EDUKASI: JURNAL PENDIDIKAN DAN PENGAJARAN
ISSN |2355-3669| E-ISSN |2503-2518|
Volume 12 | Number 1 | June 2025|

CULTURAL INCORPORATION INTO GRAPHIC DESIGN LEARNING IN SOUTH AFRICA: LEARNERS' VOICES

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Abstract
The incorporation of cultural traditions into education is gaining recognition worldwide. In South Africa, the Curriculum and Assessment Policy Statement for the subject of Technology encourages learners to explore the intersection of societal values, technology, community, and the natural world. This study investigated the impact of cultural traditions on the acquisition of graphic design skills among senior-level technology learners, guided by the social learning theory. We examined how cultural norms influenced graphic design education, focusing on a group of Grade 9 learners in the Mgwenya circuit in Mpumalanga Province, South Africa. The data were collected through qualitative semi-structured interviews and classroom observations. The analysis was conducted using the interpretative phenomenological analysis framework. The study found that while learners understood the subject content, they lacked awareness of graphic design methodologies and did not effectively incorporate cultural elements into their work. This was attributed to the absence of supportive environments, opportunities for cultural expression, and genuine appreciation for cultural diversity. This study highlights the vital role of cultural practices in graphic design education within the Technology curriculum, emphasizing the need for a more inclusive and culturally responsive approach.

Keywords: Creativity, cultural practices, cultural value, graphic design, Technology subject.

Introduction

The Technology curriculum places significant emphasis on the principles of graphic design. For instance, the Technology curriculum allows learners to demonstrate their ability to draw in a specific style. This is visual communication, which is also known as graphic communication. Teaching Technology emphasizes providing activities that enable learners to think laterally and develop original and appropriate solutions (Department of Basic Education [DBE], 2011). Graphics are about visualization and convey aesthetic standards and value systems (Yu, 2019). According to Chmela-Jones (2006), graphic design is a skills-based course, and implementing cooperative learning skills may be applied to both practical and theory courses. Similarly, visual learning is an approach to helping learners to communicate with imagery. This is the same as graphic design/communication. Skorokhod and Smola (2022) state that visual communication is transmitting information through visual language (images, signs, and infographics) and visual perception. In the graphic design environment, learners deal with vast quantities of visual information and have developed ways to process this information effectively (Chmela-Jones et al., 2007). Concerning graphic design, defined art within the context of graphics, Yu (2019) states that art is an educational tool that can facilitate knowledge transfer and science transfer to infants and schoolchildren. For example, the Technology curriculum requires

ISSN |2355-3669| E-ISSN |2503-2518|
Volume 12 | Number 1 | June 2025|

learners to showcase their design skills in the form of drawings, either 3D sketches (plans using oblique projection) and 3D sketches (plans using isometric projection) or 3D and 2D sketches (plans using first angle orthographic projection). From the above, graphic design in the Technology curriculum is fundamental in the teaching of the subject, hence this paper aims to explore the role of cultural practices in the drawing skills of learners. Design is an action that has structure within itself, and there is planning behind this structure, which covers all kinds of activities related to the organization of the structure that will be created; it is a creative action with a certain aim (Becer, 2001). In the Technology curriculum, creative thinking is a central aspect of teaching (DBE, 2011). We therefore believe that it has a strong influence on graphic design learning. According to Larraz-Rábanos (2021), creativity is essential for achieving effective and high-level learning. This view is supported by West et al. (2020), who found that visual aspects impact emotion and cognition, which in turn fosters deeper thinking and increased positive effect.

Graphic design education has been a part of the South African higher education sector for many years (Chmela-Jones et al., 2007). Graphic design has also been an established discipline at institutions of higher learning in other countries, such as the United States and Europe, since the 1950s. Nonetheless, there have been several challenges in the teaching of graphic design in South Africa and other countries. In China, for instance, graphic design appears to be based more on Western paradigms than on local traditional discourses (Yu, 2019). For instance, a study by Tian (2020) focused on dynamic visual communication image framing of graphic design in a virtual reality environment with no emphasis on cultural aspects, which only supports the Western perspective. In their study in South Africa, Chmela-Jones et al. (2007) showed a lack of basic art history knowledge (History as a school subject not being a prerequisite for the course), inadequate language proficiency (English is the language of instruction at the Vaal University of Technology, but seldom the mother tongue of the learners), and a lack of awareness of how the theory and practical subjects of the offering relate to each other despite the diverse cultural and socio-economic backgrounds of the learners who were part of the study. However, Blose and Gumbo (2019) in their study observed effortless teaching that reflected indigenous knowledge in graphic design. Furthermore, West et al. (2020) observe that research and practice increasingly recognize that visual design does impact many aspects of the learning experience.

Even so, we still maintain that the teaching of the Technology curriculum, especially graphic design, does not include basic cultural skills that may assist in the successful teaching of graphics. Chmela-Jones et al. (2007) observed a weak examination for one of the modules in the graphic design stream at the Vaal University of Technology in South Africa. This trend is also true at the school level. Therefore, we explore their study to contest that teaching through visual learning and cooperative learning would be better options. Bulduk (2010) emphasizes these aspects and says that the graphic design skills of learners can be improved by expressing their thoughts visually in a proper way only when they can perceive what they see by reflecting on and drawing it. For instance, Drucker (2020) highlights that visual expressions serve not only as representations of knowledge but also as primary modes of knowledge production. West et al. (2020) emphasize that visual aesthetics can benefit learners when tailored to provide a positive emotional experience. Teachers could select and incorporate excellent traditional graphics into their lectures when teaching visual communication. Like visual art, incorporating traditional graphics into the curriculum can help guide artistic creation, inherit local art, enrich human culture, introduce traditional technology, cultivate design ideas, inspire learning enthusiasm, and cultivate interdisciplinary talents (Yu, 2019). Despite the studies reflecting on cultural

ISSN |2355-3669| E-ISSN |2503-2518|
Volume 12 | Number 1 | June 2025|

practices, teaching graphic design still lacks the integration of those aspects. With a history of artistic design spanning thousands of years, China has abundant traditional graphic resources (Yu, 2019).

