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A CULTURE-BASED DESIGN PEDAGOGY FOR NIGERIAN AND SOUTH AFRICAN SPATIAL FORMS

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A CULTURE-BASED DESIGN PEDAGOGY FOR NIGERIAN AND SOUTH AFRICAN SPATIAL FORMS

A DISSERTATION APPROVED FOR THE GRADUATE COLLEGE

BY

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Dedicated to my son Bolu, my parents, my siblings, my nieces and my nephews.

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ABSTRACT

Previous authors have discussed non-Western design forms with regards to the significance of integrating global issues, diversity issues in design curricula, and designing in diverse cultural settings. However, there are few studies that examine instructional approaches that use non-Western African design forms. The purpose of this study was to develop and test instruction on Nigerian and South African spatial forms in an Interior Design studio in a Southwestern University (N=17). The study focused on how students responded to the instruction, their ability to synthesize design ideas for different cultural settings using design theories, their utilization of examples from non-Western perspectives as references for discussing design, and their ability to solve design problems in a different cultural setting. The hope was that the extent to which their skills improved will significantly prepare them for a diverse and global society.

The instruction was developed using one facet of ACT-R learning theory (Anderson, 1995), anthropological methods (Creswell, 2009; Hall, 1966; Kingsolver, 1998; O'Reilly, 2005; Silverman, 2005), and Grant's pedagogical approaches (Grant, 1991). The distinction between declarative and procedural knowledge was used to help students learn about Nigerian and South African spatial forms and how to apply those forms. Anthropological methods were used to elucidate information about Nigerian and South African design aesthetics. Grant's (1991) pedagogical approach of introducing diversity in

design education was embedded in the instruction using three steps: the inclusion, contribution, and transformational approaches.

An ethnographic study which combined a case study methodology from educational research and the comparative method from anthropology encapsulated the experiences of participants. The data sources were pre- and post-test questionnaires, observational data, video recording, actual design projects developed by participants, and interview data. Multiple data sources indicated the instructional design process was successful in helping students problem-solve in a different cultural setting. It highlighted the importance of helping students with the development of declarative knowledge on Nigeria and South Africa, teacher-centered and discovery methods, and constant feedback as a way to foster automatization (Anderson, 1995).

Participants responded positively to the instruction. The data showed they used a combination of abstract and concrete themes derived from Nigerian and South African cultures to develop their design solutions. Participants demonstrated their understanding of diverse background of design theories in their creative thinking, critical thinking and decision-making processes during the study. This was evident in how the different student groups articulated their spatial organization, implemented aspects from the cultures artistic expressions in their solutions, and demonstrated an understanding of color and materials from the different cultures. Evidence from different data sources such as the questionnaires, observational data, and interviews show that students were able to use examples from non-Western perspectives as references for

discussing design ideas. Additionally, through multiple data sources, students report being better at solving design problems in a different cultural setting.

CHAPTER 1

INTRODUCTION

Background of Problem

In 2010, the United States Census Bureau estimated that ethnic minorities make up 36.3% of US population. One in three Americans is a minority and this indicates we live in a very multicultural society. These population trends imply the need to understand multiple cultures and an increasing need for studies that introduce diverse and culture-based perspectives in education. As a result of these population trends, for the past decade there has been increased emphasis in higher education upon internationalism and learning in a global community (National On-Campus Report, 2004). For example, the Association of American Colleges and Universities (AAC&U) 2002 National Panel recommended the following as essential for students to succeed in the world they will inherit:

1. The human imagination, expression, and the products of many cultures.
2. The interrelations within and among global and cross-cultural communities.
3. Means of modeling the natural, social, and technical worlds.
4. The values and histories underlying U.S. democracy. (p. XII)

In the design fields, the implications of our multicultural societies have been recognized. For example, in a report titled *Building Community: A New Future for Architecture and Practice* sponsored by the Carnegie Foundation for the Advancement of Teaching, Boyer and Mitgang (1996) noted that, “the need for inclusiveness is more urgent than ever. Repeatedly, we were told by practitioners and educators that much of the future of the profession lies beyond

U.S. borders, in developing nations and in non-Western cultures" (p. 96). Similarly, Leigh and Tremblay (2002) noted:

> Globalism, a comprehensive consideration of events, actions and consequences, is affecting the interior design profession whether interpreting clients needs, designing and planning diverse spaces, specifying products, or constructing the interior built environment. (p. IV)

However, current design education is still dominated by Western cultures with little or no emphasis on non-Western cultures. Jani and Asojo (2007) conducted a survey of Interior Design Educators in the Interior Design Educators Council (IDEC) listserv and their findings indicated that not much progress has been achieved in the realm of culture-based design. Interior Design educators noted the need for materials and resources on non-Western issues. They further indicated that, for educators to be able to include diverse multicultural perspectives in design discourse, instructional approaches, tools, materials and resources were needed.

The inclusion of non-Western perspectives in the design of spaces is not new to design practitioners. There are several precedents from design practice where renowned designers have drawn inspiration from non-Western cultures. For example, Robert Mill in his winning entry for the Washington monument competition used the African Obelisk from Ethiopia (Grant, 1991; Elleh, 1997). Similarly, Frank Lloyd Wright, Bruce Goff, Christopher Alexander, Alessandro Anselmi, Louis Kahn, and Le Corbusier borrowed design conceptual ideas from Native American, Meso American, Asian, and African architecture (Grant, 1991). On the African scene, designers like David Mituzo in the design of the United Nations Complex, Nairobi, Kenya; Justus Dahinden in the design of the

Pilgrims Shrine, Uganda; and Demas Nwoko in the design of Dominican Church, Nigeria all used African geometric forms and organizational principles (Elleh, 1997).

In architectural education, there are several precedents for diversifying the curriculum. For example, using a more inclusive approach to design history, Elleh (1997) documented the history of African architecture from antiquity to contemporary times. Similarly, Grant (1991) in his article on *Cultural Invisibility: The African American Experience in Architectural Education* recommended three pedagogical approaches for introducing diversity in design education. They are:

1. The inclusion approach: utilizes examples from non-western perspectives as references for discussing design ideas;
2. The contribution approach: selects invisible designers (non-western) and analyzes the contributions they have made; and,
3. The transformational approach: the most comprehensive of the three, "attempts to significantly alter student experience and, therefore, learning...it allows one to have an oppositional view or a means to expand the critical and analytical eye in order to find and understand diverse backgrounds of design theories" (Grant, 1991, p. 161).

Grant uses the inclusion and contribution pedagogical approaches in the development of transformational methods of introducing diversity in design theory, through courses that explore design in a variety of cultural settings.

Statement of Problem

Previous authors have discussed historic non-Western design forms (Ching, F.D.K, Jarzombek, M.M., and Prakash, V. 2007; Elleh, 1997) with regards to the significance of integrating global issues, diversity issues in design curricula, and designing in diverse cultural settings (Asojo, 2001; Asojo 2007; Grant, 1991). However, there are very few studies that examine instructional approaches that use non-Western African design forms. The purpose of this study was to directly address this void by developing and testing instruction on Nigerian and South African spatial forms using one facet of ACT-R learning theory (Anderson, 1995), anthropological methods (Creswell, 2009; Hall, 1966; Kingsolver, 1998; O'Reilly, 2005; Silverman, 2005), and Grant's pedagogical approaches (Grant, 1991).

The distinction between declarative and procedural knowledge (Anderson, 1995) was used to help students learn about Nigerian and South African spatial forms and how to apply those forms. Anthropological methods were used to elucidate information about Nigerian and South African design aesthetics. Furthermore, Grant's 1991 pedagogical approach of introducing diversity in design education was embedded in the instruction in three steps:

1. By using Grant's inclusion approach to develop examples from Nigeria and South Africa as references for discussing design;
2. By using Grant's contribution approach of selecting Nigerian and South African designers and architects and analyzing their design contributions; and,

3. By using Grant's transformational approach, where students problem solve in a cultural setting to help them synthesize design ideas for different cultural settings using design theories.

Research questions

The following research questions guided the study:

Question 1: How do students respond to an instructional program that utilizes Nigerian and South African spatial forms to learn about design?

Question 2: Is there evidence that students were able to synthesize design ideas for different cultural settings using design theories?

Question 3: Is there evidence from different data sources that students were able to use examples from non-Western perspectives as references for discussing design ideas?

