Teaching of Cultural Concepts in Botswana Junior Secondary Schools Design and Technology Curriculum

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Abstract
This research explored the extent to which cultural concepts stipulated in Botswana Design and Technology curriculum are taught by teachers at junior secondary schools, a topic on which there is little previous research. The pinnacle of good product innovation is when it is grounded on sensitive cultural analysis of the society's culture. However, it has been observed that teachers have not yet been able to encode cultural concepts in teaching Design and Technology. A qualitative case study was conducted to assess the extent to which teachers teach and examine cultural concepts in Design and Technology. This data was analysed using the qualitative method of textual content analysis. The findings show that teachers do not teach this cultural component due to lack of relevant reference materials and other resources. The study concludes by proposing strategies that could be used to teach cultural concepts in the Design and Technology curriculum at secondary school level.

Key words
Botswana, cultural concepts, curriculum, design and technology, junior secondary schools

Introduction

Education plays an important role in inculcating the society's values and norms and, therefore, it has a direct and indirect influence in moulding the younger generation to appreciate their society's beliefs, attitudes and values. Botswana education system has been criticised for not responding to local needs as it tended to alienate children from their cultural roots and to create, not an appreciation of their background, but rather a tendency to look down upon it (National Commission of Education, 1977). The education system should orient young people towards the social, cultural, artistic, political and economic life of their unique society and prepare them to participate proudly in it. This criticism continues up to the present and has become a point of contention between government and other interest groups including academics, politicians and non-governmental organisations (Moalosi, 2009).

More effort is needed to decolonise the education system so that it resonates with the broader cultural concerns of the society. Design and Technology needs to build its foundation on a Botswana socio-cultural perspective. If the subject is not grounded in Botswana's cultural values, then it will not be in a position to adequately respond to the society's needs (Moalosi et al., 2004). In the process of decolonisation, educational institutions need to regularly evaluate their curricula to improve their responsiveness to the needs of the community. This is referred to as the 'postcolonial self-recovery' (Gandhi, 1998). Batswana (people of Botswana) need to re-discover themselves and it is through education that misconceptions can be challenged and corrected. Furthermore, a new breed of Design and Technology students who will appreciate the influence of culture in their design practice can emerge through design education. Innovation and creativity must be assimilated within the context of Botswana's own culture. Nakamura & Csikszentmihalyi (2001) argue that creativity does not happen inside the designer's head but in the interaction between a user's thoughts and the socio-cultural context.

It was against this background that the study assessed the extent to which cultural concepts were infused and taught in Botswana junior secondary school Design and Technology curriculum. It is important to note that the future is informed by the past and hence the significance of studying Botswana's traditional culture in design. This does not suggest that contemporary culture should be abandoned but to study the positive aspects of traditional culture so that they can inform the design of contemporary products.

Culture

Culture is not a timeless and motionless body of value systems that remains unaltered by social change; rather it is dialectic and incorporates new forms and meanings while changing or reshaping traditional ones. Culture is multi-layered. Stephan (2004) suggests two layers (visible and invisible), (Schein, 1999; Lee, 2004) propose three levels (basic assumptions, values and artefacts); Hampden-Turner and Trompenaars (1997) and Spencer-Oatey (2000) argue for four layers (basic assumptions and values; beliefs, attitudes and conventions; systems and institutions; artefacts, products, rituals and behaviour). There is lack of consensus among scholars about the definition of culture but the following essential threads run throughout the various conceptualisation and definitions of the construct of culture: (a) Culture represents some form and degree of collective agreement (b) Culture refers to the sharing of important interpretations of entities, activities, and events (Du Gay et al., 1997) (c) Cultural patterns are manifested symbolically in the form of artefacts (d) Members of specific cultures are presumed to

abide by a set of norms reflecting these commonalties. Therefore, this paper defines culture as a shared set of basic assumptions and values, with resultant behavioural norms, attitudes and beliefs which manifest themselves in systems and institutions as well as in material and non-material elements.