Meyer (2008) claims that by emphasizing the importance of cultural sensitivity in the classroom from the beginning, teachers can more effectively – and more efficiently – increase the value of graphic design as a social and cultural facilitator. Meyer (2008) further states that design plays a vital role as a contributor to arts and aesthetics, but it also acts as a facilitator of culture and society on a global scale. For instance, according to the Curriculum Assessment Policy Statement (CAPS) for Technology in South Africa, sketches are the most effective way of communicating design ideas. This is especially pertinent in our multilingual society. The language of graphics transcends spoken language and is generally unambiguous once the learners become familiar with the drawing conventions. In essence, the design reflects multicultural aspects of the Technology curriculum. However, the question is how well the learners understand and implement their cultural graphical practices in the learning of graphic design. Based on our experiences as both learners and teachers, we have observed a lack of emphasis on integrating graphical cultural practices into the teaching and learning of graphic design and, by extension, other subjects within the South African context. Therefore, in our view, social learning theory would help to establish a background for the integration of learners' cultural practices in graphic design.

This study examined the integration of cultural practices into graphic design learning for Senior Phase Technology learners in Mpumalanga Province, South Africa. While the existing literature supports the inclusion of cultural elements in art and graphic design education (Jinchi, 2019; Smith, 2019), there is a notable gap in studies that specifically address the role of cultural practices in the learning of graphic design in the South African context. Nonetheless, the importance of integrating cultural elements into graphic design education is explored in other countries. For example, Jinchi (2019) highlights the significance of incorporating local cultural elements to foster a deeper connection with Malaysian cultural identity and enhance the relevance of students' design work. Similarly, Smith (2019) argues that despite the curriculum's emphasis on cultural diversity, there is still a tendency to prioritize Māori and European art and culture, with less focus on Pasifika, Asian, and other ethnic groups.

In South African contexts, the article titled "Enacting Creative Thinking Skills Using Design Process in Technology Classrooms" by Nkosi and Mtshali (2024) primarily focuses on the development of creative thinking skills in technology education. It explores how Technology teachers can foster creativity in their classrooms through the design process. While the article touches on the influence of cultural, economic, and political factors on creativity, it does not specifically focus on cultural integration. Similarly, the article titled "The Effectiveness of Integrating ICTs in the Teaching of Mechanical System and Control in a Grade 8 Technology Subject: A Case of Two Township Schools" by Nkosi (2019) primarily focuses on the integration of Information and Communication Technologies (ICTs) in teaching Mechanical Systems and Control in Grade 8 Technology classes. This study does not address cultural integration either. Therefore, there is a clear need for more research on the role of cultural practices in graphic design education in South Africa. Integrating local cultural elements can significantly enhance the relevance and impact of design education, making it more meaningful for learners. Hence, to address this, we examined how learners in the Senior Phase understood graphic drawings, to which indigenous cultural graphics they were exposed, and how well pedagogical approaches facilitated the inclusion of cultural practices in their learning of graphic design.

ISSN |2355-3669| E-ISSN |2503-2518|
Volume 12 | Number 1 | June 2025|

Literature Review

This review will cover the theoretical frameworks underpinning the study, the importance of graphic design in education, and the integration of cultural practices in graphic design education. These topics are crucial as they provide a comprehensive understanding of how social and constructivist learning theories can enhance educational experience by incorporating cultural elements. Thus, by exploring these areas, the review highlights the significance of culturally responsive pedagogies in enriching learners' learning and creativity, particularly in the context of graphic design education. This is relevant to the research as it addresses the gap in current educational practices and emphasizes the need for a more inclusive approach that values and integrates diverse cultural backgrounds.

Theoretical frameworks

The social learning theory (Bandura, 1977) served as the theoretical framework for this study. This theory posits that learning occurs through social interactions, with individuals actively shaping their learning environment and integrating new information with their existing knowledge and skills (Wickett, 2005). As learners engage with others and navigate their surroundings – whether imposed, selected, or constructed – they exert agency over their learning process, drawing on previous experiences to make sense of new content. This aligns with the constructivist learning theory, which emphasizes the importance of learners actively constructing meaning and connecting new information to their pre-existing knowledge base. In line with (Smith & Ragan, 2005) constructivism, this study emphasizes that learners actively construct knowledge through their experiences. By analyzing and producing designs that are informed by their cultural backgrounds, the learners can develop a deeper understanding of graphic design and contribute to their communities' artistic expressions. This learner-centered approach, aligned with constructivist principles, empowers learners to make meaning of new information and actively participate in shaping their artistic knowledge and skills. This approach ensures that the inclusion of cultural practices in graphic design learning is not only acknowledged but actively integrated into pedagogical strategies.

The importance of graphic design in education

Graphic design is not merely about visualization; it also conveys aesthetic standards and value systems (Yu, 2019). According to Chmela-Jones (2006), graphic design is a skills-based course where cooperative learning skills can be applied to both practical and theoretical components. Visual learning, an approach that helps learners communicate through imagery, is central to graphic design education. Skorokhod and Smola (2022) define visual communication as the transmission of information through visual language, which is crucial for processing vast quantities of visual information effectively (Chmela-Jones et al., 2007).