Question 4: Do students report being better at solving design problems in a different cultural setting?

The Five Stages of the Study

The study occurred in five distinct stages as illustrated in Figure 1. The literature review in Chapter 2 covers Stage 1, which was the development of the instruction that integrated Anderson's ACT-R theory, Grant's pedagogical approaches, anthropological methods, and classroom based research precedents. Chapter 3 (Methodology) and Chapter 4 (Results) cover Stages 2, 3, and 4. Stage 2 was the design of the study, delivery of instruction, and inception of data collection. Stage 3 involved the evaluation of participants work post instruction. Stage 4 involved interviews of participants. Chapter 5 (Data

Analysis and Interpretation) covers Stage 5, the analysis and interpretation of the themes and findings in terms of the research questions.

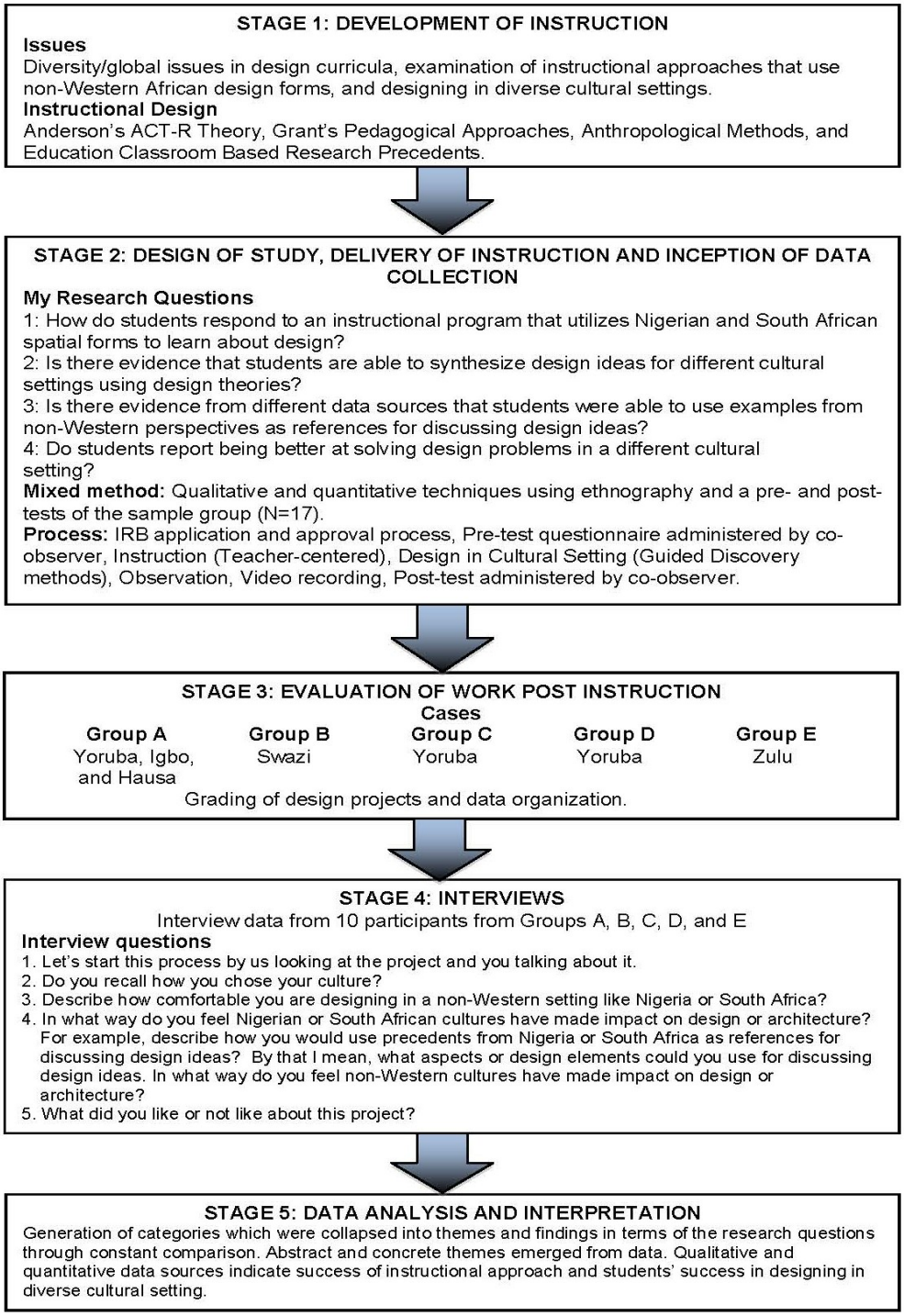

Figure 1. Procedure for a Culture-Based Design Pedagogy for Nigerian and South African Spatial forms.

CHAPTER 2

LITERATURE REVIEW AND ITS IMPLICATIONS

Stage 1: Development of Instruction

A Case for Culture Based Design from Nigeria and South Africa

Previous scholarship about culture based design has included proposing international design education (Fairbrass & Harris, 1986; Guerin & Mason, 1993; Guerin & Thompson, 2004; Leigh & Tremblay, 2002), exploring design in a variety of diverse cultural settings (Asojo, 2001; Asojo, 2007; Grant, 1991), and virtual design charettes and actual physical exchanges in Canada, the United States, and Mexico (Kucko, Prestwood, & Beacham, 2005). The discussion about internationalizing design education began with the 1986 Interior Design Educator's council annual meeting. At that meeting, Fairbrass and Harris (1986) encouraged interior design educators to integrate international activities into their classrooms by exposing students to other cultures, histories, and lifestyles.

In another study, Guerin and Mason (1993) presented an experiential framework for internationalizing interior design education that studied characteristics of study-abroad programs. Similarly, the fall 1994 Futures roundtable in Chicago, Illinois which consisted of 16 participants representing interior design practice and education met to determine trends in the profession. The resulting list included areas such as technology, art and culture, education, the environment, and business. Global cooperation, business values, cultural

diversity, and technology were noted as important areas to be addressed by the interior design profession (Hasell & Scott, 1996).

The accreditation boards for Interior design and architectural education have also both recognized the importance of integrating culture, diversity and global issues in design education. For example, the 2009 Council for Interior Design Accreditation (CIDA) professional standard 2 requires “entry-level interior designers have a global view and weigh design decisions within the parameters of ecological, socio-economic, and cultural contexts” (p. 12). Similarly, the 2009 Conditions for accreditation from the National Architectural Accrediting Board (NAAB), Inc. standard 2 A.9 on historical traditions and global culture requires that students have an

> Understanding of parallel and divergent canons and traditions of architecture, landscape and urban design including examples of indigenous, vernacular, local, regional, national settings from the Eastern, Western, Northern, and South hemispheres in terms of their climatic, ecological, technological, socioeconomic, public health, and cultural factors. (p. 23)

Furthermore, on cultural diversity, the 2009 National Architectural Accrediting Board (NAAB), Inc. standard 2.A.10 recommends students understand “the diverse needs, values, behavioral norms, physical abilities, and social and spatial patterns that characterize different cultures and individuals and the implication of this diversity on the societal roles and responsibilities of architects” (p. 22).

All the aforementioned authors and accreditation requirements suggest the increasing need to engage design students in the global design discourse. Thus, design educators are constantly being challenged to introduce global

issues in design education and are responsible for integrating global design discourse into design curricula. In order to effectively design in today's world, design students have to understand the cultural, social, economic, and political circumstances of many cultures. While previous authors have discussed and illustrated the significance of integrating global issues, diversity issues in design curricula and designing in diverse cultural settings, none have actually tested instructional approaches that use non-Western design forms. No studies exist that focus on sub-Saharan African countries.

In the study presented here, I focused on Nigeria and South Africa, two very diverse countries in Africa that offer numerous precedents for design. I chose Nigeria and South Africa because the entire African continent, with its complex history, will be very difficult to cover in one study. A unique commonality is that both countries exhibit Mazrui's 1986 "triple heritage" with influences deeply rooted in the indigenous, Western, and Islamic cultures. This "triple heritage" is what Elleh (1997) also observed in the architecture of most African cities. African architecture is a product of cross-cultural encounters from indigenous, Western and Islamic cultures. The result is that African cities are different from any other part of the world. Therefore, Africa offers unique precedents for studying culture-based design.

