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Module development for effective teaching and learning in Art Education: A Narrative review

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ABSTRACT

This study aims to provide a narrative review of module development in art education to inspire educators in creating high-quality and creative learning materials for the current generation. The study employs an extensive literature review, examining key trends, theoretical foundations, and assessment strategies in existing module development research. It focuses on various module designs, subjects, and validation processes to gather relevant and impactful information. The findings reveal that learning theories such as constructivism, behaviorism, and social learning theory provide a robust foundation for module development in art education. Effective assessment strategies, including formative, summative, and self-assessment, are crucial in enhancing student learning and achievement. Additionally, integrating technology into module development significantly improves learning outcomes by engaging and motivating students. By offering comprehensive insights into the importance of module development, this research serves as a valuable guide for educators, researchers, and stakeholders in enhancing the quality of teaching and learning in art education.

Keywords: Module development, Effective Teaching, Art Education, Technology Integration and Assessment

INTRODUCTION

Art education, also referred to this study as Visual Art Education, is a crucial component of a comprehensive education system, providing students with opportunities to develop creativity, critical thinking, and problem-solving skills. Visual Art Education specifically focuses on the study and practice of artistic disciplines such as drawing, painting, sculpture, printmaking, and digital arts, emphasizing both theoretical knowledge and practical application. Despite the abundance of existing teaching and learning modules, there remains a significant need for the development of tailored and innovative modules in art education. Existing modules often lack the specificity required to meet the unique demands of art education, which requires a balance of theoretical knowledge, practical skills, and creative expression (Bahrum,Wahid and Ibrahim, 2017; Low, Balakrishnan, and Yaacob 2023; Farihah, Norawi, and Jahan 2021; Ghannad and Lee 2022). Furthermore, the rapid advancement of technology and evolving educational theories necessitate the continuous development of updated modules to ensure that teaching methods remain effective and relevant (Ghory & Ghafory, 2021).

This study aims to fill this gap by providing a detailed analysis of module development in art education, highlighting the importance of creating high-quality and creative learning materials that are aligned with contemporary educational needs. By examining trends, theoretical foundations, and assessment strategies in module development, this research seeks to inspire educators to design modules

that effectively enhance student engagement and learning outcomes in art education.

In recent years, there has been increasing interest in the development of teaching and learning modules in art education with the aim of improving the quality and effectiveness of art teaching. This is evident from the growing number of studies on art module development from 2006 to 2024 (Figure 1). Figure 1 illustrates a significant upward trend in art education module development research over this 18-year period, indicating a growing interest and investment in this area. The data suggest a steady increase in the number of studies conducted each year, reflecting heightened awareness and recognition of the importance of structured module development in art education. This figure also visualizes highlight the historical development and increasing trend of research in module development over the years and allows for an exploration of how the field has evolved and expanded, demonstrating a growing emphasis on effective teaching, and learning practices over time.

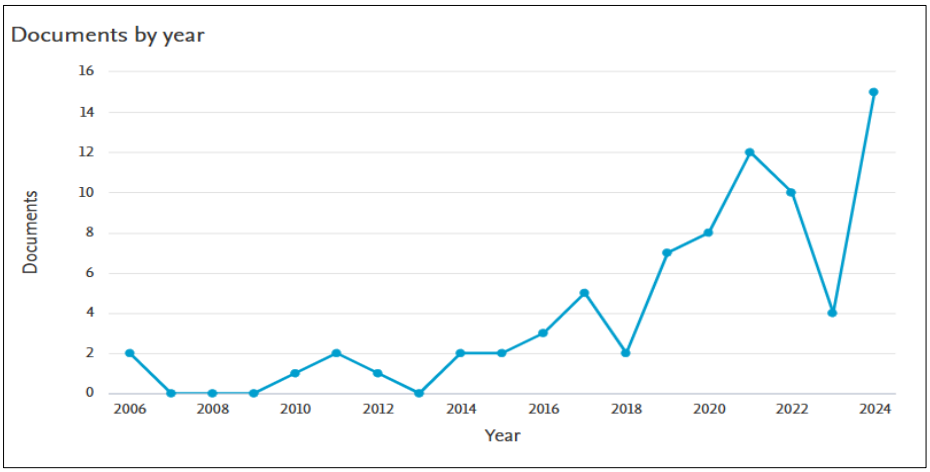

Figure 1. Trends in the Improvement of Art Education Module Development research from 2006-2024.
Source: Scopus database

Using the keywords "module" OR "modular" AND "art education" a total of 61 module development studies were identified from the Scopus database as of November 24, 2024. China emerges as the leading country in module development research with 24 studies, followed by Malaysia with 8 studies, Spain with 5 studies and South Africa with 4 studies. Additionally, countries such Australia and United States contribute 3 studies, while Belgium, Denmark, France, Hungary, Ireland, Norway, Pakistan, Singapore, Slovakia, South Korea, Taiwan, Turkey, United Kingdom have each contributes one study (Figure2). Figure 2 illustrates the global distribution of research contributions, emphasizing China's prominent role in this field. This geographic distribution highlights the recognition and value placed on module development in art education across both developed and developing countries. The contributions from a diverse range of countries underscore a widespread awareness of the importance of using structured modules in the art education learning process.

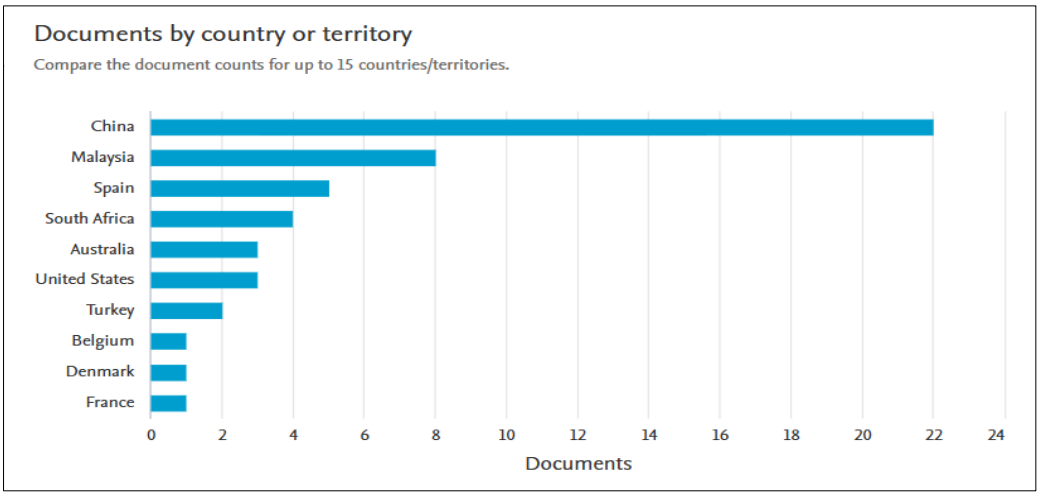

Figure 2. Art Education Module Development Research by Country
Source: Scopus database

Teaching and learning modules provide a structured approach to delivering educational content and guiding students through the learning process, helping them understand the subject being studied (Sidek Mohd Noah & Jamaludin Ahmad, 2005). These modules usually include a set of learning objectives, teaching materials, and assessment strategies designed to help students achieve specific learning outcomes (Guido, 2014). In art education, modules can take various forms, including studio-based, research-based, or history-based learning, depending on the intended learning outcomes.