The integration of cultural practices in graphic design education

Despite the recognized importance of graphic design, its teaching often lacks the integration of basic cultural skills that could enhance the learning experience. Studies have shown that the inclusion of cultural elements in graphic design education can significantly impact learners' understanding and

ISSN |2355-3669| E-ISSN |2503-2518|
Volume 12 | Number 1 | June 2025|

creativity (Blose & Gumbo, 2019; West et al., 2020). For instance, Yu (2019) suggests that incorporating traditional graphics into the curriculum can guide artistic creation, enrich human culture, and inspire learning enthusiasm.

However, the current state of graphic design education in South Africa, as observed by Chmela-Jones et al. (2007), reveals challenges such as inadequate language proficiency and a lack of awareness of the relationship between theory and practical subjects. These challenges are exacerbated by a lack of emphasis on cultural integration, which is essential for fostering a more inclusive and effective learning environment. While existing literature supports the inclusion of cultural elements in art and graphic design education (Jinchi, 2019; Smith, 2019), there is a notable gap in studies specifically addressing the role of cultural practices in the learning of graphic design among Senior Phase Technology learners. Therefore, this study aims to fill this gap by examining how learners understand graphic drawings and their exposure to indigenous cultural graphics.

Methodology

Research design and approach of the study

Within a qualitative approach, a mini-ethnographic case study was used to explore the learners' understanding and the implementation of cultural graphical practices in graphic design learning. This approach, which combines ethnography and case study research (Fusch et al., 2017; Storesund & McMurray, 2009; White et al., 2009), allows for deep and rich data collection (Schultze & Avital, 2011) within a shorter timeframe than traditional ethnography (Amaechi & Fusch, 2019). Focusing on answering the research question rather than generalizability (Fusch et al., 2017; Storesund & McMurray, 2009; White et al., 2009), this method facilitated an in-depth understanding of cultural practices in the learning environment from the learners' perspective. According to Fusch et al., (2017), the use of a mini-ethnographic case study design enables researchers to generate as well as study theory in real-world applications.

Research site and participants

The participants were seven Grade 9 learners from a Senior Phase Technology classroom in the Mgwenya circuit in Mpumalanga Province, South Africa. The school is situated in a semi-rural area, reflecting a lifestyle that is closely tied to rural life. It is one of 27 schools in the circuit, which comprises predominantly semi-urban areas influenced by township lifestyles. Out of these 27 schools, 11 (including the selected school) are in semi-rural settings. However, in this study, the selection of the school was focused on one school due to the good performance of the school. Also, the selection of this particular school was appropriate due to its close resemblance to rural life, with the Swati culture being prominent among the indigenous residents. According to Creswell and Poth (2018), purposeful sampling is essential when a researcher aims to understand a specific group. The selection of the participants was based on their Swati culture and language background, indicating a strong foundation in indigenous knowledge as Africans. The study involved seven learners, consisting of four males and three females, all from semi-rural environments – making indigeneity a key criterion for their selection. The ages of the participants ranged from 13 to 16 years, with three learners between 13 and 14 years old and four learners between 15 and 16 years old. The specific criterion for selecting participants based on age was their enrolment in Grade 9. The sample size of this study was determined by "data

ISSN |2355-3669| E-ISSN |2503-2518|
Volume 12 | Number 1 | June 2025|

saturation", which occurs when new data from participants start to repeat information already obtained, offering no new thematic categories relevant to the study objectives (Adekola, 2024).

Data collection and analysis

The data for the study were collected from July to September 2019 using two primary methods: individual semi-structured interviews with learners and classroom observations conducted under the supervision of their teacher. These methods were selected to gather verbal insights and contextual behavioral data, enabling a comprehensive understanding of the learners' experiences.

The semi-structured interviews were designed to provide structure and flexibility, allowing the researchers to address specific research questions while probing deeper into participants' responses. Each interview, conducted at the school premises, lasted approximately 30 to 50 minutes and was audio-recorded for accuracy and detailed analysis. Parental consent was obtained for the minor learners, ensuring adherence to ethical standards.

Semi-structured interviews were chosen for their ability to foster a conversational environment, which is crucial for building rapport with participants. This approach encouraged learners to reflect deeply and share their experiences meaningfully, as Rubin and Rubin (2005:88) supported. The flexibility inherent in this method enabled the exploration of emerging themes and unexpected insights, thus enriching the data quality. Additionally, participants were given opportunities to ask questions or provide comments at the end of the sessions, further ensuring their active engagement and comfort during the process (Talmy, 2010:25).

To complement the interviews, non-participant classroom observations were conducted. This method involves observing the teaching and learning processes without interacting directly with the participants, allowing for minimal disruption to the natural classroom environment (Ciesielska et al., 2018; Urquhart, 2015:30). Observations focused on capturing the learners' interactions, teaching methodologies, and the incorporation of cultural practices in graphic design education. This method was particularly valuable for documenting real-time behaviors and contextual factors that might not emerge in interviews.

The combined use of semi-structured interviews and non-participant observations provided a balanced approach to data collection, allowing for the triangulation of findings and enhancing the reliability of the study. The interviews offered personal insights and reflections, while the observations ensured contextual and behavioral validation of these insights.