Linking Design and Culture

The relationship between design and culture has taken many twists and turns throughout the last centuries, as design is seen both as a mirror and an agent of change (Moalosi et al., 2005). It is observed that modifications in the society's culture both reflect and determine developments in design. Design changes culture and at the same time is shaped by it (Röse, 2004). For example, it is argued that cultural beliefs and social practices create and reinforce frames of meaning which determine ways of relating to a product. These cultural framings affect ways in which people use or do not use a particular product. It is culture that gives products meaning and provides the rituals within which artefacts are used and the values that are often reflected in their form and function (Press and Cooper, 2003).

A theory is advanced by Jensen (1999) that the wars of the future will be based on culture and the victory will be won by the culture that sells its values and ideological foundations to the adversary. Buchanan (2001) argues that designers should focus on cultural rights. From a postcolonial perspective, the challenge is to develop ever-increasing respect for cultural rights in the world system in such a way that the world system itself evolves in accordance with cultures' highest, wisest and most enduring values rather than the basest and crudest practices (Schafer, 1998). In product design, the goal of cultural respect can be achieved by incorporating the historical and aesthetic values of users (Moalosi et al., 2005).

It is argued that designers need to recognise that people are cultural beings and the process of integrating cultural factors in their practice should be emphasised. Design is firmly embedded in user's culture: it does not take place in a cultural vacuum (Margolin, 2002). Users are not just physical and biological beings, but socio-cultural beings (Baxter, 1999; De Souza and Dejean, 1999). Baxter advances an argument that designers have not yet been able to consciously encode cultural phenomena to the same extent as physical and cognitive human factors due to inadequate research on the area.

Each culture evolves its own answers to its problems (Hofstede et al., 2002). The use of a society's cultural factors in design does not only make technologies more appropriate for their social context, but makes better use of culture itself as a resource for innovation (Moalosi et al., 2005). Innovation and creativity must be assimilated within the context of one's own culture because creativity does not happen in a vacuum, but in the interaction between users' thoughts and the socio-cultural context (Moalosi, 2009). Creativity is systematic rather than an individual phenomenon. Design is an agent of change and it is important for designers to know how they can either undermine or support the indigenous cultural systems of the society (Popovic, 2002). It is through artefacts that cultural values are communicated. Design is, therefore, an important medium of communication which expresses the values of the system within which it functions.

The primary objective is to develop an understanding of users' values and behaviours that can be translated into viable, powerful visual design, information architecture and design ideas. "Technology is not a good traveller unless it is culturally calibrated" (Kaplan, 2004: xiv). This means that designers need to take into consideration the technological, aesthetic, anthropological and socio-cultural factors of their intended users. This might enable designers to design products and services that fit the users' cultural context. The meanings that products come to have should be constructed in the process of a dialogue between culture, design and users. Moreover, this integration might enable designers to design products and services with relevant design features that give users narratives and benefits.

Postcolonial theory

The culture of contemporary Botswana has been influenced by postcolonialism and in the process new cultural identities have been produced. The dominant national culture of Botswana today reflects the dual heritage and intermingling of the local and English cultural dominions (Parsons, 1999). Batswana are in the process of decolonising their culture, which involves challenging and rethinking the dominant Western values. Postcolonial theory is useful to this study because it challenges certain patterns of domination by deconstructing the power relations within them and by acknowledging the value of cultural membership (Moalosi et al., 2005). Postcolonial theory challenges Western knowledge construction, truth and representation, and calls into question claims of academic knowledge and intellectual authority (Hickling-Hudson et al., 2004). It also challenges, among other important things, the ways in which the identities, norms and practices associated with culture are modified. Postcolonial theory articulates notions of the resistance by Batswana and at the same time examines complicity, thus

analysing how people actively reject, appropriate and modify colonial values, practices and technologies as they decolonise.