The development of an effective art education module is a complex process that requires careful planning, collaboration, and evaluation. To ensure that the developed module successfully achieves its goals, the process must be based on sound educational theory and designed using appropriate teaching strategies. Theory serves as the backbone of a module's strength (Sidek Mohd Noah & Jamaludin Ahmad, 2005). Additionally, modules need to be carefully evaluated to ensure they are valid, reliable, and effective in promoting student learning (Russell, 1974; Sidek Mohd Noah, 1977; Jamaludin Ahmad & Sidek Mohd Noah, 2001).

This narrative review aims to provide an overview of the development of teaching and learning modules in art education. It explores the different types of modules used and the theories that underpin their development. The review also emphasizes the importance of setting clear learning objectives, designing teaching materials that support those objectives, and assessing the validity and reliability of modules. Furthermore, it discusses the need for continuous assessment and appropriate modifications to ensure the effectiveness of art education modules. By offering a comprehensive overview, this research aims to equip educators with the tools and knowledge needed to create effective modules that improve student learning outcomes.

METHODOLOGY

This study involved conducting a narrative review of literature across several databases, including Scopus, Google Scholar, and ERIC, using keywords such as "Art Education," "Teaching and Learning Modules," "Module Development," "Learning Outcomes," "Educational Theory," "Assessment Strategies" and "Technology Integration". A narrative review was conducted in this study to provide a deeper and more comprehensive understanding of module development in art education, emphasizing relevant contexts, theories, and practices, while allowing the authors to encompass a variety of perspectives and approaches that are not necessarily confined to systematic methodologies. Firstly, this review covering publications from 2000 to 2024 in both English and Malay languages. Secondly, relevant studies were identified and analyzed based on themes including module development, types of modules, theoretical applications, impacts and reliability, and module assessment. Finally, to ensure comprehensive coverage, attempts were made to obtain full-text articles through email correspondence

with authors when necessary. The evaluation of modules focused on their design, implementation, and assessment, with particular attention to their relevance, effectiveness, innovation, and adaptability in various educational contexts. This approach provided a detailed understanding of the current trends and best practices in module development for art education, emphasizing the need for continuous professional development for educators to enhance teaching and learning outcomes. The following is a summary of this comprehensive narrative review the search strategy implemented:

Table 1. The search strategy summary

Citeria	**Description**
Types of review	Narrative review
Date of search	November 24, 2024
Databases and other sources searched	Scopus, Google Scholar, and ERIC, Book, Dissertation, Unpublished sources
Literature Type	Journal (Article), Conference, Book
Keyword used	Art Education, Teaching and Learning Modules, Module Development, Learning Outcomes, Educational Theory, Assessment Strategies, Technology Integration, and Professional Development.
Timeframe	2006-2024
Language	English and Malay

LITERATURE REVIEW

The development of art education modules has evolved with technological advancements, enhancing accessibility, interactivity, and engagement. Several studies highlight the role of digital platforms and interactive systems in improving art learning experiences. For instance, Wu and Xu (2022) explored the integration of mobile learning applications in art education, demonstrating the feasibility of a mobile-based interactive system for university teachers. Similarly, Ramli et al. (2019) emphasized the effectiveness of interactive multimedia learning modules, developed using the ADDIE model, in enhancing students' understanding of the Elements of Art. Furthermore, Fu et al. (2024) introduced an AI-driven sketching system, incorporating image transformation and style transfer, to support personalized learning and creative exploration. These findings underscore the importance of leveraging digital tools and artificial intelligence to optimize module development in art education.

Beyond technological integration, various approaches to module development in art education emphasize pedagogical frameworks, structured learning methodologies, and creative engagement. Research on studio-based learning, problem-based learning, and interdisciplinary approaches highlights the need for diverse and adaptable module structures to cater to different learning styles and educational objectives (Li, 2017; Sun & Yang, 2022). Additionally, assessment strategies and instructional design models play a crucial role in ensuring that modules effectively enhance student learning outcomes. Given these perspectives, this narrative review synthesizes existing literature to provide a comprehensive understanding of the principles, strategies, and challenges in art education module development, offering insights into best practices and future research directions.

RESULTS

Designing Innovative Learning Materials for Art Education

In today's rapidly evolving educational landscape, high-quality and creative learning materials are essential in fostering meaningful and engaging learning experiences in art education. A well-designed module should not only cover theoretical knowledge but also encourage critical thinking, creativity, and problem-solving skills among learners (Istiana, 2024; Tampubolon & Sipahutar, 2024). Research

suggests that modules integrating innovative teaching strategies, interdisciplinary approaches, and real-world applications significantly enhance student engagement and learning outcomes (Wang et al., 2023). Furthermore, with the advancement of digital technology, incorporating multimedia elements such as interactive exercises, virtual galleries, and online collaborative tools can provide a more dynamic and immersive learning experience (Papasarantou et al., 2023).

Aligning learning materials with contemporary educational needs requires continuous evaluation and adaptation to current pedagogical trends and student learning preferences. Effective module development must consider learner diversity, accessibility, and curriculum relevance, ensuring that the content remains inclusive and adaptable across different learning environments (Mahali, 2024; Masruroh et al., 2024). Moreover, fostering creativity through personalized and student-centered learning approaches has been shown to improve motivation, self-expression, and artistic confidence (Wang, 2023; Arif 2021). Therefore, developing modules that integrate emerging educational theories, technology-driven instructional methods, and hands-on experiential learning is crucial in preparing students for the evolving demands of the art and design industry.

Module Development

The development of teaching and learning modules in art education is an important resource for ensuring effective teaching. The development process involves the creation of teaching materials that are aligned with learning outcomes, consider the needs and learning styles of students, and incorporate best practices in module development. The process requires systematic planning and consideration of the factors that affect student learning outcomes. There are several processes that can be used as a guide in the development of Art Education modules. The module development process proposed by Sleeman and Rockwel (1976) (figure 3) begins by identifying the target group or students by considering their age, intelligence, background, and socio-economic factors. Then the next process is to choose concepts, principles, skills, and procedures that will be included in the module. After that, the objectives to be achieved at the end of learning need to be determined.

In fact, the creator of the module also needs to plan assessment questions to test the level of student achievement, choose the content of the appropriate module, the selection of learning strategies that can interest students and the selection of media that can help strengthen student understanding. Finally, the created modules need to be compiled and put together for the purpose of validity and reliability before being tested for effectiveness through experimental tests (Sharifah Alwiah Alsagof, 1981; Sidek Mohd Noah & Jamaludin Ahmad, 2005).