The interpretative phenomenological analysis (IPA) framework was employed to analyze the collected data. This approach was selected to focus on understanding participants' lived experiences and the meaning they derive from those experiences within their social and cultural contexts (Larkin & Thompson, 2011; Adekola & Mavhandu-Mudzusi, 2021). IPA's iterative and interpretative nature aligns well with the study's objectives, ensuring an in-depth exploration of both individual and shared experiences.

The analysis began with the transcription of all audio recordings verbatim, providing a rich textual dataset for detailed examination. Following Finlay's (2014) guidelines, the research team immersed themselves in the data by reading and rereading the transcripts, engaging in free association to make initial notes, and exploring semantic content. This phase allowed for the identification of nuanced details and emerging patterns in participants' narratives.

Subsequently, emergent themes were developed by examining segments of the transcripts in conjunction with the initial notes. The themes were organized into coherent categories, reflecting the

ISSN |2355-3669| E-ISSN |2503-2518|
Volume 12 | Number 1 | June 2025|

core aspects of the learners' experiences. To maintain the integrity and individuality of each participant's account, themes from earlier cases were set aside (bracketed) when analyzing new cases, ensuring an open-minded approach.

Once themes were identified across individual cases, connections between them were explored. Higher-order themes were abstracted, highlighting shared patterns while also noting unique variations. This phase emphasized the interplay between individual experiences and broader social and cultural factors, enriching the analysis. Furthermore, the interpretation was deepened by incorporating metaphors, temporal references, and social learning theoretical perspectives. This integrative approach facilitated a robust understanding of the learners' experiences and the contextual factors influencing them, offering valuable insights into the role of cultural practices in graphic design education.

The trustworthiness of this study was meticulously ensured through a multifaceted approach that included credibility, transferability, dependability, and confirmability (Gunawan, 2015; Adekola & Mavhandu-Mudzusi, 2021). We developed early familiarity with the participants to establish credibility, creating a conducive environment for open dialogue. Additionally, member checks were conducted, inviting the participants to review and validate the collected data and interpretations, ensuring accuracy and authenticity (Gunawan, 2015; Stahl & King, 2020). To enhance transferability, comprehensive background information was provided to establish the contextual framework and a detailed description of the phenomenon under investigation. This transparency allows readers to draw parallels with their contexts, facilitating the extrapolation of findings to similar settings. Ensuring dependability was paramount, achieved through a thorough methodological description. By meticulously outlining the research methodology (including data collection techniques, analysis procedures, and interpretations), we established a robust foundation for replication, enhancing its reliability.

Confirmability was strengthened by a triangulation approach, using multiple data collection methods such as interviews and observations. The corroboration from different sources mitigated the risk of bias and ensured the validity of the conclusions drawn. Triangulation of data sources added layers of credibility to the study's findings, reinforcing their trustworthiness (Gunawan, 2015).

In terms of ethical measures, ethical clearance (Ref: 2019/02/13/56712715/17/MC) was obtained from the University of South Africa before commencing the study. Subsequently, the Mpumalanga Department of Basic Education granted permission to conduct research in its schools. To uphold ethical standards, the selected participants gave their informed consent, with the researchers ensuring that they understood the study requirements and their right to withdraw without consequence. Furthermore, questions that could cause discomfort or humiliation were avoided, and signed consent forms from the parents, and the learners' assent were obtained before proceeding. Confidentiality was maintained by using pseudonyms in transcripts and reports, protecting the participants' identities. All audio recordings and transcripts were securely stored in an electronic folder to protect participant data.

Results

This study explored the role of cultural practices in Senior Phase Technology learners' learning of graphic design. The analysis revealed four key themes: (i) the understanding of graphic design and the cultural context of the learners, (ii) Exposure to Indigenous Graphics in Graphic Design Education, (iii) Lack of Cultural Relevance in Graphic Design Teaching, and (iv) Incorporating Cultural Practices in Graphic Design Education. The subthemes and keywords for each theme are demonstrated in Tables 1-4.

ISSN |2355-3669| E-ISSN |2503-2518|
Volume 12 | Number 1 | June 2025|

Table 1. *Understanding graphic design and cultural context among learners*

Main themes	Subthemes	Keywords
Understanding and teaching of graphic design concepts	Basic understanding of graphic design	Drawings, 3D, 2D, conventions, lines, hidden details, basic grasp, depth, understanding
	Limited learning time	Minimal time, limited exposure, understanding, depth of learning, time allocated, graphic design topics
	Lack of indigenous knowledge integration	Teaching, learning, Indigenous knowledge systems, cultural backgrounds, graphic drawings, not encouraged
	Varied levels of understanding	Articulate, understanding, graphic design, struggled, define, concept, variance, levels of understanding
	Lesson	Lesson, introduced, graphics, no reference, cultural knowledge, teaching approach, local knowledge, connect, content

As shown in Table 1, learners showed an understanding of the concept of graphic design. They understood graphic design as being about drawings that could be 3D or 2D and in which conventions such as lines and hidden details could be used. Despite the above information, a participant indicated that they did not do much in terms of learning graphics due to the minimal time they had available for this topic. However, she understood what graphic design entailed. This learner claimed that teaching and learning took place without the inclusion of Indigenous knowledge systems:

> *"We didn't learn a lot about Graphic Design but is a concept where are learning about drawings, how to draw and it comes in different forms which are 3D and 2D."– Learner 6, male*

Another participant was clueless about what the concept of graphic design means. This learner failed to state her understanding, as she claimed graphic design:

> *"…is about the use of skills, techniques that you can use to develop."– Learner 5, female*

Another learner said:

> *"Easy and simple just look at instructions….is about drawings." – Learner 1, male*

During observation, for example, the lesson introduced learners to the concept of orthographic projections. Observably, it was difficult for the teacher to introduce local knowledge in the teaching of graphic design. This was evident during the interviews by the learners that were not encouraged

ISSN |2355-3669| E-ISSN |2503-2518|
Volume 12 | Number 1 | June 2025|

to learn or understand graphic drawings from their cultural backgrounds (Table 1). Subsequently, *"the lesson introduced learners to graphics with no reference to the cultural knowledge of the learners."* – Observation.