Nigeria is the most populous country in Africa with a population of about 140 million. This population is made up of about 250 ethnic groups. Three of them, Hausa, Ibo, and Yoruba are the major groups and constitute more than 40 percent of the country's population. Virtually all the indigenous populations of

Africa are represented in Nigeria, hence the great diversity of her people and culture. It was in Nigeria that the Bantu and Semi Bantu, migrating from South and central Africa, intermingled with the Sudanese. Later, other groups such as Shuwa Arabs, the Tuaregs, and the Fulanis, all of whom are concentrated in the far north, entered northern Nigeria in migratory waves across the Sahara Desert. The earliest occupants of Nigeria settled in the forest belt and in the Niger Delta region (Embassy of the Federal Republic of Nigeria, 2009).

South Africa has a population of about 50 million people. The 2010 midyear population estimates indicates 79.4% are black Africans, 9.2% are White, 8.8% are colored and 2.6% are Indian or Asians. Major ethnic groups include the Zulu, Xhosa, Basotho, Venda, Tsonga, Swazi, Ndebele, Tswana, and Bapedi. The white population originates from many ethnic groups such as the Dutch, Flemish, Portuguese, Norwegian, German, Greek, French, English, Polish, Irish, Italian, Scottish, and Welsh.

Anderson's Act Theory and its Implication for Instruction in Culture-Based Design

ACT-R (Adaptive Control of Thought—Rational) was developed by John R. Anderson at Carnegie Mellon University (Anderson, 1995). The basic premise is that cognitive tasks humans perform consist of a series of separate actions and procedures. One main assumption of ACT-R is that knowledge can be classified as either declarative or procedural (Anderson, 1995). Anderson (1995) noted "declarative knowledge is explicit knowledge which we can report and of which we are consciously aware" (p. 284). Many Cognitivist theorists

observed that declarative knowledge takes two forms: episodic memory and semantic memory (Bauer, 2006; S.K. Johnson & Anderson, 2004; Tulving, 1983, 1991, 1993; Ormrod, 2008). Episodic memory is a person's memory of a personal life experience, while semantic memory is general knowledge about the world. Procedural knowledge, the second type of knowledge, involves knowing how to execute tasks (J.R. Anderson, 1983, 1995; Corno et. al., 2002). Anderson (1995) observed that "procedural knowledge is knowledge of how to do things, and it is often implicit" (p. 234-235).

Several cognitive and educational psychologists consider procedural knowledge, skills related to the performance of cognitive activities (Anderson, 1995; Ormrod, 2008). Anderson (1995) noted "human cognition is always purposeful, directed to achieving goals, and to removing obstacles to those goals" (p. 237). Therefore, a better understanding of procedural knowledge can be gained through problem-solving activities. It is pertinent to note that in the process employed by designers and architects, the goal is directly aimed at solving problems and achieving goals, which are the client/user requirements for the space being designed. Three essential features of problem-solving activities identified by Anderson (1995) are goal directedness, sub-goal decomposition, and operator application. These three features are relevant to problem-solving in design. Initially, there is a goal by the designer to solve a problem. Next, the designer creates sub-goals for the problem. Finally, the designer puts these sub-goals together and performs tasks to achieve a solution to the design problem. While the distinction between declarative and

procedural knowledge is an underlying assumption of ACT-R, it is important to note it is not an element of the theory. The theory accounts for procedural learning.

According to Anderson, procedural knowledge is acquired in three stages of skill development: cognitive, associative, and autonomous (Anderson, 1995). Anderson (1995) observed the first stage, the cognitive stage represents the phase in which "subjects develop a declarative encoding of the skill; that is; they commit to memory a set of facts relevant to the skill (p. 273). During this stage there is heavy demand on working memory. For example, Anderson (1995) noted the following about the process of learning to drive:

> Learners rehearse facts as they first perform the skill. For instance, when I was first learning to shift gears in a standard transmission car, I memorized the location of the gears (e.g., up, left) and the correct sequence of engaging the clutch and moving the stick shift. I rehearsed this information as I performed the skill. (p. 273-274)

The second stage, the associative stage results out of repeated practice. During this stage a person detects and corrects errors. As a result of which performance becomes smoother and more rapid. This stage fosters practice, thus leading to proceduralization. In the driving experience presented earlier, Anderson (1995) observed

> Two main things happen in this second stage. First, errors in the initial understanding are gradually detected and eliminated. So, I slowly learned to coordinate the release of the clutch in first gear with the application of gas in order not to kill the engine. Second, the connections among the various elements required for successful performance are strengthened. Thus, I no longer had to sit for a few seconds trying to remember how to get to second gear from first. Basically, the outcome of the associative stage is a successful procedure for performing the skill. (p. 274)

Eventually, as the procedure becomes more automated through practice, automaticity emerges in the autonomous stage. According to Anderson (1995), "the procedure becomes more and more automated and rapid" (p. 274-275). The activity now occurs more naturally and rapidly for the learner. Anderson (1995) further observed

> More complex skill like driving a car or playing chess also develop gradually in the direction of becoming more automated and requiring fewer processing resources. For instances, driving a car can become so automatic that people will engage in conversation with no memory for traffic that they have driven through. Two dimensions of improvement with practice are speed and accuracy. The procedure comes to apply more rapidly and more appropriately. (p. 275)

Anderson's (1995) ACT-R has some general implications for teaching procedures that are relevant to the present study. They are:

1. Students must develop an accurate and elaborate declarative representation of the desired procedure (actions) and conditions under which it should be used;
2. Teaching can be accomplished using the expository or discovery methods. The expository method is teacher-centered instruction, while the discovery method occurs via discovery;
3. Feedback is an important component, because it fosters proceduralization; and,
4. Continued practice leads to automatization.

In this study, I used Anderson's ACT-R general implications for teaching procedures to guide students through a culture-based design learning process. In the first step, I guided students through the development of accurate and

elaborative representation of Nigerian and South African culture and design. Students learned aspects of the culture such as general information (location, population, climate, history, languages, government, culture, food, festivals, clothing and textiles, and technology), design philosophy, design elements, design principles, organizational principles, spatial relationships, spatial transitions, form and space, proportion and scale, horizontal elements, environmental issues, etc.

This information was developed using the expository method, which involved teacher-centered instruction, using interactive presentation lecture formats. Additionally, exercises where students learned by guided discovery were integrated. An example of a method built into this study where students learned by guided discovery is when they picked a Nigerian or South African ethnic group and developed conceptual ideas based on the traditional and contemporary design from that ethnic group. Students were asked to include the following in their conceptual ideas: location, brief history, philosophy, form and space, spatial organization, and material technology. Students also learned through discovery in the process of designing a restaurant to highlight Nigerian and South African cultures.

Images were used to provide information about the cultures, since design students generally possess high levels of visual literacy, because of their constant utilization of visual and graphic methods in the design process and design problem-solving. This process facilitated learning through discovery. Constant feedback was important to foster proceduralization and with constant

practice the process became automatized and natural. The hope was that the state of automatization was accomplished through the final design project, where the students designed a restaurant in an urban setting in Lagos, Nigeria or Johannesburg, South Africa to highlight each country's culture for tourists. Table 1 illustrates a chart of the steps in which I utilized the general implications of Anderson's ACT-R for teaching to help students learn about Nigerian and South African designs.

Grant's Pedagogical Approaches and its Implication for Instruction in Culture-Based Design

Grant (1991) recommended three pedagogical approaches for introducing diversity in design education: the inclusion, contribution, and transformational approaches. The inclusion approach utilizes examples from non-western perspectives as references for discussing design ideas. The contribution approach selects invisible designers (non-western) and analyzes the contributions they have made. Regarding the most comprehensive approach, the transformational approach, Grant (1991) noted:

> Attempts to significantly alter student experience and, therefore, learning. It injects perspectives, references, and content through cross-cultural experiences that shape students' understanding of significant architectural theories while demonstrating alternative creative thinking and decision-making skills. To transform or change the existing singular context and its assumptions, a revised curriculum, cultural emphasis, and learning context are required. (p. 161)

Grant uses the inclusion and contribution pedagogical approaches in the development of transformational methods of introducing diversity in design theory through courses that explore design in a variety of cultural settings. In

this study, I will build upon the existing body of knowledge by developing a pedagogical model of how diverse culture-based design perspectives are introduced in studio. Using Grant's inclusion, contribution, and transformational approaches, design students explored design in Nigeria and South Africa. Grant uses the inclusion and contribution pedagogical approaches in the development of transformational methods. He introduces diversity in design theory through courses that explore design in a variety of cultural settings. Like Grant, the project in this study began by utilizing the inclusion and contribution approaches (Grant, 1991).