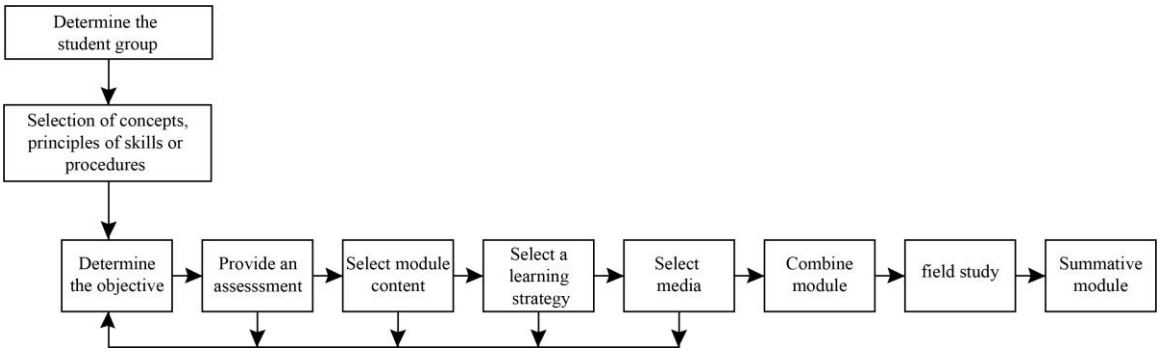

Figure 3. Flowchart of the Module Development Process by Sleeman and Rockwell 1976
Source: (Sharifah Alwiah Alsagof, 1981)

The second module development process (figure 4) was introduced by Russell (1974). The process begins with the determination of learning objectives and the determination of measurement items to assess student understanding after using the module. In addition, module development must be designed based on the analysis of student achievement. The modules that are built can be designed with different approaches based on the student's own achievements and can be followed by them from various levels, i.e., excellent, average, or weak students. Then the modules are arranged and adapted to specific media for the strengthening and understanding of the students who will use the module. After

that, the draft module that has been built is tested for validity and reliability. The final process is to conduct experimental tests to determine its effectiveness.

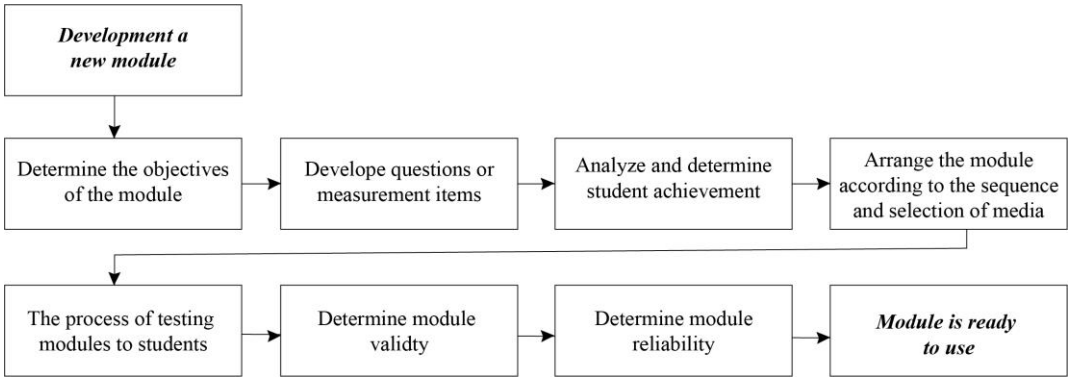

Figure 4. Flow Chart of the Module Development Process by Russell (1974)

The third module development process is the Sidek Module Development model as illustrated in figure 5. This model, which was introduced in 2001, has two different phases, i) the module draft preparation phase and ii) the module trial and evaluation phase. The first phase has nine steps that start with the construction of module goals and end with the consolidation of module drafts. At this stage, the built module has not yet been proven to be valid and reliable. While in the second phase, this model has four subsequent steps. At this stage, the built module will go through the process of validity and reliability through pilot testing. If at this stage the module is judged to be of poor quality, then the process of re-evaluation of the module will take place. If the evaluation of the module proves to have a high value of validity and reliability then the module is considered as a complete module (Sidek Mohd Noah & Jamaludin Ahmad, 2005).

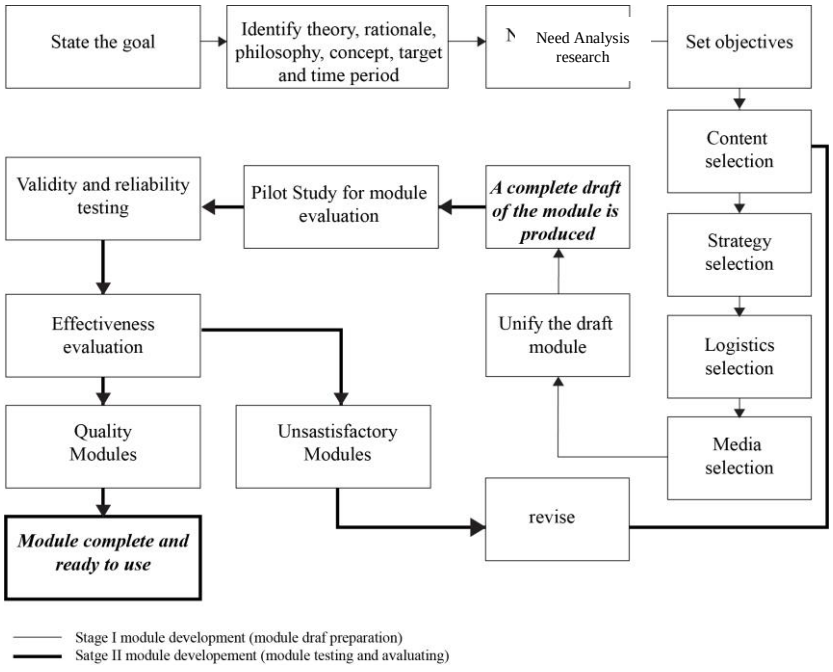

Figure 5. Sidek Model Development of Module
Source: Sidek Mohd Noah & Jamaludin Ahmad (2005)

In addition, educators can also refer to the module development process introduced by Meyer 1986 in the design and development of art modules. Meyer's model has 11 steps that begin with an assessment of the needs of developing a module and end with a trial of the module on the target group. If the results of the findings and feedback received are not satisfactory, the module needs to go through

a revise process. Mayer's module design and development approach were also applied in previous studies in module development by (Kiong et al., 2012, 2021; Kumaran et al., 2020; Tze Kiong et al., 2013). The steps found in Mayer's model are very suitable in the development of modules of any field. The modules produced will also be of high quality if the steps recommended in this model are followed perfectly (Kumaran et al., 2020).