Exposure to indigenous graphics in graphic design education

Table 2. *Exposure to indigenous graphics in graphic design education*

Main theme	Subthemes	Keywords
Exposure to indigenous graphics In graphic design education	Lack of exposure to indigenous graphics	Not come across, indigenous graphics, drawings, patterns, modernized drawings, cultural backgrounds, environments
	Varied experiences with indigenous graphics	Different view, indigenous drawings, limited exposure, fossils, syringes, pipes
	Integration of indigenous knowledge in projects	Scenarios, design a bridge, community, solutions, indigenous knowledge, modern technology, crossing rivers, traditional designs
	Importance of indigenous practices	Importance, incorporating, indigenous practices, graphic design learning, cultural practices, influence, education
	Teacher's role in cultural integration	Technology education teachers, acknowledge, respect, cultural significance, teaching, enhance learning experience, relevance

In terms of learning graphics with recognition of cultural aspects, as detailed in Table 2, most of the learners stated that they had not come across indigenous graphics, drawings, or patterns when learning graphic design. Instead, they came across modernized drawings, as opposed to drawings from their cultural backgrounds or environments. All the learners claimed that they had not been exposed to Indigenous graphics/drawings/patterns in learning graphic design in the classroom. Similarly, this was evident during observation the learners' activities focused mainly on modern drawings and did not cater to Indigenous graphics. Thus, *"Most learners' drawings showed that they had not encountered indigenous graphics when learning graphic design."* – Observation.

ISSN |2355-3669| E-ISSN |2503-2518|
Volume 12 | Number 1 | June 2025|

However, some of the participants expressed a different view, as they stated that they had come across indigenous drawings in their learning of graphic design, even though one participant's exposure was a 'bit off the point. He stated:

> *"Yes, in Indigenous knowledge drawings, we sketch some fossils done with objects like syringes and pipes to lift a certain object up and down." – Learner 4, male*

The other participant explained that she had come across Indigenous graphics in the scenarios that they did each term. For instance, In Term 1, they had to design a bridge for a community that needed it. The learners had to come up with solutions to a problem that the community faced. They had to design bridges that required them to combine indigenous knowledge and modern technology to solve the problem of crossing rivers rather than focusing only on modern technology. Thus, the learners were exposed to different indigenous graphics as they designed bridges.

> *"Yes, like mini-pat, every mini-pat has a scenario like in Term 1 we came across the problem we have to solve." – Learner 6, male*

According to the learner, the scenario involved designing a bridge for a village, which required drawing inspiration from traditional, simple designs rather than modern, popular bridges. This highlights the importance of incorporating indigenous practices into graphic design learning. The learner's perspective suggests that cultural practices significantly influence graphic design education. Technology Education teachers should acknowledge and respect this cultural significance when teaching graphic design in the classroom. With minimal recognition, the teacher tried to expose learners to indigenous drawings. Accordingly, *"during teaching, Sudwala Caves was partially mentioned as a place with indigenous arts."* – Observation. Nonetheless, it had less impact on the learning of graphic design. The lack of cultural relevance in teaching, as indicated by the limited indigenous graphics exposure (Table 2), suggests the need for a more inclusive curriculum.

Lack of cultural relevance in graphic design teaching

Table 3. *Lack of cultural relevance in graphic design teaching*

Main theme	Subthemes	Keywords
Lack of Cultural Relevance in Graphic Design Teaching	Demonstration-Based Teaching Approach	teaching method, step-by-step, demonstrations, modern design examples, collaboration, neglects, cultural heritage
	Use of Previous Projects	past projects, demonstrate, drawing techniques, cultural context, graphic design
	Positive Reception of Demonstration Approach	helpful, understanding, graphic design concepts, clarifying, confusing concepts, solid foundation

ISSN |2355-3669| E-ISSN |2503-2518|
Volume 12 | Number 1 | June 2025|

Lack of Cultural Integration	cultural views, drawings, relatable, lesson activities, cultural backgrounds, technical drawing
A Gap in Learning Experience	absence, cultural relevance, gap, understanding, appreciation, resources, local knowledge, disconnecting

Observably, the current approach to graphic design learning seems to lack cultural relevance (Table 3). As noted by the participants, *"the teaching method followed a demonstration-based approach, where the teacher guided them through a step-by-step process using modern design examples."* – Observation. Although this approach encourages collaboration among learners, it neglects the value of cultural heritage in design. Table 3 highlights the predominance of demonstration-based teaching, which, while effective in some aspects, failed to incorporate cultural contexts into learning. Additionally, *"the teacher used previous projects to demonstrate drawing techniques, but this approach did not fully equip learners to appreciate the cultural context of graphic design."* – Observation. Moreover, during the lesson observation, *"it was evident that the teacher used demonstrations to teach graphic design without cultural views or drawings that might make it simpler for learners to understand it"*– Observation.

The findings revealed that the participants found the teacher's demonstration approach helpful, as it assisted them to follow the teacher step by step on the chalkboard. According to a participant, the approach was "perfect", as the learner found that teaching in this manner was good. It gave the learners a better understanding than if they were given a book to read on their own.