Botswana's contemporary culture is a result of this hybridisation. As Prakash (1995:81) argues,

> …postcolonial culture is inevitably a hybridised phenomenon, involving a dialectical relationship between the grafted Western cultural system and an indigenous ontology, with its impulse to create or recreate an independent local identity. Such construction or reconstruction only occurs as a dynamic interaction between Western hegemonic systems and peripheral subversions of them.

When this is applied to Botswana's context, it might mean that a postcolonial advance in thinking involves (a) the breaking down of Eurocentric codes (b) recognising indigenous voices in the formation of postcolonial culture and (c) recognising that the latter is therefore a hybrid culture.

Some African thinkers, intellectuals and literary icons such as Chinweizu (1975), Ngugi (1987), Mazrui (1999) and Achebe (2003) argue that this kind of approach, though radical, assists in gaining insight from past mistakes and shortcomings. It is about self-evaluation within the architecture of cultures in a globalising world. This cultural task demands a deliberate and calculated process of syncretism, one which, above all, emphasises valuable continuities with pre-colonial culture and which welcomes vitalising contributions from other cultures and exercises inventive genius (Dirlik, 1997). For example, in design and technology education, Botswana needs a different approach from the current system which is so predominantly based on Western values that tend to be detached from the needs of some of Botswana's social groups (Moalosi et al., 2004). For example, before 2000, the Botswana junior secondary school curriculum was based on the American Industrial Arts model and the senior secondary school was based on the British Design and Technology model. In 2000, attempts were made to localise both curricula and create a smooth transition between the junior and senior secondary school design approach. However, both curricula are still modelled around the Western design concept with little due regard to the local socio-cultural context. Ndaba (1994) also argues that due to the influence of donor agencies from abroad, such conflicting design approaches cause a lot of confusion and frustration among the stakeholders.

Importance of cultural concepts in Design and Technology

Design and Technology in Botswana's junior secondary schools is offered to give students basic knowledge and skills in different technological fields. It is a practical subject which emphasis learning through hands-on experience. The teaching of Design and Technology at junior secondary schools is guided by the aims and objectives stipulated in the syllabus. The Design and Technology three-year Junior Certificate programme (2009:3) curriculum stipulates that on completion of the ten-year basic education programme students should have:

- *Acquired knowledge and understanding of society, appreciate their culture including languages, tradition, songs, ceremonies, customs social norms and sense of citizenship.*
- *Understand and appreciate their culture and that of others and realize the importance of cultural influence on technology.*

These aims demonstrate that teachers are expected to teach cultural concepts, knowledge and skills in Design and Technology.

Cultural concepts influence Design and Technology in that when designers create products, they have a duty to ensure that their designs have a link with some practices and customs of the local people. When designers infuse cultural concepts in products, this creates a solid identity of the product. It is through products that traditional and modern cultural values are communicated which expresses the values of the system within which it functions (Moalosi et al., 2010). Design and Technology educators and students should interpret and transform users' needs and wants in features which will give products identity. Carolan (2007) argues that infusion of culture and technological elements in the school's curriculum will reshape the learning of Design and Technology. The teaching of cultural concepts will result in some changes in the way teaching of the subject has been done depending on the areas of culture to be covered. This will require teachers to venture into a new untapped area of cultural design research and product or service design. The research will need to be focussed on the socio-cultural context of the users and this will inform the type of products and services to be designed. Students can start to appreciate and admire their culture related products and this can probably lead to product acceptance by users.

In acknowledging and appreciating the significance culture plays, the Science and Technology Policy for Botswana (1998:5) objectives states:

a. Promote and develop national, indigenous, new and innovative technologies;

b. Create knowledge and awareness, improve and develop the scientific and technological culture of Botswana.
c. Promote and develop traditional technologies and encourage their wider diffusion and application.