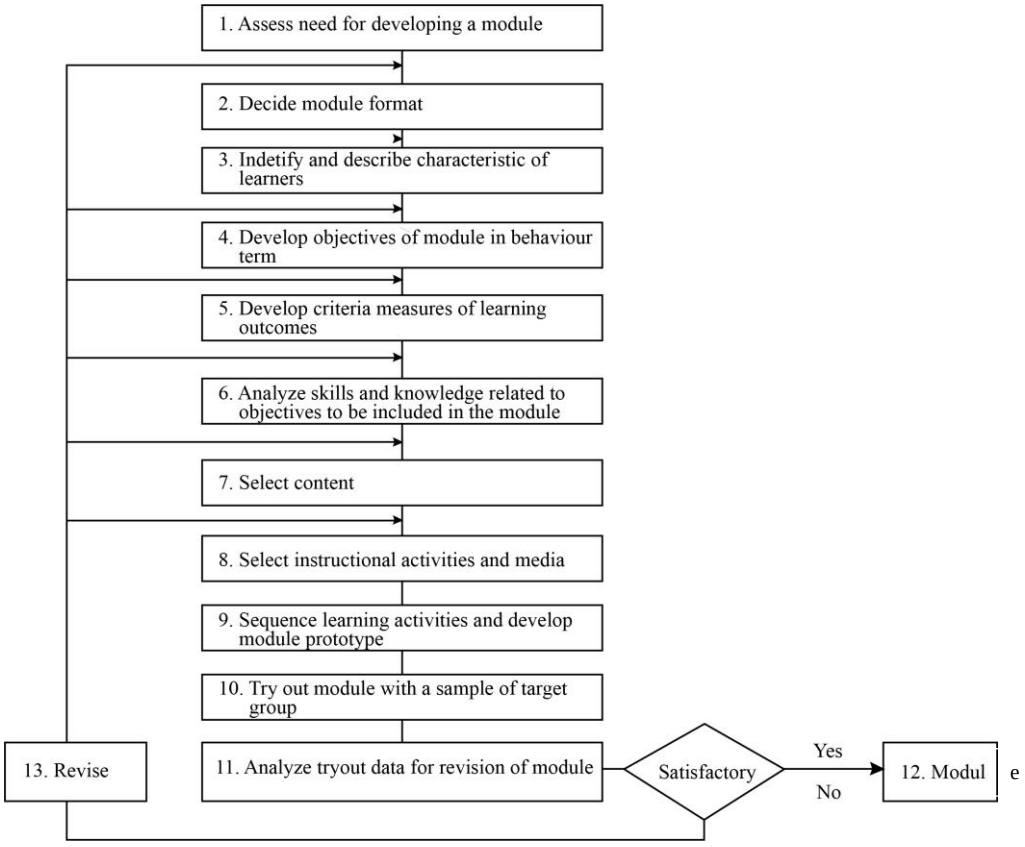

Figure 6. Flow Chart of Module Design and Development
Source: Meyer G.R. Mayer (1986)

Beside the design methods refined before, there is another method that can be used as a guide in module development by Gagne et al. (2005). There are six steps in the development process that have been introduced (figure 7). The module development process was introduced is started by translating the module development goals into the main objectives of the module, the second is by determining the main unit or topic's teaching, the learning outcomes and the time that will be allocated to each unit in the module. After that, the content of the module continues by stating that the learning outcomes of each unit must be in line with the objectives. Next, the content must be broken down according to lesson units and learning activities. The next process is to develop the specifications or characteristics of the module lessons and appropriate learning activities. The development process is concluded by making the assessment design specification for students to achieve the main goal of the designed module.

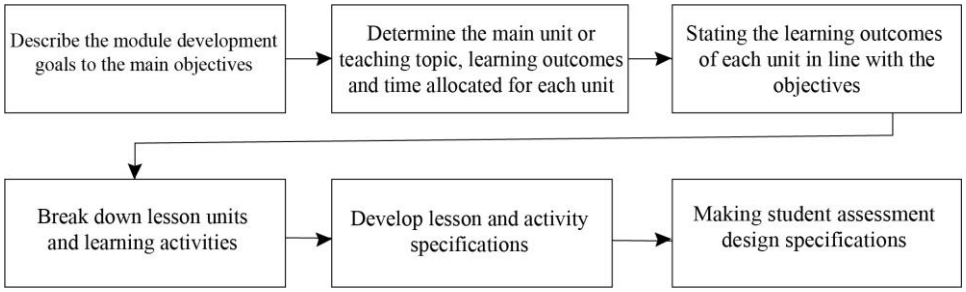

Figure 7. Module Design and Development Steps
Source: Gagne et al. (2005)

Although the development of the teaching and learning modules that are produced need to go through a long-term process to ensure the quality of the resulting modules, the experience can give educators the opportunity to create more effective and interesting learning for their students (Kiong et al., 2021). In addition, the use of teaching that has a variety of approaches in the developed modules can help educators address the various needs of their students and ensure that all students get an effective impact. This can be seen in a module development study that uses a combination of self-teaching approach and digital application in learning able to make it more effective with two-way communication (Tusiime et al., 2019). By designing modules that combine different teaching modes such as visual, auditory, and kinesthetic, educators can help students with different learning styles in achieving their learning outcomes (Sapon et al., 2023).

Although module development has its importance, the development process also faces various challenges. Effective and engaging module development requires considerable time, resources, and expertise. In addition, in an educational environment that is constantly changing with new trends and technologies, educators may face difficulties in keeping up with the latest developments and adopting the best methods in module development. However, by taking advantage of professional development opportunities and resources, educators can continue to improve their knowledge and skills and improve the quality of teaching and learning modules in art education. The selection of various approaches to the module development process presented (Table 2) is dependent on the educators to follow the steps that have been suggested to guarantee the quality of the modules produced (Sidek Mohd Noah & Jamaludin Ahmad, 2005). Ultimately, effective module development is essential in preparing students with the skills and knowledge to succeed in the arts and go further in the field.

Table 2. Comparison of Module Development Process Based on Various Model Approaches

No	Development Process	Russell (1974)	Sleeman & Rockwell (1976)	Meyer (1986)	Model Sidek (2001)	Gagne et al. (2005)
1	Goal setting				√	
2	Need Analysis Study			√	√	
3	Determinations of the target group/ students		√	√	√	
4	Selection of concepts, skill principles, procedures, or module format/time/theory/rational/philosophy		√	√	√	√
5	Objective determination	√	√	√	√	√
6	Test preparation/ questions development/ student evaluation	√	√	√		√
7	Determination of measurement criteria			√		
8	Selection of module content		√	√	√	√
9	Selection of learning strategies/ lesson plans		√		√	√
10	Selection of logistics (other module's tools)				√	
11	Determination of learning activities			√	√	√
12	Media selection	√	√	√	√	
13	Organize modules	√	√		√	
14	Pilot study using the module				√	
15	Module evaluation/ field study/ test the module on a sample	√	√	√	√	
16	Analyze and determine student achievement/skills and knowledge/measure learning outcomes/effectiveness assessment	√		√	√	
17	Determination of validity	√			√	
18	Determination of reliability	√			√	
19	Evaluation or revise			√	√	

Types of Art Education Modules

Art education modules come in many forms and types, each with its own characteristics and benefits. The type of module that the educator chooses to use depends on the learning outcomes, student needs, and the educator's teaching goals. Understanding the different types of art education modules and their applications is essential in designing effective and engaging learning experiences for students.

One type of art education module is a project-based learning (PBL). In this type of module, students carry out practical projects that involve research, collaboration, and critical thinking. Project-based learning modules are effective in helping students develop problem-solving skills, creativity, and collaboration, as well as content knowledge. In most of the past studies in the development of PBL modules also showed positive feedback towards the use of modules that use the PBL approach in making Batik Pelangi Visual Arts Education (Maaruf & Basri, 2019a). While a study (Snepvangers & McAlpine, 2006) using an online PBL Module approach to teach Art and Design Education has found that the effectiveness of PBL learning is dependent on the teacher's own way of handling and this approach has also enabled lessons to learn independently and reduce dependence on the teacher

Next, another type of module in Art Education is the skill building module. In this type of module, students learn specific skills or techniques related to a particular medium or discipline (Priyanto, 2020). The skill building module is essential in providing students with a solid foundation of technical skills that they can use in their artistic practice. This statement is in line with previous studies such as (Xu et al., 2021) showing that students successfully increase their interest, learning efficiency and artistic creation ability effectively through the application of the developed drawing module. In addition, the creation of the Visual Arts Language Module (BSV) as a teaching and facilitation material in helping students build cognitive skills using BSV in the basic topics of art and design principles of Visual Arts Education has proven a good achievement after applying the module. (Darliz Jenal & Harozila Ramli, 2020).