> *"…is perfect and she teaches very well. In this way, we can learn about graphic design." – Learner 5, female*

The learner explained that the teacher used a variety of resources to support learning, including past examination papers and textbooks. The teacher's approach was to first demonstrate the process on the board, allowing the learners to observe and understand the steps involved. If a learner struggled to understand, the teacher patiently repeated the explanation multiple times to ensure that everyone grasped the concept. This approach helped to accommodate learners who needed extra support, ensuring that no one was left behind.

> *"The teacher uses previous question papers and textbooks. [This] helps us to do it on the chalkboard and in our classwork books." – Learner 5, female*

Other participants echoed the same sentiment, stating that learners grasped graphic design concepts more effectively through hands-on demonstrations. The demonstration approach proved invaluable in clarifying previously confusing concepts, helping to dispel misunderstandings that lingered from earlier grades. By seeing the design process unfold step by step, the learners gained a clearer understanding of the principles of graphic design.

> *"She [the teacher] helps us a lot since in previous grade we did not understand so the teacher helps." – Learner 6, male*
>
> *"It assists because it truly helps some other kids who are good in technology to see the better future of technology." – Learner 4, male*

ISSN |2355-3669| E-ISSN |2503-2518|
Volume 12 | Number 1 | June 2025|

This participant emphasized the value of demonstrations in teaching graphic design, particularly for learners with a strong technology background. The demonstrations provided a solid foundation for understanding graphic design principles, which would benefit the learners in various applications such as building design and other projects. By using demonstrations to teach graphic design, the learners gained a deeper understanding of the subject, preparing them for success in their future endeavors.

Although the learners found the demonstration approach helpful, a notable omission was apparent: the lack of cultural relevance and Indigenous graphic design practices in the activities. *"The learning experience failed to build upon the existing cultural knowledge and skills of the learners, particularly in technical drawing."* – Observation. This was evident during lesson observations, where graphic design teaching seemed disconnected from learners' cultural practices. The approach neglected to take advantage of the cultural backgrounds of the learners, leaving a gap in their learning experience. For instance, the lesson activities did not link to learning that reflects on the cultural backgrounds or knowledge of the learners. That was mainly on the use of line type, scale, and dimensions. Furthermore, the resources did not link local knowledge.

Incorporating cultural practices in graphic design education

Table 4. *Importance of incorporating cultural practices in graphic design education*

Main theme	Subthemes	Keywords
Importance of Incorporating Cultural Practices in Graphic Design Education	Enhancing learning through indigenous graphic skills	Cultural practices, indigenous graphic skills
	Improving understanding through indigenous technology	Indigenous technology, graphic design, existing knowledge, cultural background
	Connecting with cultural context	Mix with history, forefathers
	Challenges with modern designs	Modern designs, influence learning, difficult to understand
	Cultural diversity and understanding	Cultural diversity, deeper understanding, Swati culture, connect with subject matter
	Mixed familiarity with indigenous designs	Mixed familiarity, traditional Swati designs, Indigenous graphic designs, cultural knowledge gap
	Lack of cultural support in teaching	No cultural support, cultural knowledge, experience, disconnected, modern paradigms, culturally responsive

Despite the lack of cultural incorporation in the learning of graphic results, the learner participants believed that incorporating cultural practices that included Indigenous graphic skills would

ISSN |2355-3669| E-ISSN |2503-2518|
Volume 12 | Number 1 | June 2025|

significantly enhance their learning of graphic design. They argued that this approach would allow learners to better understand the fundamentals of graphic design, develop problem-solving skills in technology, and become more proficient in drawing graphic designs. In their words,

> *"It will make it easier for us to understand" – Learner 1, male*
> *"It is going be good because we can now understand Indigenous technology and like how it works, we will learn it, and we will know how to interpret it in drawings." –Learner 3, female*
> *"It can help children to be able to draw GD and to be able to solve problems in technology" – Learner 4, male*

In addition, as detailed in Table 4, learners felt that incorporating indigenous technology into their learning would significantly improve their understanding of graphic design. By leveraging their existing knowledge and experiences from their cultural background, the learners would be able to connect indigenous knowledge systems to graphic design principles, leading to a deeper understanding of the subject. This integration would enable the learners to draw upon their familiar cultural context, enhancing their learning experience and fostering a more meaningful connection to graphic design.

> *"As we learn more and more in class, it helps a lot as learners, as we mix it with history and go back as learners to background knowledge because even our forefathers were also using technology." – Learner 6, male*
> *"Yes, as some still use it in their homes because grandparents have experience with it and are knowledgeable." – Learner 2, female*

The results indicate that Indigenous technology would improve graphic design learning, as some learners found it difficult to understand modern designs (Table 4),

> *"So, if Indigenous knowledge can be integrated into the learning of graphic design, it would influence the learners' learning." – Learner 5, female*

This was supported by another participant:

> *"[It will give us] a chance to know more about what they were doing long ago and what is it like now." – Learner 7, male*

Observably, *"The participants showed interest that their cultural diversity could facilitate a deeper understanding of graphic design."* – Observation. For example, during interviews, they mentioned that their native language was Swati, which is predominantly spoken in the Ehlanzeni district of Mpumalanga Province. They suggested that incorporating elements of their Swati culture into graphic design education would allow them to better understand and connect with the subject matter (Table 4).