The objectives highlight the importance of promoting cultural concepts in technological developments of Botswana. The Science and Technology policy for Botswana forms the basis on which the technology education of Botswana rests. This policy was documented with full knowledge, intentions and understanding that the integration of cultural issues in the teaching on Science and Technology is a necessity. The policy states excellent objectives but falls short on coming up with strategies on how the same can be achieved. From a close analysis it seems the Design and Technology curriculum is not quite aligned to this policy. As such there is need to re-align the teaching of cultural concepts in Design and Technology to this policy. This will be one strategy towards achieving the aims and objectives of the Science and Technology policy.

The framework for a long term vision for Botswana 2016 (2008:38) is one of the documentations that form the vision that Botswana technological education should take in the future. It states that;

Botswana does not at present have a strong tradition for technical research and development that can be used as basis for developing 'home grown' technology. Clearly in the early stages most of the technology will need to come from elsewhere. However, even the transfer and adaptation of technology to local conditions will require expansion in the capacity for research and development within Botswana.

The framework acknowledges the deficiencies which the country has as far as research on local technology is concerned. However, it encourages the nation to get involved in researching more on local technologies so that there could be some documentation which could be used as reference materials.

All the government policy documents reviewed emphasise the importance of culture in technological development. One of the strategies to achieve these aims is to have a solid foundation in the education system of which Design and Technology education is a major contributor.

Cultural concepts in Design and Technology Education Curricula

Various Design and Technology Education curricula around the world do integrate cultural concepts to a limited extent. Most countries cover such concepts under the strand 'technology and society' and in Australia these concepts are covered under three strands thus: designing, making and appraising, information and materials (Table 1). Table 1 illustrates that each country considers the socio-cultural, environmental and technological issues at varying degrees and this is influenced by the local context.

The main aim of studying cultural concepts in Design and Technology Education is to enable students to design products and services that will deliver the following properties as suggested by Dant (1999:55-56)

(a) Function – the object enhances the physical action of its users.
(b) Signification – the object signifies the social group membership of its user.
(c) Sexuality – the object arouses its user or other or both, as a sign from a code indicating identity and interest, through bodily display and sensuality.
(d) Knowledge – the object deliver knowledge to its intended user by storing simple information or a synthetic understanding of some aspect of the world.
(e) Aesthetics – the beauty or form of the object directly moves the emotions of users by representing pure values.
(f) Mediation – the object enhances communication between users.

Many products will deliver more than one of these six properties in different degrees as well as provide tactile quality, symbolism and a story that gives products value and meaning. This is supported by Reinharz, (1992:145) who stated that "cultural artefacts of any given society at any given time reverberate with the themes of that society and that era".

The driving research questions for this study were:
(a) Which cultural concepts are taught in the junior secondary school curriculum?
(b) How are the cultural concepts taught?
(c) How are these concepts assessed?

Research Method

A qualitative case study methodology was conducted in junior secondary schools in and around Gaborone (Botswana's capital city), to enable the researcher to discover participants' daily experiences on the subject matter. Baxter and Jack (2008) argue that a case study provides tools for researchers to study complex phenomena within its real-life context. When the approach is applied correctly, it becomes a valuable method for design research to develop theory, evaluate programmes,

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and develop interventions. The method allowed the researchers to collect extensive data using multiple forms of data collection such as observations, interviews, documents and visual materials (Creswell, 2002). Individually semi-structured interviews were conducted with eight teachers and focus group interviews were conducted with 17 Form 2 (14 year-old) students and 20 Form 3 (15 year-old) students using the non-probability purposive sampling technique (Table 2). This sampling technique is suitable where there are financial and time constraints (Castello, 2009). Seven focus group sessions were conducted and each session had a minimum of five students. Students were asked to outline the areas they have covered which relate to cultural concepts, examples of tasks or activities they have covered, the benefits accrued from doing such topics etc. Participants were selected on the basis of their accessibility to the research team. Form 2 and 3 students were selected for the focus group interviews because they have covered enough content in the syllabus for them to respond adequately to the research problem.