In addition to project-based learning modules and skill building, there are other types of art education modules that can be used in teaching. For example, inquiry-based learning modules involve questions or problems being presented to students and allowing them to investigate and explore relevant solutions. Inquiry-based learning modules can help students develop critical thinking, research and analytical skills, as well as foster creativity and independence in generating ideas and problem solving. Several studies in the development of inquiry-based Art Education modules such as the study of the development of Bijak Seni Module (Harrinni Md Noor & Irma Rahayu Ibrahim, 2019) are designed to encourage students to think critically in the production of works. In addition, the module can improve drawing and painting skills and is able to help student's complete complex fine art questions with inquiry and computational thinking methods such as figure 9 in generating ideas to produce works of painting and painting. While the development of the inquiry-based "steAm" Module in the study (Suraya Bahrum et al., 2018) was designed to see the applicability of Science, Engineering Technology and Mathematics combined in Visual Arts Education or known as (STEAM). The development of this type of module also in line with 21st century learning has had a positive impact on the implementation of the integration of STEM and Visual Arts Education because it emphasizes collaborative communication learning, problem solving processes and student-centered learning in exploration (Suraya Bahrum et al., 2018).

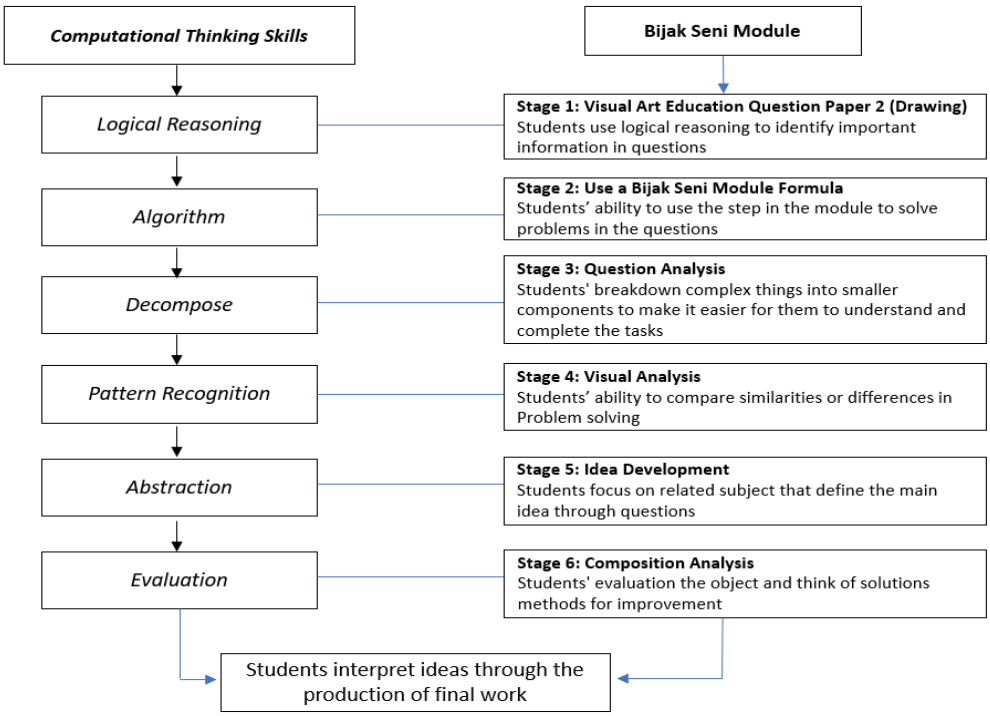

Figure 9. Learning Flow Chart Bijak Seni Module
Source: Modified from (Harrinni Md Noor & Irma Rahayu Ibrahim, 2019)

Another type of module is the digital media module. With the increasing use of technology in education, the digital media module has become an important component and received a good response in applying it in Art Education. This is clearly proven when there are many previous studies (Faizura Nur Mohamed Jamion et al., 2020; Guo et al., 2020; Harozila Ramli et al., 2019; Mao & Zhang, 2021; Maaruf et al., 2019) have develop modules with the use of technology. This type of module includes instructional videos, online tutorials and digital tools and resources that allow students to explore and experiment with different mediums and techniques. Previous studies related to the development of online art modules by (Wu & Xu, 2022) have designed a curriculum and developed a teaching platform "Moodle" that has a special Art Design Basics course for teaching teachers. This study has shown the development of the Moodle module, which is a mobile online learning system application that has various functions and interesting content such as creating art, watching learning videos, learning activities, sharing experiences and information and being able to exchange messages between users.

In addition, the use of technology using learning video and interactive approaches in the I-GEP module has emphasized the design of interesting info graphics to help students understand the topic of art elements and design principles in Visual Arts Education (figure 10). Several elements such as symbols to help students remember art notes, teacher, and student characters, learning videos, and the characteristics of 21st century learning activities namely Gallery Walk have been emphasized in the module (Mohammad, 2019). The findings of the study show that there is a significant improvement in student achievement after using the I-GEP module where it is proven that no student has failed in the assessment test after following its use. In addition, the findings also show that there is an increase in post-test scores by both male and female students. However, female students are more motivated after using the module (Maaruf et al., 2022; Mohammad, 2019). This shows that digital media modules can be particularly effective in attracting the interest of technology-savvy students and students who prefer using digital tools and resources rather than traditional art materials.

Figure 10. I-GEP Module Content Design that has Interesting Infographics, Symbols, and 21st Century Learning Activities
Source: (Mohammad, 2019)

Although there are advantages to the variety of module types discussed, it still has certain limitations. For example, project-based learning modules may be time-consuming and require significant resources and planning. Skill building modules, on the other hand, may be less appealing to students who prefer a more creative and open learning experience. Therefore, the thing that needs to be considered in the development of the module is to consider the needs of the educator himself and the existing experience of the students so that the module produced is suitable for use in their learning (Siti Rohana Salleh & Nordin Mamat, 2020). The study by Nor Azizah Mohammad & Suziyani Mohamed (2020) also states that an effective teaching method to help teachers deliver learning is by preparing a complete learning module containing activities that are suitable for students because the guidance in the module helps teachers always be ready to continue applying it to students. Additionally, incorporating different types of modules can help educators address the diverse needs and learning styles of their students, and keep them engaged and motivated to learn. Finally, understanding the different types of art education modules and their applications is important in designing effective and engaging learning experiences that can indirectly improve student learning outcomes.

Theory Application

The application of theory is an important component in the development of effective modules in art education. Theories provide a framework for understanding the complex processes involved in learning and can help educators design sound instructional approaches and evidence-based practices. By incorporating theory into the design of art education modules, educators can create interesting and effective learning experiences in promoting student learning outcomes. Schunk (2020) argues that the main purpose of learning theory is to improve teaching and effective teaching requires the best theoretical perspective. for the type of learning encountered and its implications for teaching. Harasim (2017) also believes that theory is important in educational practice because by understanding theory it can help educators improve and practice in practice, reshaping, refining work and being used as a tool to translate research findings into recommendations for educational practice.