> *"Swati, because our home language is Swati, we use how they were living like reed to construct bridges, so reed if am not wrong is a Swati, and then technology brought concrete, so they are no longer using reed." – Learner 7, male.*

However, the responses of the participants revealed a mixed level of familiarity with indigenous Swati designs. While two participants admitted that they were not familiar with any traditional Swati designs, another participant demonstrated knowledge of indigenous graphic designs rooted in Swati culture.

ISSN |2355-3669| E-ISSN |2503-2518|
Volume 12 | Number 1 | June 2025|

This discrepancy highlights a potential gap in cultural knowledge and understanding among the participants.

> *"I know that Swati's use patterns when they are making their cultural clothes, they use patterns which come in the form of triangulations." – Learner 6, male*

The learner interviews revealed a missed opportunity for the teacher to take advantage of the cultural background of the learners in teaching technology and graphic design concepts. By incorporating culturally relevant activities, the teacher could have made the content more relatable and meaningful to the learners' experiences. To achieve this, working with experts in indigenous knowledge would have been essential to provide cultural context and guidance in teaching graphic design. In the same vein, the lesson observations showed that there was no cultural support, thus it failed to encourage learners to draw on their cultural knowledge and experience in graphic design. By neglecting this crucial aspect, the teaching and learning of graphic design remained disconnected from the learners' cultural perspectives. For example, *"the learners' given activity was influenced by modern paradigms. Thus, they were required to deliver an orthographic drawing showing stairs. The learners' work has not shown culturally responsive as they were required to reproduce the drawing"* – Observation.

Discussion

The findings illustrate a spectrum of understanding among the learners regarding graphic design, with some exhibiting a clear comprehension while others struggled to articulate its definition. This variance could be attributed to factors such as prior exposure, educational resources, and teaching methodologies that do not relate to the cultural backgrounds of the learners. Drawing from the above, a wider literature suggests that a critical approach to policy and pedagogy and an ethic that gives priority to equity and democracy as social and educational objectives is a way forward for active engagement in cultural inclusion (Bianchi, 2011; Gay, 2010; Sleeter, 2008). Burgess et al. (2020) argue that Indigenous knowledge should be recognized as foundational to building classroom curricula and Indigenous methodologies as a key to culturally responsive teaching. Notably, the limited time for a proper background in graphic design learning appears to hinder comprehensive learning. This suggests a need for adjustments in the teaching approach for deeper exploration of the subject matter.

In their study, Pham and Renshaw (2013) reports focused on a lack of critical thinking skills, in-depth conceptual understanding, communication skills, and insufficient student-centered practice. The results of their study revealed a significant gap in effectively implementing student-centered learning practices. Therefore, based on this study we hold a view that there is a significant gap in the integration of cultural awareness in graphic design education. Gumbo (2020) states that Indigenous perspectives in Technology Education are under-researched because the conceptualization of the curriculum is within Western paradigms. Moreover, Burgess et al. (2020), indicate that little research exists on indigenous-led teacher professional learning to improve skills in developing culturally responsive practices in schooling. Notably, despite acknowledging the importance of cultural relevance, this present study reveals that the curriculum primarily focuses on modern design examples, neglecting indigenous graphics, drawings, and patterns. This oversight limits learners' exposure to diverse design perspectives and fails to capitalize on the richness of cultural heritage as a source of inspiration and innovation in graphic design. Gumbo (2020) attests that the curriculum of Technology Education is embedded within Western knowledge. Thus, it lacks accommodation of other forms of

ISSN |2355-3669| E-ISSN |2503-2518|
Volume 12 | Number 1 | June 2025|

knowledge, such as Indigenous knowledge. Hofstede (1980) and Stephens (2007) maintain that culture comprises the ideas that define the beliefs and behaviors of individuals and groups within a society. These cultural elements exist in both visible forms (such as artifacts) and invisible forms (such as customs). We believe that cultural practices in the teaching of graphic design will be valuable, as Hofstede and Stephens assert that culture is also visible in artifacts. Blose and Gumbo (2019) state that it is essential to examine Indigenous graphic designs (such as those in architecture, sculpture, and textiles) from the broad perspective of Indigenous knowledge systems to the local context of learners and acknowledge their educational significance and relevance. For example, the graphic drawings may reflect a wide range of historical and contemporary graphics of current living that showcase visual design, illustration, and graphical communication. These drawings may highlight graphic design's evolution and diversity and underscore its significant role in cultural, social, and commercial communication.

The predominant teaching approach, characterized by demonstrations using modern examples, proves effective in aiding learners' comprehension of graphic design concepts in this study. However, this approach falls short of incorporating indigenous cultural practices into learning. While demonstrations provide practical guidance, it has overlooked the opportunity to embed cultural relevance into graphic design education, thereby perpetuating a disconnect between learners' cultural backgrounds and the curriculum content. Alton-Lee (2003, 2004) and Rubie-Davies (2010) assert that teaching is the most important factor in learner achievement. They argue that teachers must take responsibility for every learner, value diversity, respect learners' cultures, have high expectations, and build on learners' experiences. Burgess et al. (2020) claim that cultural mentoring presents a pathway for schools and teachers to genuinely engage with local indigenous knowledge and demonstrate the benefits to all. Nonetheless, in his study, Gumbo (2020) showed that teachers' workshops and practice did not emphasize the integration of Indigenous knowledge.