The selection of teachers was based on non-probability purposive sampling as well. Preference was given to

Country	Strand	Areas covered
Australia	Designing, making & appraising	– Social and economic circumstances; – Environmental conditions and consequences; – Ethical and cultural issues; – Attitudes and values of people;
	Materials	– Understanding of particular materials in different cultures and environments;
	Information	– Explore the social, cultural and political effects of information technology; – Analyse and present information in ways that are gender and culturally inclusive (Australian Education Council, 1994)
Sweden	Society and technology	– Society (global, state, municipality); – Technology as part of society; – Technology and environment; – The needs of society; – Social interaction; – Morality, ethics, social justice, skills and values (Rasinen, 2003)
New Zealand	Society and technology	– Understanding the ways the beliefs, values and ethics of individuals and groups; – Influence attitudes towards technological development; – Understanding the impact of technology on society and the environment: past, present and possible future as well as at local, national and international settings (Technology in New Zealand curriculum, 1997).
Hong Kong	Society and technology	– Impact of modern technology on society (environment, transportation, communication, manufacturing); – Ways and beliefs people promote or constrain technology developments in local, national and international setting (Design and Technology – alternative syllabus, 2010)
South Africa	Society and technology	– The environment, beliefs, culture, values of the society impact upon the development of technology; – Cultural factors; – Indigenous solutions (Technology: Manual, 1994)

Table 1. Cultural concepts in Design and Technology Education curriculum

teachers who had at least two years teaching experience because they were better placed to give appropriate information due to their teaching experience. Document analysis and students focus groups were used to verify the accuracy of the data obtained from the teachers interviews. The focus of doing this was to find out which cultural elements were taught to students as well as examine how the same was assessed.

Table 2 Participants profile	
Number of teachers	8 (6 male, 2 female)
Number of students	37 (25 male, 12 female)
Students' age range	14-15
Teachers' educational qualifications	Diploma & Degree holders
Students' educational background	Form 2 & 3
Educational institution & country	Junior secondary schools in Botswana

Table 2. Participants profile

Data analysis

All interviews and focus group sessions were recorded and transcribed. A coding system was developed for the textual and visual data which were then analysed through content analysis using a qualitative software called Atlas.ti. The development of the coding system involved naming and grouping data in themes. The themes were represented by words, phrases or paragraphs in the text. For example, a sentence such as "we do not have reference materials like books on local materials, processes and technology" was coded as 'support material' (SM).

Data analysis involved relational analysis that is, examining and identifying the relationships among the themes present in a given text. Individual concepts in and of themselves are viewed as having no inherit meaning; rather the meaning is a product of the relationships among concepts in a given text (Carley, 1990). This section reflected on the participants' points of view on the teaching of cultural concepts in the curriculum.

Findings

The findings indicated that students have never covered any content on cultural concepts despite the fact that some of the syllabus aims demand that it must be covered. This was supported by data from students' interviews as stated:
That topic was covered at the Social Studies class not in Design and Technology.

We do not know anything about cultural concepts in design. We have never covered any topic which deals with cultural concepts.

Some teachers also alluded to the fact that they do not teach the area on cultural concepts due to the following reasons:

I have never covered the aims in the syllabus which deal with cultural concepts due to lack of support materials.We do not cover this topic because it is not examinable.
It will benefit students a lot to cover the topic but what drives us is to teach material that is examinable.

What is emerging from the above excerpts is that some teachers only concentrate their efforts on teaching students examinable topics and neglect those that are non-examinable. Teachers' emphasis is on teaching students to pass the examinations rather than imparting a holistic range of life-long knowledge and skills needed by students. However, some teachers claimed that at times they infuse the cultural content in their teaching as expressed by the following teacher:

This is done through infusion. For example, in a topic like structures, we emphasise the importance of the rigidity of the structure. The structures used in building traditional huts are sound and rigid... Students can learn some structural principles through this cultural building.