A theoretical framework that is commonly applied in art education is constructivism theory. According to this theory, learning is an active and constructive process, where students build new knowledge and understanding based on existing knowledge, experience and influence from the environment and ultimately lead to behavioral changes. in terms of cognitive, effective, and psychomotor (Mustafa & Roesdiyanto, 2021; Prater, 2015). Constructivism also explains the learning process of how knowledge is organized in the human mind where the knowledge cannot be transferred perfectly by the instructor, rather the students themselves need to build knowledge from their own experiences (Leng et al., 2012). In art education, constructivism can be applied through an inquiry-based learning approach, where students are encouraged to explore and experiment with different mediums and techniques and create their own unique artistic expression (Tomljenović & Vorkapić, 2020). By applying constructivist theory in module development, educators can create learning experiences that are interesting, authentic, and relevant to students' interests and experiences.

In art education, the application of a theoretical framework like the social learning theory proposes by Albert Bandura can offer significant benefits. This theory underscores the role of social interaction and environmental influence in learning and individual growth. It highlights that individuals acquire knowledge through direct observation of peers, parents, teachers, or indirectly via media (Bandura, 1977). Art education can integrate the social learning theory through project-based learning, facilitating collaborative creative projects, idea sharing, and mutual feedback among students (Snepvangers & McAlpine, 2006). This approach can be enhanced by incorporating technology and media, such as showcasing relevant examples or tutorials. Notably, a prior study by Liao and Ho (2011) applied the social learning theory to art education by utilizing online observational learning through Cloud and Web computing systems (figure 11), demonstrating a positive impact on students' art learning. This approach, when integrated into module development, enables educators to craft learning experiences that nurture creativity, critical thinking, and collaboration among students.

Figure 11. Video of Simulation of the Note-taking Process in the Cloud Observational Learning System for Art Education Through E-Learning in Taiwan.
Source: (Liao & Ho, 2011)

Furthermore, the theoretical framework that can be applied in the development of art education modules is the theory of multiple intelligences. The theory introduced by Gardner (1983) explains that individuals have different types of intelligence, such as verbal-linguistic, logical-mathematical, visual-spatial, kinesthetic-body, musical, interpersonal, and intrapersonal intelligence (Santrock, 2008). According to this theory, teachers also need to create differences in teaching needs based on the diversity of student intelligence. There have been several previous studies in the context of visual arts conducted to explore students' attitudes towards the theory of multiple intelligences (Abdelhak & Romaissa, 2022), its application in learning art history (Erkan, 2012) and to investigate the view of art teachers on the effects of the theory of multiple intelligences in student creativity in art (Castillo et al., 2016; Fernández et al., 2019; Fuentes, 2018; Garin Vallverdu et al., 2016; Jung & Chang, 2017). A study by Tetikci et al. (2023) has found that teachers lack awareness and do not have extensive knowledge about the theory of multiple intelligences due to the limited application opportunities given at the school level. Therefore, to increase awareness among educators of the merits of this theory, educators can create art education modules by incorporating activities that cater to a variety of inclusive intelligences and meet the diverse needs and learning styles of their students.

In addition, ecological systems theory proposed by Bronfenbrenner can also be applied in the development of art education modules. This theory suggests that human development is influenced by the interaction between individuals and their environment (Crawford, 2020). In art education, the application of this theory in learning is a cross-curricular approach because this theory can be applied by combining activities that involve students in creating art that reflects their environment, such as creating art inspired by local flora and fauna, or by creating art that evokes awareness of environmental issues (Peppler et al., 2023) Although the use of this theory is still limited in the context of art research, its diverse approach can be presented in a wider educational discourse.

Another theoretical framework that can be applied in the development of art education modules is cultural historical activity theory or CHAT. This theory emphasizes the role of cultural and historical context in shaping human activity and understanding (Cliff et al., 2022). In art education, this theory can be used in modules to explore the cultural and historical contexts in which different art forms have emerged and developed, and to help students develop a deeper appreciation and understanding of the

role of art in different cultures and societies. In the context of Art Education in Malaysia, when there has been a change in the curriculum in the national education system to implement the Secondary School Standard Curriculum (KSSM) in the pursuit and learning of Visual Arts Education (Curriculum Development Department, 2018; Iktisas Circular No. 6, 2019) there are many fillings involving the culture and history of society in Malaysia as well as in the west has been contained in the latest secondary school curriculum measures (Harleney Abd Arif et al., 2018; Md Nasir Ibrahim et al., 2014, 2019, 2020). Studies by Du (2020), Dyck (2021), Maaruf et al. (2013) and Maaruf & Basri (2019) support the culture-based art learning approach in a society. Therefore, a module that applies this theory can be thought of by educators to further develop cultural and art history learning for students.

Although there are various approaches to applying theory in the development of art education modules, it can be something complex and make it difficult for educators to apply it effectively in teaching and learning practice (Gerber & Eybers, 2021; Oreski et al., 2022; Trisnawati & Sari, 2019; Xiao et al., 2020). In addition, the needs and learning styles of students vary, making it challenging for educators to design attractive and effective modules for all students (Kamsin et al., 2022; Purwasih et al., 2022). To overcome these challenges, educators must carefully consider learning outcomes, instructional goals, and the needs of their students when using theory in module development.

In conclusion, the application of theory in the development of art education modules can help educators create interesting, effective, and inclusive learning experiences for their students. By combining theories such as constructivism, social learning theory, multiple intelligence theory, cultural-historical activity theory, and ecological systems theory, educators can create art education modules that promote student learning outcomes and foster creativity, critical thinking, and appreciation for diverse culture and environment.

Validity and Reliability

Module validity and reliability are important concepts in module development research and evaluation. In developing a module, the validity process needs to be implemented where it refers to a measurement tool (Ahmad & Noah, 2001) or an effort to accurately measure the content or items in the measurement (Mohd Majid Konting, 2005; Murphy Charles O., 1988). While reliability refers to the consistency and stability of measurement or evaluation tools over time and across different contexts (Sidek Mohd Noah, 1997). In developing an art education module, validity and reliability are important considerations in ensuring that the module is effective in achieving the desired learning outcomes.

As an alternative, validity in module development can be ensured by determining the validity of the module's content itself. Rusell (1974) suggested five conditions that must be complied with to ensure that the module developed can meet the validity, i) the module must meet the target population, ii) the teaching situation or the method of implementing the module must be satisfactory, iii) the time taken to complete the module must be sufficient, iv) the module must succeed in improving student achievement performance and v) the module must succeed in changing the student's attitude towards excellence. Hence, from this requirement, a questionnaire instrument was developed (figure 2) (Rusell, 1974) and was translated into Malay and made into a Likert scale item by Jamaluddin Ahmad (2002) for the purpose of obtaining module validity from module experts.