I guided students through the study of Nigerian and South African design precedents and culture. The hope was that, in the process of designing a restaurant in an urban setting in Lagos, Nigeria or Johannesburg, South Africa to highlight the cultures of the countries, the students would develop a "critical and analytical eye" which will enhance their appreciation of the importance of culture-based knowledge within design. The extent to which this occurred would determine the success of the instructional approach. Tables 2 and 3 illustrate a synopsis of design precedents from Nigerian and South African spaces using the inclusion and contribution approaches as references for discussing design ideas presented to the students.

Table 1

Anderson's ACT-R General Implications for Teaching about Nigerian and South African Design

Task	Process
Develop accurate and elaborate declarative representation of Nigerian and South African designs	Examples of topics covered to help students develop an accurate and elaborate representation are the following: • General information about the Culture: Location, Population, Climate, History, languages, Government, Food, Festivals, Clothing and Textiles, Technology, etc. • Design Philosophy: Design theories/ideologies, Religious and Cultural values, natural elements (earth, water, air, fire, sky) and their importance. • Design Elements: Line, Form, Shape, Space, Texture, and Color • Design Principles: Balance, Rhythm, Emphasis, Proportion, Scale, and Unity/Harmony. • Organizational Principles: Centralized, Linear, Radial, Clustered and Grid planning styles. • Spatial Relationships: Interior/exterior, Spatial adjacencies, Spatial hierarchy, Patios, Courtyards, Verandahs. • Spatial Transitions: Circulation, Approach, Entrance, Importance of threshold changes, Path, Edges, Nodes, Corridors, Courtyards etc. • Articulation of form and space, Cultural Identity and Symbolic meaning, Proportion and scale, Role status and hierarchy in determining proportion and scale of the buildings and spaces. • Horizontal elements: Base planes, Depressed planes, Overhead planes • Vertical elements: Trees (discuss symbolic meaning), Columns, Arches, Vaults, Minarets, Walls, Niche. • Properties of enclosures and quality of space - Shape and Form, Proportion and Scale: volume, Light, View, Texture, Pattern, Surface and Color, Sound. • Environmental issues: Sustainability and Green Design issues. • Furnishings and Materials: Building materials, Furniture, Textiles and Accessories. • Precedent studies: Examples of building types - Religious buildings, Residential buildings, Commercial buildings, Civic buildings, etc.
Expository Methods (Teacher centered instruction)	Using the expository methods involves teacher-centered instruction to help students develop declarative knowledge. The above-mentioned topics will be presented in PowerPoint and interactive presentation lecture format on Nigerian and South African design. Anthropological methods such as ethnographic information, proxemics, and genealogies will be used to elucidate information about Nigerian and South African design aesthetics.
Discovery Methods	The discovery method allows students to learn through discovery. Projects are assigned to enhance discovery. Examples of project types to foster discovery: Task 1: Assign students the task to pick a Nigerian or South African ethnic group and summarize the traditional and contemporary design or space from that culture. Ask students to include the following topics: location, brief history, philosophy, form and space, spatial organization, and material Technology. Task 2: Interior and lighting design of restaurant in Nigeria and South Africa in an urban setting in Lagos, Nigeria or Johannesburg, South Africa to highlight the country's culture and food for tourists.
Feedback Component	Feedback is an important component, because it fosters proceduralization. Feedback from the instructor is paramount. Any misconceptions and disequilibrium is corrected with feedback and constant critiques and input from instructor.
Automatization	Continued practice leads to automatization

Table 2

Design precedents from traditional Nigerian and South African spaces using the inclusion and contribution approaches as references for discussing design.

Culture	Location	Spatial Organization	Artistic Expression
Hausa-Fulani (Figure 2)	Nigeria	Street patterns were radial in Hausa-Fulani cities, which had authoritarian communities. Spaces were sometimes based on rectilinear or curvilinear geometry or a juxtaposition of both. Buildings had dome or flat roofs sometimes on quadrangular or square forms. The center was important in Hausa-Fulani culture. Arches and vaults were predominant.	Wall decoration and painting was very predominant. Resurfacing of walls was an annual ritual. Hausa-Fulani specialized in ironwork, leather, pottery and goldsmithing. Arabic scripts and geometric patterns were sculptured on walls.
Igbo	Nigeria	Street patterns were based on winding labyrinths in Igbo societies, which had a more diffused authority structure.	Wall decoration and painting was very predominant and women painted the interiors and exteriors of the family Obi.
Benin	Nigeria	Street patterns based on a modified grid in Benin, which had authoritarian communities. Buildings were based on impluvium style with central courtyard.	Famous for ancient carvings and artistic work made of ivory that adorn many museums in the West.
Yoruba (Figures 3 and 4)	Nigeria	Street patterns were radial in Yoruba cities, which had authoritarian communities. Buildings were based on impluvium style with central courtyard.	Woodcarvings, decorative patterns sculpted into walls, verandah and columns. Human mythological and animal symbols were also sculpted on walls. Elaborately carved doors and caryatids. Sculptures in Ife were made out of bronze and terracotta. Famous for aso-oke weaving.
Zulu (Figure 5)	Present day South Africa	Cities or settlements were circular in form. Huts were domical or beehive in form.	Renowned for their basketry and beadwork. Zulu beadwork combined geometric shapes and colors. Zulu baskets were made by men and women and similar to their beadwork, they integrated some geometric patterns and colors.
Ndebele (Figure 6)	Present day South Africa and Zimbab-we	Basic layouts were made up of rectangular walled compounds with a centrally located main house that was divided into the front and back. The courtyard served as an outdoor room. It was used for cooking, washing and socialization.	Renowned for the wall paintings and art by the women. Ndebele paintings were typically bold, brightly colored and predominantly made up of geometric designs with black outlines.
Basotho	Lesotho	Conical beehive roof with a cylindrical structure made of pliable materials.	Walls of huts were decorated with simple patterns that were hand drawn. Earth tone colors such red, yellow, cream and browns are used. Stone mosaics are also used as decorative elements on the exterior (Aston, 1952). Traditional Basotho straw hats were conical in shape similar to their huts. Men built the huts and women painted and maintained them.

Table 3
Design precedents from Nigerian and South African contemporary spaces using the inclusion and contribution approaches as references for discussing design.

Culture	Location	Spatial Organization	Artistic Expression
Contemporary Nigeria (Figure 7, Dominican Church Ibadan, Nigeria designed by Demas Nwoko)	Nigeria	Round spatial planning, the sanctuary radiates around altar, serving as central focus and reinforcing the concept of community similar to traditional Africa societies. Existence of a gradual transition from outside to vestibule to the sanctuary and altar. Verandah around the sanctuary allows for a relationship with nature and cross ventilation, thus reinforcing simplicity.	Decorative elements, such as woodwork on altar, seats, carved columns recall traditional artistry. Simplicity of Dominican order matched in the use of natural materials (wood and stone) and warm earth tones. Use of brown and green tones. Materials left unfinished for simplicity.
Contemporary South Africa (Figure 8, Housing Project, Cape Town, South Africa designed by Luyanda Mpahlwa)	South Africa	Simple two-story, single-family housing planning style is rectilinear.	Mpahlwa's inspiration is from traditional South African architecture's use of local materials. He uses bags full of sand because of its abundance and the exterior is plastered. In many cases, members of the community gathered together to pack sand bags to be used for construction. This is a community-oriented process reminiscent of traditional societies.

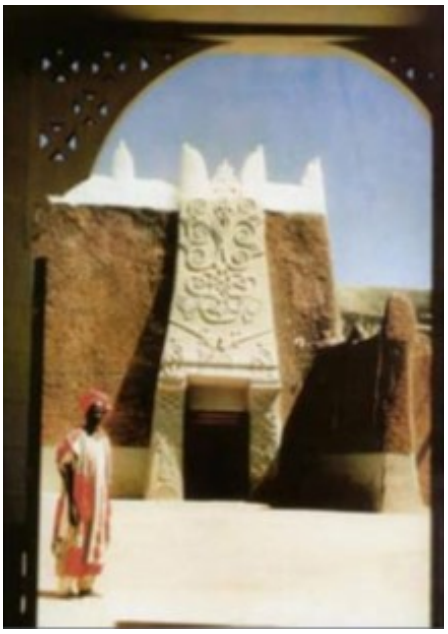

Figure 2. Traditional Hausa Wall Entrance Portal of the Emir's Palace at Bauchi, Nigeria. Wall decoration and painting was very predominant in Hausa buildings. Paintings were more abstract among the Hausa, who are predominantly Moslem, because Islam forbids figurative paintings.