There was no concrete evidence to support the aforementioned claim except being given as an example in one topic. If ever, cultural concepts are taught, students should be aware of this fact and furthermore, their design projects, assignments and teacher's schemes of work should provide the needed evidence.

The syllabus content is flawed as it does not break down what must be taught under cultural concepts and this has resulted in the aims set in the syllabus not being covered at all. Teachers claimed that the teaching of cultural concepts in Design and Technology needs proper planning of the syllabus and it should be complemented with proper guidance and support materials. This claim is supported by these sentiments from teachers:

As teachers, we can teach cultural concepts if the syllabus could be structured such that it clearly shows what to teach and how far we should go, just like other topics. At the moment, the syllabus is silent. The aims are there but there is lack of guidance on this topic.
The syllabus does not break down the topics that should be taught under these aims….
The syllabus should stipulate the topics to be taught under cultural concepts.

It emerged through the research that there is need for appropriate research on local materials, processes and technologies because it hinders the teaching of cultural concepts. Documenting these could act as reference materials to be used in schools. Some teachers expressed that;

We do not have reference materials like books on local materials, processes and technologies.
We depend on books which are imported from abroad which do not cover the area in question.
The authorities are also of no help in this regard. They never talk about it. May be the topic is not that important to them.

Conducting research into local materials, processes and technologies is a long term solution for the current challenge faced by teachers. According to the interviews conducted, both students and teachers believe that cultural concepts could be taught or infused in project work. This can result in products which reflect the socio-cultural practices of Botswana. Students felt that learning of cultural concepts in Design and Technology could help in preserving and promoting the culture of Botswana. This view was articulated by participants as follows:

We can learn about the cultures of other tribes in Botswana.

We can pass the culture of Batswana to the next generation and that is preserving and promoting Botswana's culture.

Culture is dynamic and in some instances it is shaped by the designed products used by the society. Teachers suggested that cultural concepts can be infused in design projects. Good aspects of traditional values can be integrated in cultural products and then innovated by incorporating new technology or systems and controls. This point was lamented by the following participants:

Technology can be integrated in some of the cultural products to add to their value.
Since culture changes, we can incorporate new technological processes to shape it.
Systems and controls can be infused in some mechanical cultural products to improve their efficiency...

The statements from participants indicated that design has the power to innovate cultural products and as such change the society's culture. This can only be achieved through a carefully structured design education curriculum.

The study also found out that participants were mainly articulating how cultural concepts can be taught rather than reflecting on what they are currently teaching in the classroom. This was due to the fact the teachers hardly cover the aims which deal with cultural aspects in the syllabus. Similarly, on issues of how teachers assess work done on cultural concepts, there was no evidence to show that they did as elaborated below:

I have never assessed that component…
I do not teach this aspect and therefore, I have never assessed it.
If support materials were available, I could teach this area and assess it.

Discussion

There is great need to empower teachers since they are supposed to teach issues of cultural concepts. It is wrong to assume that during implementation teachers can easily handle this area with confidence. Workshops should be conducted in all the regions in the country where teachers should be equipped with necessary knowledge and skills on issues of content coverage, assessment, learning and teaching strategies to be used when delivering the content. Teachers need to be given guidance on what exactly they need to teach which is related to culture as well as how it could be taught. The possible cultural concepts to be taught in the Design and Technology curriculum could include an introduction to these areas, but not limited, to some of the following:

a. Social anthropology – structure of the social groups, behaviour patterns, society values, beliefs, customs, social communication, cultural identity and storytelling. This area will help Design and Technology students to interpret narratives, ritual and symbolic behaviour in relation to the society's action and practice to inform and enrich a cultural-orientated design practice.
b. Cultural ecology – application of technology to the environment, basic survival problems, creative culture, cultural invention, cultural awareness and appreciation, cultural differences, culture and ergonomics, culture and emotions. In this topic, students could study the relationship between the society, technology and its impact on the natural environment.
c. Economic anthropology – exchange of products and services, cultural traits and patterns (material artefacts, tools and artworks). For example, students could analyse the traditional production processes, distribution channels and the society's consumption patterns to inform the design process).
d. Visual anthropology – ethnography, analysis of observable material items, games, ceremonies, visual arts and crafts. (In Design and Technology lessons, students could study and analyse visual representations such as the art and crafts, motifs, painting etc. so that traditional design features can inform contemporary

design).