Notably, the study shows that learners expressed a strong desire for greater integration of Indigenous knowledge systems into graphic design education. They believed that incorporating indigenous technology and cultural practices would not only enhance their understanding of graphic design but also foster problem-solving abilities rooted in their cultural heritage. This sentiment underscores the importance of acknowledging and leveraging cultural diversity as a catalyst for innovation and creativity in graphic design pedagogy. Yang and Li (2022) explain that the power of culture in shaping curriculum innovations is remarkable. It has come to light that the inclusion of culturally esteemed principles, such as communalism and primary concepts, serves to motivate students to achieve higher levels of success across various disciplines like language arts, mathematics, and social science (Hurley et al., 2009). Chun and Dickson (2011) noticed that Latinx learners exhibited higher levels of engagement and self-efficacy when teachers recognized the significance of their cultural background and the importance of the Spanish language during instructional sessions.

The findings underscore the need for curriculum developers and teachers to prioritize cultural inclusivity in graphic design education. Incorporating indigenous graphics, drawings, and patterns into the curriculum can enrich learners' learning experiences, foster cultural appreciation, and empower them to create designs that resonate with diverse audiences. Stanczak (2007:3) argues that "images are not merely appendages to research but rather inseparable components to learning about our social worlds." Moreover, integrating indigenous knowledge systems into teaching methodologies can bridge the gap between theory and practice, equipping learners with the skills and perspectives needed to address real-world design challenges in culturally sensitive and sustainable ways. In the same vein, Burgess et al. (2020) state that placing Indigenous voices front and center and as the foundation of

ISSN |2355-3669| E-ISSN |2503-2518|
Volume 12 | Number 1 | June 2025|

teaching and learning creates a context for decolonization to occur if those voices are recognized, remunerated, and respected. In line with this study, the findings highlight the critical role of cultural context in graphic design learning and underscore the importance of embracing cultural diversity as a cornerstone of effective design education. By incorporating indigenous knowledge systems and cultural practices into the curriculum, teachers can create a more inclusive and dynamic learning environment that empowers learners to become culturally competent and socially responsible designers. Similarly, Blose and Gumbo (2019) argue that teachers who can see the wealth of indigenous knowledge in their teaching can transform the teaching of graphic skills in Technology Education, making the subject relevant and interesting to the learners.

Conclusion and Recommendations/Implications

Based on the purpose and research questions for the study, we conclude that integrating cultural practices into graphic design education is essential to fostering a more inclusive and effective learning environment. The findings highlight the significant role of cultural practices in enhancing learners' understanding and creativity in graphic design. However, the current curriculum's focus on modern design examples limits learners' exposure to diverse design perspectives. To address these gaps, we recommend:

1) Curriculum adjustments are needed to allow deeper exploration of graphic design concepts and allocate sufficient learning time.
2) Teachers should prioritize cultural inclusivity by incorporating Indigenous graphics and patterns into the Technology Education curriculum, enriching learners' experiences and fostering cultural appreciation.
3) Integrating indigenous knowledge systems into teaching methodologies, bridging the theory–practice gap, and equipping learners with culturally sensitive problem-solving skills.
4) Table 4 underscores missed opportunities for cultural integration in teaching graphic design. Therefore, embracing cultural diversity and incorporating indigenous knowledge systems to create a dynamic and inclusive learning environment, empowering learners to become culturally competent and socially responsible designers.
5) Expansion of the sample size and diversity: Future studies should include a larger and more diverse sample of schools and learners across different regions and contexts. This would enhance the generalizability of the findings and provide a more comprehensive understanding of the role of cultural practices in graphic design education in broader contexts.

The study highlights a significant gap in integrating cultural awareness in graphic design education. Incorporating indigenous graphics, drawings, and patterns into the curriculum can enrich learning experiences and foster cultural appreciation. This can empower learners to create designs that resonate with diverse audiences and reflect broader cultural perspectives. However, we have observed limitations in this study. The limitations of this study include its focus on a single school and a Grade 9 class in Mpumalanga Province's Ehlanzeni district, which restricts the generalizability of the findings. The data collection was limited to learners and classroom observations, excluding perspectives from curriculum implementers, elders, and custodians of Indigenous knowledge, which could have provided a more comprehensive understanding of local Indigenous graphic designs. Consequently, the broader applicability of the findings is limited, and interpretations should be made with these constraints in mind. The limitations are detailed as followed:

ISSN |2355-3669| E-ISSN |2503-2518|
Volume 12 | Number 1 | June 2025|

This study has several limitations that should be acknowledged. Firstly, the study involved only seven Grade 9 learners from a single school in the Mgwenya circuit, Mpumalanga Province. This small and specific sample size limits the generalizability of the findings to other contexts and populations. To mitigate this, we ensured a diverse representation within the selected group and focused on in-depth qualitative data to provide rich insights. Secondly, the study focused specifically on the integration of cultural practices in graphic design learning. This narrow focus may overlook other important factors influencing graphic design education. However, we addressed this by grounding our study in established theoretical frameworks and comparing our findings with broader literature.

The study was conducted in a semi-rural school setting, which may not apply to urban or other rural settings. We, therefore, provided detailed contextual information to help readers understand the specific setting and its influence on the study. Data collection was limited to a specific period (July to September 2019), which may not capture long-term trends or changes in graphic design education. We used intensive data collection methods within this period to gather comprehensive insights. The study's rationale was based on the need to explore cultural integration in graphic design education, which might have introduced a bias toward finding cultural elements in the data. We maintained objectivity by using established qualitative analysis methods and triangulating data sources. Lastly, the study used qualitative methods, including semi-structured interviews and classroom observations. While qualitative methods can be subjective and may not provide statistically generalizable results, we ensured the reliability and validity of our findings through rigorous data analysis and triangulation.

Disclosure statement

No potential conflict of interest was reported by the authors.

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