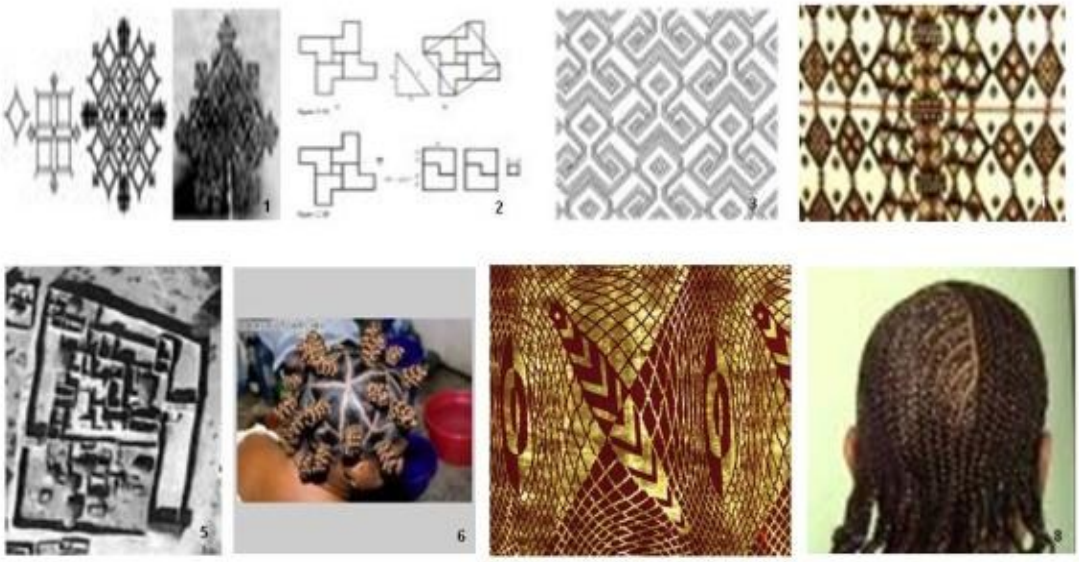

Figure 3. Images illustrate how traditional settlements tend to use fractal structures- rectangular walls enclosing rectangles with streets that branch down to tiny footpaths with striking geometric repetition. Fractals are often seen in carvings, architecture, ornamentation, jewelry and even hairstyles.

Figure 4. King's Palace, Owo, Nigeria largest palace in Yorubaland covers 44 hectares. Images depict elaborately carved entrance doors. The beams, lintels and boards of ceilings are carved with human, mythological and animal figures and geometric patterns.

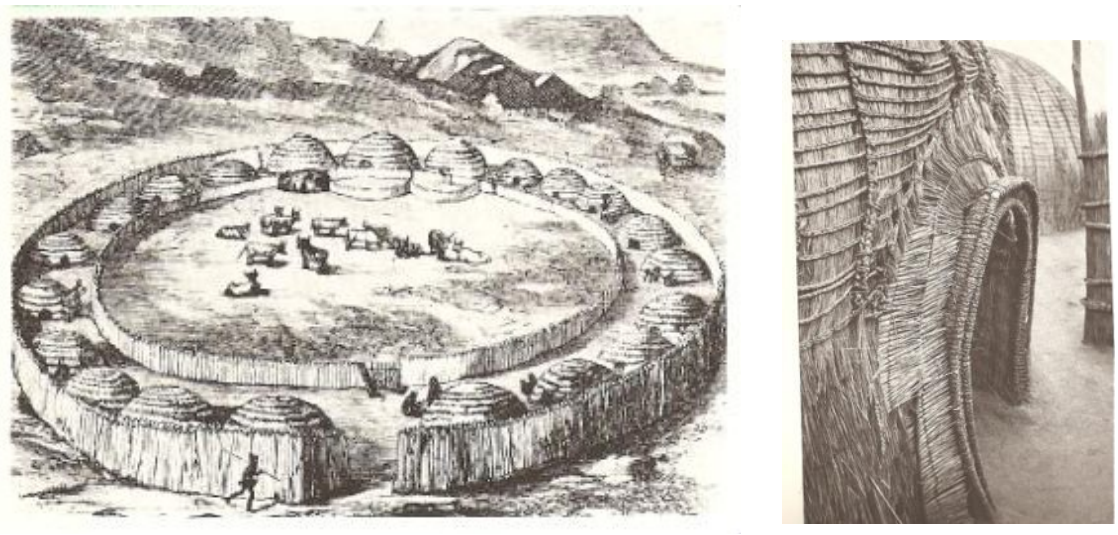

Figure 5. Traditional Zulu Kraal showing cities or settlements were circular in form. Zulu huts were domical or beehive in form.

Figure 6. Traditional Ndebele houses illustrate bold, brightly colored geometric designs outlined in black.

Figure 7. A contemporary adaptation illustrated in the church design by Demas Nwoko in the 1970's. The major elements from the Yoruba culture in this region can be seen in the engravings on columns and the wall treatments in the sanctuary. The woodwork on the altar, seats and ironmongery are reminiscent of the traditional artistry of this region.

Figure 8. MMA's Indaba House features a two-story timber frame with sandbag infill in Cape Town, South Africa

Anthropological Methods and their Implications for Instruction in Culture-Based Design

Anthropological methodologies include research traditions such as phenomenology, participant observation, the comparative method, life histories, genealogies, photography, grounded theory and the study of proxemics. In the present study, these research traditions were used to elucidate information about Nigerian and South African design aesthetics to participants. Phenomenological research is a qualitative method in which the researcher captures the individual's experience of a phenomenon as described by the participant (O' Reilly, 2005). It often involves long interviews with about ten people. Participant-observations involve personal observations in which the researcher gains the trust of the community being studied by immersing herself or himself in the culture, so as to learn about significant aspects such as human interaction, human behavior, kinship patterns, aspects of ceremonialism, and spatial layout of the culture. The comparative method involves the analysis of cultures to learn and explain patterns of similarities and differences.

Life history collection by the researcher is another anthropological field technique. The goal is to capture important information from the subjects. Genealogies help to highlight information about the group's ancestry. Photography involves taking and documenting images from the group being studied. Grounded theory involves the development of theory based on data collected in the field. Creswell (2009) defined grounded theory as "a qualitative strategy in which the researcher derives a general, abstract theory of a process,

action, or interaction grounded in the views of participants in a study" (p. 229). It typically involves about twenty to thirty people.

Proxemics, a term coined by Edward T. Hall (1966), deals with human interaction and behavior in space and it is also used to understand how people perceive and use space. In his analysis of space, Hall (1966) delineated the following four distances:

1. Intimate distance, which is the space within 1.5 feet of a person. This correlates to how close people are for embracing or touching;
2. Personal distance, which is from 1.5 to 2.5 feet of a person. This is usually for interaction among friends and family;
3. Social distance, which is from 4 to 7 feet of a person. This is for interaction with acquaintances; and,
4. Public distance, which is from 12 to 25 feet. This is usually for public speeches.

Two other notions of human behavior in space that Hall (1966) defined are sociofugal and sociopetal spaces. Sociofugal spaces are arranged to discourage human interaction, while sociopetal spaces are arranged to encourage human interaction. An example of a sociofugal space is a classroom with rows of chairs facing the instructor, which clearly does not promote socialization among peers, whereas a sociopetal arrangement is one in which the spaces might be laid out in teams or groups of tables to promote teaming and interaction.

Phenomenology, participant observation, the comparative method, life histories, genealogies, ethnography, photography, grounded theory and proxemics from anthropology have numerous applications and implications for cross-cultural design. In a recent study, I used phenomenology to study hairdressing among the Yoruba, a major Nigerian ethnic group. The study highlighted the relationship of natural hairstyles to the built environment and architecture using fractal theory as illustrated in Figure 3. Figure 3 illustrates how traditional settlements used fractals in spatial composition and these fractals are also seen in carvings, architecture, ornamentation, jewelry and hairstyles of the Yoruba.