It is anticipated that, when the above-mentioned cultural concepts are taught, this will set a basis to design and produce products and services that promote cultural appreciation, diversity, tolerance and respect through design and technology.

Conducting in-service workshops on some of the proposed cultural concepts will create a common understanding amongst teachers and clear the mist of confusion which teachers might find themselves facing if they do not know what to teach and how to teach it. Empowering teachers should be taken a step further by trying to change their mind set so that they can all recognise the value of teaching cultural concepts in Design and Technology. This is necessary because there may be some teachers that are of the view that such an exercise is not important. The success of the teaching of cultural concepts in schools as Carolan (2007) argues, depend on the teachers' appreciation and admiration of culturally related products. Yang (2007) maintains that students and teachers will start to appreciate and admire culturally related products. It is important for Design and Technology educators to know that they can easily undermine the indigenous cultural systems of their societies by overlooking this pertinent issue. It is through artefacts that cultural values are communicated and Design and Technology should become an important medium of communication which expresses the value system of the society.

The teaching of cultural concepts will obviously result in some changes in the way Design and Technology will be taught. This will depend on the areas which will be covered and it will require teachers to venture into a new untapped area of design education. Such a venture will encourage teachers to contest meaning, beliefs and practices as they believe cultural concepts should be taught to students through infusing them in design projects. This is the basis of postcolonial theory which seeks to challenge such knowledge construction, truth and representation. This could alter accepted academic knowledge and share alternative perspectives that will impact on social relations between producers and customers (Carolan, 2007). For example, in Africa it is a fact that design is heavily linked to the arts and crafts industries rather than mass production industries (M'Rithaa, 2011). Botswana is no exception and there are few industries in the country which support mass production. A new design approach could be developed based on the concept of design for customisation which has its roots borrowed from the arts and crafts. Another dimension could be to consider how design can be used to add socio-cultural and economic value to the arts and crafts products so that they can compete globally. There is also a possibility of designing through storytelling thus designing experience-based products and services which have narratives for their users. Storytelling is one of the foundations of Botswana's culture.

There is a serious need for scholars to research and document areas affecting Botswana's culture with special emphasis on design. This will help in developing resources that will guide teachers and students in this subject. Developing such support resources will assist in building reference materials to be used in schools. In developing the same, manuals can be made to help students cover the same content uniformly across the country. Polito (2005) argues that theories of learning have indicated that learning is effective when students are engaged in hands on exercises. When students are engaged in practical activities they tend to remember and understand what they have learnt easily. It is through practical activities that students gain and develop knowledge and skills on different materials. It is recommended that practical exercises must be done when teaching cultural concepts in Design and Technology.

Conclusion

Design is embedded in the society's culture and it is imperative for design education to recognise this reality. Evidence from the literature indicated that culture influences design in that students should design and make products that have a link with some of the social practices and customs of the local people. Such products satisfy people's cultural and spiritual needs. However, it emerged from the study that the afore-mentioned facts cannot be achieved in Botswana's context because cultural concepts are hardly taught in schools. Design education is one medium of intervention which can assist in fully integrating cultural concepts in Design and Technology. Botswana government documents such as the Science and Technology Policy (1998), National Policy on Culture (2002), The framework for a long term vision for Botswana 2016 (2008) and the Design and Technology three-year junior certificate programme (2009) all acknowledge the importance of culture in technological development. However, these documents failed to clearly outline how this can be achieved. The authors have proposed some strategies which can be adopted to adequately address this area such as running in-service workshops for teachers and developing appropriate support materials in the area in question.

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