Table 2. An example of a module content validity questionnaire

Bil.	Statement	Scale options				
1	The content of this module meets its target population	1	2	3	4	5
2	The content of this module can be implemented perfectly	1	2	3	4	5
3	The content of this module corresponds to the time allocated	1	2	3	4	5
4.	The content of this module can improve student achievement performance	1	2	3	4	5
5.	The content of this module can change the attitude of students towards excellence	1	2	3	4	5

Scale Interpretation: 5- Strongly Agree 4-Agree 3- Uncertain 2- Disagree 1- Strongly Disagree
*** Source:** Russell (1974) and Jamaluddin Ahmad (2002)

To determine the validity calculation for module content based on the instrument above, the formula for calculating the percentage of module validity achievement is percentage calculation method or PCM (figure 12) by Tuckman and Waheed (1981) can be used. According to their view, the achievement of a total of 70 percent obtained can be considered to have mastered or reached a high level of achievement of the validity of the module. The total score given by the expert is divided by the maximum score (25) and then multiplied by the value of 100% to obtain the total percentage of validity. The score obtained is converted into decimal form for example 80 percent as 0.80. With that amount, achieving content validity of 80 percent can be considered to have a content validity coefficient of .80. This method is also supported and has been applied by previous studies such as (Armizawani & Sharul Effendy, 2021; Mohd Shapri & Che Ahmad, 2020; Nur Izwani & Che Nidzam, 2020; Nor Tutiaini, 2019) in obtaining the validity of the content of the built module.

$$\frac{\text{Total Experts' Score}}{\text{Total Maximum Score}} \times 100\% = \text{The Content Validity Percentage (PCM)}$$

Figure 12. Module Content Validity Coefficient Formula (Percentage Calculation Method)
Source: Tuckman and Waheed (1981)

Another method in determining the validity of module content is Content Validity Index (CVI) recommended by Lyyn (1986) as shown in table 3. CVI is a method of data analysis that is collected empirically in determining the validity of the content or instrument used in the study. Researchers can determine the validity of module content from the aspects of i) module presentation, ii) module content and iii) language presentation (Armizawani & Sharul Effendy, 2021). Previous studies using the CVI validation method in the validation of module content are align with Hamid et al. (2021), Idrus et al. (2022), Lau et al. (2019), Mahmud et al. (2022), Mensan et al. (2020), Ping & Osman (2019), and Setambah et al. (2017).

Table 3. The Scale, Formula, Procedure and Range Accepted for the CVI Method

		Details
1.	Scale	Ordinal Divide the ordinal scale into two groups for example scale 1, 2, 3, 4 so that 1 and 2 represent disagree and vice versa.
2.	Formula	CVI = n – numbers of evaluators who agreed; N – sum of evaluators
3.	Range accepted	N: 2-5 → CVI value: 1.00 6 → ≥0.83 7 → ≥0.86 8-10 → ≥0.78 Mean CVI is mean of all CVI for each item

While reliability refers to the stability, consistency, prediction, and accuracy of the instrument used when tested several times (Ghazali & Sufean, 2021). According to Sidek and Jamaludin (2005), the reliability of the module reflects the level of consistency of the steps contained in the module. In the development of art education modules, reliability can be obtained by conducting pilot tests. Pilot testing involves trying to use a module with a small group of students to identify any issues or challenges and make necessary adjustments before implementing it with a real group. This process can help ensure that the module accurately measures the intended learning outcomes and is effective in achieving the desired results. One way to measure the reliability of the module is to use SPSS statistical software to calculate the Cronbach's Alpha coefficient for each item and instrument used. Cohen et al. (2017) stated that there is an acceptable Cronbach's Alpha coefficient value score, as shown in Table 4:

Table 4. Reliability Scores

Level of Reliability	Cronbach's Alpha Score
Not Reliable	<0.6
Low	0.60-0.69
Enough	0.70-0.79
High	0.80-0.90
Very High	>0.90

In conclusion, ensuring the validity and reliability of art education modules is important to promote effective student learning outcomes. Educators can ensure validity and reliability by conducting pilot tests, using a variety of assessment methods, and implementing continuous assessment and evaluation. By prioritizing validity and reliability in the development of art education modules, educators can ensure that they are providing high-quality and effective learning experiences.

Module Evaluation

Module evaluation is a crucial post-development process aimed at aiding educators in gauging the efficacy of their teaching strategies within art education modules. This involves gathering input from students, instructors, and stakeholders to pinpoint strengths, weaknesses, and enhancement areas. The assessment helps identify effective elements driving student learning outcomes, prompting revisions for less effective components. It is essential to document this evaluation for feedback on module activities. Various evaluation methods are available, including questionnaires and activities within the module itself, as proposed by Russell (1974). Lee and Osman (2012) created a module evaluation questionnaire aligning with this notion, assessing module quality across multiple components, and measuring comprehension and efficacy. Factors influencing module development encompass student demographics, education level, cognitive abilities, background, content, effectiveness gauged through tests, training, and successful module completions (Russell, 1974).

According to Sidek Mohd Noah & Jamaludin Ahmad (2005), module evaluation encompasses three key stages (figure 5): module development, effectiveness assessment in a laboratory context, and evaluation in a real-world scenario. The first stage involves developing the module and assessing its validity and reliability, with a focus on achieving high levels of both. The second stage pertains to evaluating the module's impact within a laboratory setting, requiring designers to conduct experiments measuring variables like achievement, motivation, and self-concept. Previous studies by Manatad (2020), Mulhayatiah et al. (2019), and Sumarmi et al. (2021) employed experimental assessments to gauge student achievement across various module types. If the evaluation significantly improves variable scores from a statistical perspective, the module proves effective and suitable for recommendation. The third level of evaluation involves testing the module's real-world applicability to establish external validity. This step necessitates a research process utilizing an ex-post facto study design, facilitating a cause-and-effect comparative analysis of module effects between experimental and actual settings (Sidek Mohd Noah & Jamaludin Ahmad, 2005).

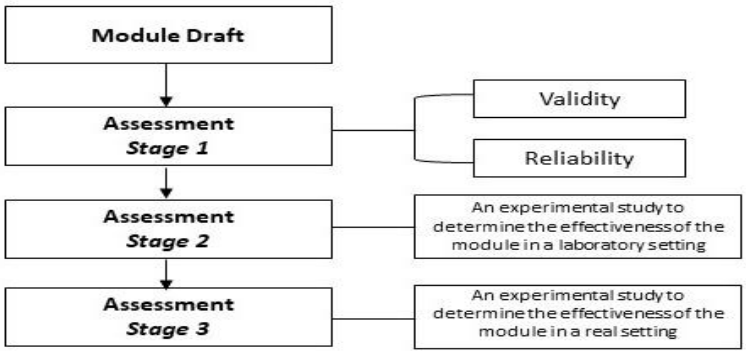

Figure 5. Module Evaluation Process

Apart from the assessment that has been explained before, module assessment can also be implemented using formative assessment. Formative assessment aims to provide feedback to the instructor as to the extent to which the program's impact meets the objectives throughout teaching (Cohen et al., 2017) It also involves continuous feedback and evaluation throughout the learning process that can help educators identify areas where students may experience problems and require additional support or modifications to the module as needed. Abdelmohsen (2020) in his study has implemented a formative assessment in applying the ADDIE model in the implementation phase of the module which aims to measure the development of students' critical thinking, collaboration and writing skills throughout the learning process. This type of assessment allows educators to adjust the module and ensure that it effectively meets the needs of their students.