Fractals are swirling patterns for modeling in biology, geology, and the natural sciences. The five components of fractal geometry are recursion, scaling, self-similarity, infinity, and fractional dimension. Fractals occur in a loop, the output for one step is the input for the next step. Fractals also consist of similar shapes in different scales. Ron Eglash (1999), in his book *African Fractals: Modern Computing and Indigenous Design,* noted “while fractal geometry can indeed take us into the far reaches of high science, its patterns are surprisingly common in traditional African designs, and some of its basic concepts are fundamental to African knowledge systems” (p. 3). Eglash found the self similarity of fractals in what is characterized as “circles of circles of circular dwellings, rectangular walls enclosing smaller rectangles” which were the basis of many Nigerian and South African ethnic groups. Fractals are often seen in carvings, architecture, ornamentation, jewelry and hairstyles in both

Nigerian and South African cultures. Fractal geometries are present in Ndebele material culture (South Africa) and Hausa, wall paintings (Nigeria), as well as, in Zulu (South Africa) and Yoruba (Nigeria) spatial organizations. Phenomenology can be used to study the phenomena of carving, jewelry making, ornamentation, fabric making, and building construction to understand more about Nigeria and South Africa.

Biographies of notable figures from a culture can help elucidate important aspects from the culture's past. For example, in this design pedagogy, I highlighted biographies of past leaders and public figures during the pre-colonial, colonial and post-colonial periods to help students better understand the culture. Queen Amina of Zaria (Nigeria), Shaka Zulu (South Africa), Kings of Benin and Ife (Nigeria), and Nelson Mandela are some notable figures that were used to highlight some historical factors in the built environment in both Nigeria and South Africa. Their biographies contributed to learning general information about Nigeria and South Africa and political influences on the patterns of settlement, architecture, and space planning.

Participant-observation is important to highlight aspects such as human behavior and interaction, ceremonialism and spatial layout. I have observed ceremonies in West African environments and some of these can be used to teach the concept of the "triple heritage" by Mazrui (1986) and Elleh (1997) in history and the built environment of Africa to design students. Mazrui (1986) noted that African culture is deeply rooted in the "triple heritage": the indigenous, Western, and Islamic influences. This heritage is what Elleh (1997)

also observed in the architecture of most African cities. These elements combine to form the built environment in African cities and make them different from any cities elsewhere in the world. Elleh (1997) observed “traditional religion, regardless of Islam and Christianity, plays a significant role in the life of the people and affects the building tradition” (p. 299). Participant-observation of spaces, ceremonies, festivals, etc, can be powerful tools to inform design pedagogy and highlight concepts such as the “triple heritage” in Nigeria and South Africa. Life histories and genealogies can capture important information to help design students understand aspects of the group’s ancestry and culture. In a recent exercise, I documented a genealogical chart for a man of Yoruba descent in the US and the chart further reinforced the notion of how “triple heritage” is prevalent among West Africans. This can be a useful teaching tool.

When one observes how spaces are planned in indigenous Nigerian and South African settings using Hall’s (1966) notion of proxemics, an extended family or the King’s palace (in societies with monarchical systems) lived within the confines of compounds. This implies they were within intimate, personal and social distances depending on the activities they engaged in. For example, families were within intimate and personal distances of each other and guests were kept within social distances in large courtyards or at personal distances in festival times. Settlement patterns among the Yorubas, Igbos, Hausa, Benin, and Zulu were often arranged around open spaces such as courtyards or greenery, and human interaction was important, therefore they were sociopetal in form. The fact that both Nigerian and South Africa compounds often were

made up of extended family members indicated that constant interaction was important. Thus, the design of spaces was done to promote this interaction, thereby, reinforcing sociopetal forms.

Classroom Based Research Precedents

Studies about instructional approaches in classrooms are not new in education programs. For example, Denson and Chang (2009) studied how different forms of campus racial diversity contribute to student learning experiences. There were 20 classrooms and 178 students who participated. The three forms of campus diversity they studied were:

1. Structural diversity-student body racial composition;
2. Curricular/co-curricular diversity–programmatic efforts that expose students to content about race/ethnicity; and,
3. Interaction diversity –informal student-student cross-racial contact.

The dependent variables in their study were broken down into personal (self-efficacy and general academic skills) and social (racial-cultural engagement) domains. The independent variables were cultural diversity, cross-racial interaction, and structural diversity. The control variables were students' background characteristics (e.g. gender, race), college experience (living and working arrangement), enrollment size, parental education, high school GPA, level of involvement, pre-test for self-efficacy, pre-test for general academic skills, pre-test for racial-cultural engagement, cultural diversity, and cross-racial interaction.

Denson and Chang's (2009) findings indicated positive benefits from curricular diversity and cross-racial interaction which improved students' ability to engage in more racial-cultural engagements. Another one of their findings was "significant positive educational effects" in environments where students engaged with diversity issues. To conclude their study, Denson and Chang (2009) noted the following "the quality of undergraduate education is appreciably enhanced by diversity-related efforts on colleges and universities. Those efforts appear to improve students' experiences and learning by cultivating key behaviors and knowledge, and by providing a unique educational context" (p. 346-347).

In another study, Hurtado (2001) examined whether gender or the race/ethnic background of the faculty impacts the curriculum or support diversity through their pedagogical strategies, how students assess their own learning after opportunities to interact with someone from a different race or ethnic background in a learning environment, and if the diversity the faculty introduces in the curriculum impacts how students assess their own learning (n=4,253). The variables Hurtado studied were gender and race differences in instructional techniques, techniques used in courses – cooperative learning, experiential learning/field studies, group projects, extensive lecturing, readings on racial/ethnic issues, and readings on women/gender issues. Other variables Hurdato studied were diversity related activities, civic outcomes, job related outcomes, and learning outcomes.

The diversity related activities included studying with someone from a different racial or ethnic background, enrollment in an ethnic studies course, and enrollment in a women's studies course. The civic outcomes included acceptance of people of different races, cultures, cultural awareness, tolerance of people with different beliefs, leadership abilities, interpersonal skills, public speaking ability, and religious belief and conviction. The job related outcomes included ability to work cooperatively, ability to work independently, job-related skills, preparation for graduate/professional school, and competitiveness. The learning outcomes included critical thinking, problem-solving skills, general knowledge, foreign language ability, knowledge of a particular field, writing skills, mathematical ability, and confidence in academic abilities.

In Hutado's study, students made positive associations between taking ethnic or women studies courses and self-reported improvements in their critical thinking skills. These skills, Hurtado (2001) expects "would conceivably enhance their learning in any academic course and throughout life" (p. 198). Another major finding of Hurtado's study is "diversity may contribute significantly to students' improvement on key learning outcomes that are associated with both academic development and the critical abilities needed to work in diverse settings-skills that will be increasingly important in the 21st century" (p. 200). Hurtado concluded with the notion that higher education has a major role in preparing graduates for their future in a pluralistic democracy.

In another study, Land and Greene (2000) examined project-based learning with the World Wide Web (n=9). They examined strategies that

learners used to identify relevant information resources and how they analyze various resources and use them to create a “coherent project” (Land and Greene, 2000). The study occurred in a classroom context over a five-day period. On the first day, participants were introduced to basic Internet searching skills and the project requirements, and they generated project ideas. On the second and third days, participants searched the internet and worked on their projects. On the fourth day, participants shared ideas with each other in groups of four or five. On the fifth day, participants presented their projects to the class and submitted their final project. Land and Greene (2000) noted “three prominent findings emerged from this study: (a) limitations of data-driven strategies; (b) ad hoc and post hoc simplification; and (c) compensatory metacognitive effects” (p. 61).

Their findings indicated that participants who developed goals and project ideas early on and then used the Internet to find resources were more successful and had more coherent projects than those who used data-driven strategies (Land and Greene, 2000). Additional findings also indicated how some learners used ad hoc simplification. As they found new information on the Internet, they either integrated the ideas into their projects, discarded the information or adapted their projects to fit the new information found. Some learners used post hoc simplification which Land and Greene (2000) noted involved “changes to an already stabilized idea, bearing in mind many perspectives and considerations. New stipulations were often added to simplify

project ideas that were prompted by considerations of additional constraints, such as classroom pragmatics" (p. 63).

