and RGB processes.
4. Understanding the materials used in printing, such as paper, cardboard, plastics, and other materials, and how designs should be adapted for each material.
5. The use of finishing techniques such as lamination, varnishing, embossing, and debossing to enhance the appearance and quality of printed products.
6. The use of professional design techniques and effective design presentations for presenting designs to clients or buyers.

3.1.11 Interpretation of Graphic Learning Materials

Based on various analyses conducted above, including the analysis of the curriculum used in the study program, the analysis of national and international job competency standards (SKKNI), the analysis of the physical content of instructional book products, the analysis of trends in the graphic field, the comparison of graphic books, the analysis of criteria and standards for books, as well as the analysis of the level and learning objectives, the next step is to interpret or draw conclusions from the results of these analyses. Interpretation in the development of learning materials involves interpreting the competencies to be achieved, learning objectives, and the curriculum used to compile the content to be published as learning materials in the graphic textbook. This is important to ensure that the learning materials developed are in line with the intended objectives and competencies and are consistent with the curriculum in use.

3.1.12 Formulation of Learning Competencies for Graphic Design Courses

The formulation of competencies for graphic design courses includes technical and non-technical competencies. Technical competencies involve the ability to use graphic technology, such as offset, digital, and screen printing machines, as well as operate other printing equipment. Non-technical competencies encompass project management skills in graphic design, including planning, organizing, and controlling, as well as communication skills, teamwork, and professional ethics. The following are the competencies formulated for graphic design courses:

1. General knowledge of graphic design and its history.
2. General knowledge of the scope of graphic design.
3. Basic knowledge of printing technology, such as types of printing machines and printing processes used.
4. Skills in operating graphic design software used in the printing process.
5. Ability to analyze and evaluate print quality.
6. Understanding of applicable standards and regulations in the printing industry.
7. Effective communication skills with clients or colleagues in the printing process.
8. Ability to manage and organize graphic design projects from start to finish.
9. Ability to apply graphic design theory in creative projects.
10. Ability to apply graphic design theory in business projects.
11. Ability to apply graphic design theory in digital printing projects.
12. Ability to apply graphic design theory in offset printing projects.

3.1.13 Formulation of Learning Objectives for Graphic Design Courses

Learning objectives are competencies that have been formulated and are intended to be achieved by students in terms of knowledge and skills that students must acquire after completing the course. The formulation of learning objectives for graphic design can be determined based on these competencies. Therefore, the general instructional objectives for graphic design courses are formulated as follows: Students should possess knowledge and skills in the graphic production process, ranging from planning, preparation, implementation, and outcomes, as well as an understanding of printing technology in line with the development of modern graphic methods. Based on the formulation of general instructional objectives, the learning objectives for graphic design are formulated as follows: After completing the graphic design course, students are expected to be able to:

1. Explain what graphic design is and its history.
2. Describe the scope of graphic design.
3. Explain the basics of graphic technology, such as the types of printing machines and printing processes used.

4. Operate graphic design software used in the printing process.
5. Have the ability to analyze and evaluate print quality.
6. Explain the standards and regulations applicable in the graphic industry.
7. Have effective communication skills with clients or colleagues in the printing process.
8. Have the ability to manage and organize graphic design projects from start to finish.
9. Have the ability to apply graphic design theory in creative projects.
10. Have the ability to apply graphic design theory in business projects.
11. Have the ability to apply graphic design theory in digital printing projects.
12. Have the ability to apply graphic design theory in offset printing projects.

3.1.14 Planning and Development of Learning Materials

After formulating the competencies and learning objectives for the graphic design course, the next step is to plan and develop the teaching strategy. The considerations in this phase include: 1) Designing a syllabus or semester lesson plan that includes the learning materials to be taught, the teaching methods to be used, and the evaluations to be conducted, 2) Preparing teaching materials: preparing teaching materials that align with the competencies and learning objectives, 3) Determining the learning media and resources: deciding on the instructional media to be used, 4) Creating a schedule and lesson plan: setting the lesson schedule, the number of teaching hours, and the lesson plans to be executed.
Here is an overview of the general strategies for graphic design learning materials, which have been prepared to facilitate this research and development:

Table 1. Graphic Design Course Learning Strategies

Time Allocation	Learning Materials	Methods	Media
Sessions 1,2	Graphic design history and its development	Lecture	PresentationSlides Textbook
Sessions 3,4	Scope of graphic design	Discussion	Textbook
Sessions 5,6	Graphic designtechnology	Individual assignments	Textbook
Sessions 7 - 9	Principles of the graphic design industry	Projects	
Sessions 10 -16	Graphic print product workflow	Projects	Textbook

3.2 Discussion

The research involves collecting initial data from students, lecturers, and design industry practitioners through methods such as discussions, interviews, and questionnaires regarding students' learning needs. The researcher identifies students' learning needs related to the field of graphic design. This includes learning preferences, the difficulty level of the material, and effective learning styles to help students achieve their learning objectives. Interaction with lecturers and design industry practitioners allows the researcher to understand their perspectives on the ideal curriculum, the competencies that students should possess, and the latest trends in the field of graphic design. This helps ensure that the developed textbook is relevant to both academic and industry needs. The research also gathers information from relevant literature reviews and book standards in the field of graphic design. This helps understand best practices in textbook development and ensures that the resulting textbook meets established quality standards. From the analysis of the collected data, the research identifies potential issues that need to be addressed in the development of the graphic design textbook, such as the gap between the curriculum and student needs, the adequacy of learning product content, and the alignment of learning objectives with student needs. This identification and research process is based on learning and teaching theories, helping to identify student needs with a behavioristic approach focused on observing observable behaviour and positive reinforcement to strengthen desired responses, in line with [20], who emphasized learning as a change in behaviour triggered by external stimuli, such as reinforcement or punishment.

4. CONCLUSION

The development of a graphic design textbook is crucial to meeting students' needs, staying relevant to industry trends, and improving learning outcomes. The research, involving students, lecturers, and design industry practitioners, reveals a need for a textbook that aligns with current trends and addresses challenges faced by students. The involvement of lecturers and industry practitioners is essential for real-world insights and aligning learning materials with industry standards. Students also value effective learning methods like discussions, studio practices, and case studies. Structured field internship programs can provide practical experiences. Regular evaluations ensure relevance and meet student needs.

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