Another method of assessing art education modules is with summative assessment. Summative assessment involves assessing student learning at the end of a module or course unit through a final project or exam (Abdelmohsen, 2020). This type of assessment can help educators determine whether students have achieved the desired learning outcomes and can provide valuable feedback about the effectiveness of the module. In addition, peer observation and feedback methods can also be used to evaluate modules (Simpson et al., 2019). Art educators can observe each other's teaching methods and provide constructive feedback on areas of strength and areas that may need improvement. This type of assessment can help educators identify new teaching strategies and techniques and provide opportunities for professional development.

Next, other valuable method for module evaluation involves student self-assessment, enabling educators to gather insights into module effectiveness and identify areas requiring additional support (Alturki & Stuckenschmidt, 2022; Aricò & Lancaster, 2018; Sadikin & Hardianti, 2021). Moreover, technology-based approaches like online surveys, social media platforms, and digital feedback tools can collect input from students and stakeholders (Alwan et al., 2007; Suhail et al., 2023). Art educators should adopt a holistic approach by considering student engagement, motivation, and overall satisfaction (Baartman & Prins, 2018; Ejsmont, 2020). Integrating these factors with traditional assessment methods offers educators a comprehensive understanding of module effectiveness, facilitating necessary improvements for enhanced student learning outcomes.

In general, module assessment is a dynamic and ongoing process involving the collection of feedback from various sources and using that feedback to enhance teaching and learning strategies. By employing various assessment methods and taking a holistic approach, art educators can ensure the effectiveness of their modules in promoting student learning outcomes and providing a high-quality art education experience. In conclusion, module assessment is a vital component in art education that helps educators ensure the effectiveness of their teaching and learning strategies in promoting student learning outcomes. By utilizing formative and summative assessment methods, educators can gather feedback from students and other stakeholders, make real-time adjustments to modules, and assess overall module effectiveness. Prioritizing module assessment allows educators to provide a high-quality and impactful art education experience for their students.

DISCUSSION

The overall idea presented in the module assessment discussion highlights the importance of continuous assessment and feedback in art education. By employing various assessment methods and taking a holistic approach, art educators can ensure their modules effectively promote student learning outcomes and provide a high-quality art education experience. However, it is important to recognize that module assessment can be a complex and challenging process. Gathering feedback from multiple sources, analysing data, and making necessary adjustments to modules can be time-consuming and resource intensive. Additionally, educators must balance the need for assessment with maintaining a positive learning environment and supporting their students (Dicks, Morra, and Quinlan 2020; Cameron and Bizo 2019).

Furthermore, the effectiveness of module assessment can also depend on the quality of assessment tools and methods used (Ryder, Smith, and Furlong 2023). Educators must carefully select appropriate assessment methods that align with learning objectives and student populations, providing meaningful and actionable feedback. Despite these challenges, the significance of module assessment

cannot be overstated. By prioritizing continuous assessment and feedback, art educators can continually improve their teaching and learning strategies and offer a high-quality art education experience to their students.

This study on the development of teaching and learning modules in art education provides a narrative overview of the main themes and considerations involved in creating effective art education modules. One strength of the study is its emphasis on the importance of assessment and continuous evaluation in module development. By offering various methods to assess module effectiveness, including peer observation and student self-assessment, this review underscores the importance of ensuring effective art education modules that promote student learning outcomes and deliver a high-quality learning experience.

Incorporating innovative learning materials in art education offers significant advantages in enhancing both teaching effectiveness and student engagement. While the previous section highlighted the importance of integrating multimedia and interdisciplinary approaches, it is crucial to examine how these elements can be practically applied in real-world teaching contexts. For instance, the inclusion of interactive exercises and virtual galleries not only provides a dynamic learning experience but also fosters a deeper connection between students and the content. These approaches enable students to visualize abstract concepts, allowing them to engage in critical thinking and problem-solving in a more hands-on and creative manner. However, challenges arise when adapting these tools to diverse student populations, as the varying levels of technological proficiency and access to resources can affect their learning experience. Educators must, therefore, carefully assess the needs of their students and ensure that the materials are accessible and inclusive. Furthermore, a shift towards student-centered learning can boost motivation and artistic confidence, but this requires ongoing professional development for educators to effectively design and implement such innovative approaches. By addressing these practical considerations, educators can create learning modules that are not only aligned with contemporary educational needs but are also adaptable to the evolving demands of the art and design industry.

However, this study could benefit from a deeper discussion of the challenges involved in module assessment. While it briefly acknowledges the complexity of the assessment process, it could provide a more detailed insight into the difficulties of collecting feedback from various sources and analysing data. Moreover, the study could explore potential biases and limitations of different assessment methods and offer guidance on overcoming these challenges. Another area for improvement in this study is discussion of various types of art education modules. While it provides a general overview of online and blended learning, it could benefit from a more detailed examination of the benefits and drawbacks of each module type and how they can be effectively integrated into the art education curriculum. Additionally, the study could explore other innovative approaches to module development, such as project-based learning and interdisciplinary collaborations.

With these limitations, this study offers a valuable resource for art educators seeking to create effective teaching and learning modules. By emphasizing the importance designing high-quality and creative learning materials, this research outlines the significance of a holistic approach to module development. Overall, this research provides a comprehensive overview of the key considerations involved in creating effective art education modules and serves as a valuable source for art educators looking to enhance their teaching and learning practices.

CONCLUSION

In conclusion, the development of effective teaching and learning modules is a complex and ongoing process that requires careful consideration of various factors. Throughout this comprehensive study on module development in art education, several key themes have emerged as critical to the success of art education modules. These themes include the importance of continuous professional development for art educators, the need for clear and measurable learning outcomes, the application of relevant theories, and the significance of meticulous assessment and evaluation.

This research provides a valuable resource for art educators seeking to create effective teaching and learning modules, emphasizing the importance of a holistic and collaborative approach to module development. By offering practical guidance and resources, the research outlines the potential of art

education modules to enhance student learning outcomes and provide a high-quality learning experience.

Overall, the study highlights the crucial role played by art education in nurturing creativity and critical thinking, serving as a valuable source for educators aiming to create impactful art education modules. Through ongoing professional development, thoughtful consideration of learning outcomes, and meticulous assessment and evaluation, art educators can create modules that effectively promote student learning and provide engaging and inspiring learning experiences.

FUTURE RESEARCH

In the pursuit of continuously enhancing and improving art education through the development of teaching and learning modules, future research can provide a significant contribution to this field. Firstly, comprehensive studies are needed to analyze the lasting impacts of successful art education modules on students' creativity and critical thinking development, offering invaluable insights for educators striving to create more effective modules. Secondly, future research should delve into the technological aspects of module development, exploring how technologies like virtual reality and computer-based art can enrich students' learning experiences and boost their creativity.

Additionally, emphasis on inclusive module design, considering cultural diversity and various abilities, is vital for comprehensive and effective art education. Exploration of intervention studies can provide practical insights into how specific modules contribute to improved learning outcomes. By conducting focused research, the art education community can continue to advance its role in nurturing creative, innovative, and critically minded future generations, thereby addressing upcoming challenges and opportunities.

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