Regarding their third finding, Land and Greene's (2000) indicated that "system, domain, and metacognitive knowledge were essential for project development that was both efficient and free of frustration. Metacognitive knowledge was especially important for consolidation processing and often seemed dependent on system and domain knowledge" (p .63). Land and Greene (2000) noted a major implication of their study was "that increased instructional support, or scaffolding, should focus on helping learners reflect on and articulate their ongoing understanding in a complex learning environment" (p. 64).

In another study, Greene and Land (2000) discussed an analysis of scaffolding use in a resource-based learning environment involving the World Wide Web (n=18). Some of the significant findings of their study were: the need for accessibility of resources to learners; the relationship between students recognizing limitations in their thinking and problem-solving; and, the benefits of instructional scaffolds (Land and Greene, 2000). Dynamic and social instructional scaffolding were found to be very important. Land and Greene (2000) defined dynamic scaffolding as a "real time, back and forth discussion that does not allow for ignoring confusion, but rather confronts confusion and inconsistencies in thinking" (p. 175). Social scaffolding when provided by the instructor was important in moving students to higher-level thinking in their projects.

In another study, Ge, Thomas and Greene (2006) used technology-rich ethnography for examining the transition to authentic problem-solving in a high school programming class (n=24). Their study examined students' motivation and engagement in problem-solving as the classroom culture changes from a traditional learning environment to a more open-ended learning environment using Quest Atlantis (QA). Data was collected using observation protocols from the three researchers, including interviews and focus groups; students' logs of daily work; audio-recorded group interactions; chats within QA among students; the projects produced by the students; and students' evaluation of student projects (Ge, Thomas and Greene, 2006).

Their findings indicated that technology rich ethnography may be useful for researching learning environments. Flexibility and multiplicity were found to be important concepts. On the notion of flexibility, Ge, Thomas and Greene (2006) recommended that "the researchers need to be able to change what and how they are looking at the data, before, during, and after the implementation because it is not a static environment controlled by researchers" (p. 347). Multiple data sources and methods were also effective in capturing the experiences of participants (Ge, Thomas and Greene, 2006). Their findings also illustrated potential for students to problem solve well in an open-ended learning environment because of the authenticity of the task.

These classroom based research precedents have several implications for the proposed culture-based design pedagogy. My study aims to develop and test instruction on Nigerian and South African spatial forms, research how

students respond to the instructional program, their ability to synthesize design ideas for different cultural settings using design theories, their utilization of examples from non-Western perspectives as references for discussing design and their ability to solve design problems in a different cultural setting. Like Hurtado (2000) and Denison and Chang (2009), I will test how students assess their learning, their development of design critical thinking skills after instruction, and their ability to design in Nigerian and South African contexts. I hope that the extent to which their skills improve will significantly prepare them for a diverse and global society.

Similar to the Hurtado (2000) and the Denison and Chang (2009) studies, I will illustrate the importance of curricular diversity through a design project in a Nigerian and/or a South African setting and the positive correlation curricular diversity has with student learning. Metacognitive strategies from Land and Greene (2000) such as scaffolding will be used to increase students' reflection and learning in a complex learning environment. For example, instruction will include cueing, providing hints to students, engaging students in the learning, and getting feedback and input from them. Teaching students within the context of specific and authentic learning tasks will be promoted by engaging students in design problem-solving in Nigerian and South African cultural settings. Use of multiple data sources during the study through pre-tests, post-tests, short answer questions, video recording, and interviews, similar to Ge, Thomas, and Greene (2006), will allow me to encapsulate the experiences of participants.

Summary of Stage 1 and Overview of Present Study

Educators are constantly being challenged to integrate global and diversity issues in design curricula. A facet of ACT-R learning theory (Anderson, 1995), Grant's pedagogical approaches (Grant, 1991), anthropological methods, and the classroom based research precedents discussed in the preceding literature review informed the development of the instructional unit used in the present study. The distinction between declarative and procedural knowledge (Anderson, 1995) was used to help students learn about Nigerian and South African spatial forms and how to apply those forms.

Anthropological methods such as phenomenology, the comparative method, life histories, ethnography, photography and proxemics were used to elucidate information about Nigerian and South African design aesthetics. Grant's (1991) pedagogical approach of introducing diversity in design education was embedded in the instruction in three steps: the inclusion approach; the contribution approach; and the transformational approach. The classroom based precedents from education illustrate examples of instructional approaches in classrooms.

The present study examined the efficacy of using this background to design instruction for integrating global issues and diversity issues in design curricula. A mixed methodology grounded in ethnography was chosen in Stage 2 to allow me encapsulate the experience of participants after experiencing a culture-based design pedagogy on Nigeria and South Africa Spatial forms. The following research questions guided the study:

Question 1: How do students respond to an instructional program that utilizes Nigerian and South African spatial forms to learn about design?

Question 2: Is there evidence that students were able to synthesize design ideas for different cultural settings using design theories?

Question 3: Is there evidence from different data sources that students were able to use examples from non-Western perspectives as references for discussing design ideas?

Question 4: Do students report being better at solving design problems in a different cultural setting?

CHAPTER 3

METHODOLOGY

Stage 2: Design of Study, Delivery of Instruction and Inception of Data Collection

Overview of Methodology - Stage 2

This ethnographic study incorporated a mixed method approach that combined both qualitative and quantitative techniques and included a pre- and post-test of the sample groups. Since ethnographies are based on inductive research using observations, interviews, and other data sources collected in the field (O' Reilly, 2005), it seemed the best overarching method for this study. I also combined it with a case study method from educational research and the comparative method from anthropology. This mixed method approach allowed me to encapsulate the experiences of how participants responded to a culture-based pedagogy that used Nigerian and South African forms in design instruction in a real-life context.

Researchers in education have proposed case study methodology as a comprehensive strategy of inquiry in educational contexts (Denzin and Lincoln, 2005; Merriam, 1998; Yin, 2003). Case Studies have also been identified as preferred methodology when how or why questions are posed and when the study focuses on phenomenon in real-life context (Yin, 1994). Several authors such as Merriam, 1998; Stake, 1995; Yin, 2003; Creswell, 2007 identified the following steps in case study methodology**:**

1. The researcher must first determine if the case study approach is an appropriate approach by identifying the cases and boundaries;

2. Next the researcher determines whether the case is single, multiple or intrinsic in type. Along with this the sample group is also identified;

3. Next is data collection, which draws on multiple sources of information such as observations, interviews, documents, and audio-visual materials (Creswell, 2007). Six types of data collection methods recommended by Yin (2003) are documents, archival records, interviews, direct observations, participant-observation, and physical artifacts;

4. The next step is the data analysis, which can be an analysis of the entire case or an analysis of a specific aspect of the case. A strategy would be to identify issues within the case and then look for common themes (Yin, 2003); and,

5. The final stage is the interpretive phase where the researcher forms constructs for the case.

I integrated the abovementioned five steps in the ethnographic study presented here as illustrated in Figure 9. First, I identified the case that was to examine how design students respond to an instructional approach that use non-Western African forms from Nigeria and South Africa to learn about design. The case boundaries were the non-Western cultural setting and the educational context of an Interior design studio class. Next, I collected qualitative and quantitative data. I collected qualitative data using four major techniques:

observations, interviews, documents and audio-visual materials. A co-observer and I took notes and video recording of how students were engaged with instruction and problem-solving in a different cultural context during the study. The co-observer was present to ensure trustworthiness of the data. Assignments, design solutions and drawings produced by the students were also used as data. Some students were invited for a formal interview after the class.

I collected quantitative data using pre- and post-test questionnaires which measured students' awareness and understanding of design theories in cultural settings, students' utilization of examples from non-Western perspectives as references for discussing design ideas, and students' competencies in problem-solving in a different cultural setting. The pre- and post-test questionnaires were administered by the co-observer, since I was the instructor for the course and they were retained by the co-observer until after grades were posted.

Next during data analysis, the data from individuals were collapsed into themes for the case rather than treated as individual phenomena. Themes and patterns of students' understanding of design theories in cultural settings, how students used examples from non-Western perspectives as references for discussing design ideas, and students' competencies in solving design problems in a different cultural setting were inferred from an analysis of the multiple data sources collected. Finally, the interpretive stage was used to determine assertions and form constructs for the case.

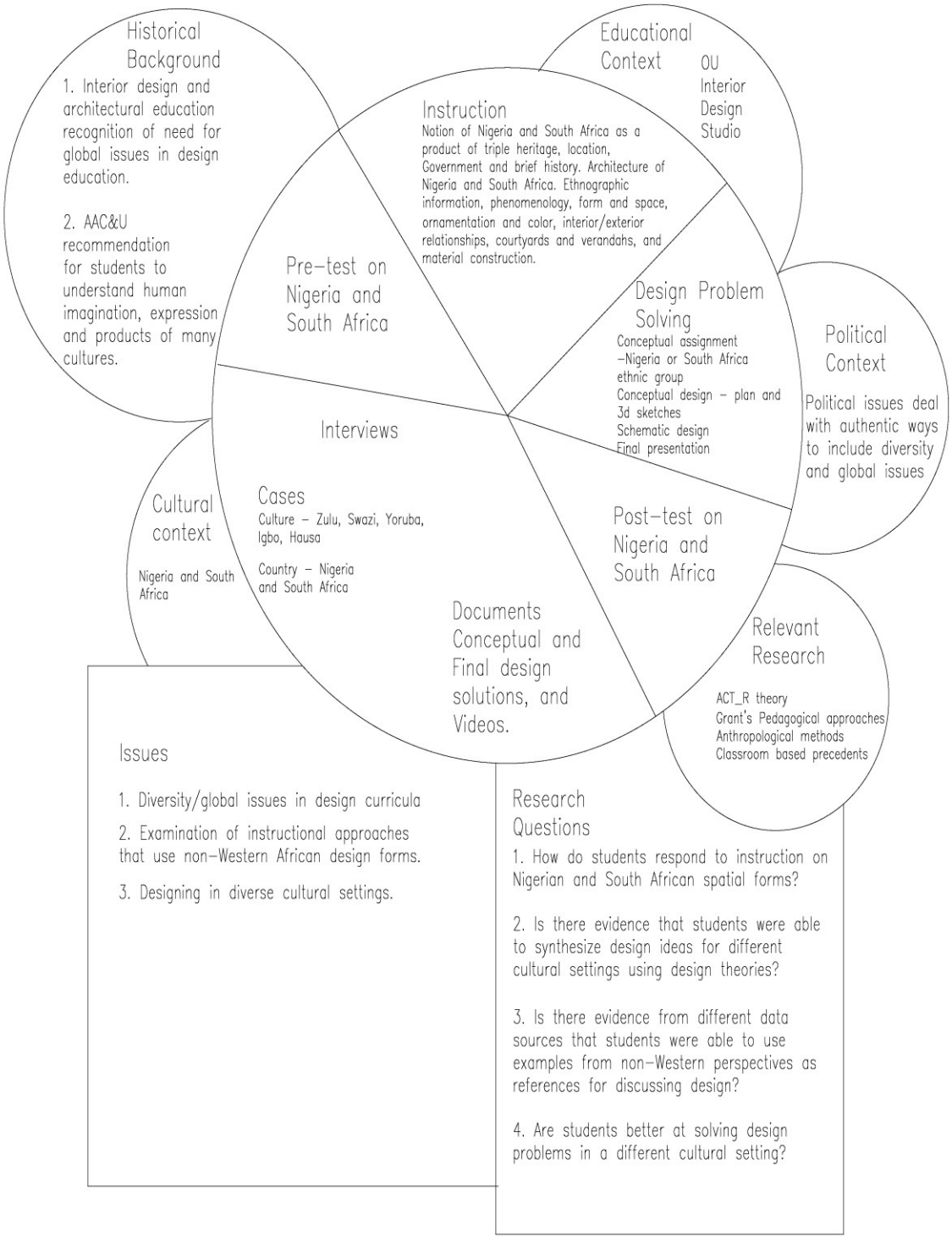

Figure 9. An Ethnography for a Culture-Based Design Pedagogy for Nigerian and South African Spatial forms adapted from Robert Stake's graphic design of a case study (Source: Stake 2006).

Sample and Context – Stage 2

Participants

Consent to participate in this study was sought from undergraduate design students enrolled in a Southwestern University junior level studio course. The sampling procedure was purposive since the targeted participants were interior design and architecture students experiencing a particular pedagogical approach. The sampling unit was a design class with an enrollment of 20 students (19 females and 1 male). A sample size of twenty (N=20) was considered sufficient, because prior studies focusing on teaching approaches have used similar sample sizes (Ge, Thomas, Greene, 2006; Greene and Land, 2000; Land and Greene, 2000; Asmussen and Creswell, 1995). Based on the current demographic characteristics in the Interior Design Program, which is 98% white, non-Hispanic female students, the sample group was expected to be overwhelmingly white female of US nationality.

Students were either juniors or seniors with a major or minor in Interior Design, therefore they possessed some domain-specific Interior Design knowledge. The National Council of Interior Design Qualifications (NCIDQ) notes “the Interior Design process follows a systematic and coordinated methodology, including research, analysis and integration of knowledge into the creative process, whereby the needs and resources of the client are satisfied to produce an interior space that fulfills the project goals” (NCIDQ, 2008). Critical thinking skills, professional values, core design and technical knowledge in design history, space and form, color and light, furniture, fixture, equipment, and

finish materials, environmental systems and controls, interior construction and building systems, and regulations (Council of Interior Design Accreditation, 2008) are some other domain-specific skills the students possess at varying levels depending on their classification. The general world knowledge of this group was expected to vary and depend on each individual member's interests, age, culture and other social factors.

The Course

Interior Design II is a third-year, semester long design course which introduces interior design juniors to lighting as a dynamic element affecting space and the built environment. One goal of the course is to help students develop competence in the design of interior environments using several delivery formats such as lectures, field trips and design projects. Other goals are to emphasize volumetric design and computer visualization techniques in design. The course began with an introduction to light and lighting effects in interior environments. Next, students explored the design process, lighting concepts, design elements and principles, and architectural elements.

Additional topics included lighting sources, color, psychological aspects, and daylighting. A field trip to Smith lighting showroom in Oklahoma City provided an immediate context for exploration of different light sources and resources in real life. Next, students learned how to quantify light using photometric techniques. Next, energy management, codes, economics, light, and health issues were examined. Next, students learned how to coordinate

lighting with mechanical systems, security systems, and fire suppression systems.

Four major design projects were assigned in this course. The first project was a two-week lighting analysis of a store, office space, and gallery in Oklahoma. The second project was a four-week lighting design of a contemporary brand name store. The third project was a four-week full-scale light fixture design project. The final project, which was the context for this study, was a six-week interior and lighting design of a restaurant in Nigeria or South Africa.

Data Sources – Stage 2

Since this study's methodology relied on multiple sources of evidence, I focused on collecting multiple sources of data combining both qualitative and quantitative methods. Qualitative data came from observations, video recording, and interviews of how students were engaged with instruction and problem-solving in a different cultural context, as well as, actual projects developed by students. Quantitative data came from a pre- and post-test of the sample group. The data collection process for the study was very systematic with data collected throughout the six-week class period and during a formal interview after the course was over. The data sources were the pre-test questionnaires, video recording and observation of instruction and design problem-solving processes, actual design projects produced by the students, post-test questionnaires, and interview data. Each will be described in detail next.

Pre-test Questionnaire

The pre-test questionnaire was developed over the course of two semesters with feedback and suggestions from the doctoral committee co-chairs and students enrolled in the Interior design third year lighting design studio (Interior Design II) and a special topics course titled women, minorities and design, which I taught in fall 2009. Interior Design II is a third year semester long design course which introduces interior design juniors to lighting as a dynamic element affecting space and the built environment. The women, minorities and design course addressed the contributions of underrepresented groups to design related fields. Topics and readings covered historical surveys of the contributions and experiences of minorities such as women, African-Americans, Africans, Caribbeans, Hispanics, Asians and Native Americans to the global design discourse.

A questionnaire on cultural design pedagogy was used to determine students' perception of cultural design pedagogy and the importance of race, gender and ethnicity on the built environment. The questionnaire addressed the following research questions. First, how important are the histories of non-Western cultures in design curricula? Second, how important are women's issues in design history? Third, how much impact have non-Western cultures had on the built environment? Fourth, how much impact do race, gender and ethnicity have on the built environment? The instrument was broken into two parts. Part I focused on demographic questions about gender, age, race and

major. Part II was based on a Likert-type scale from 1 (strongly disagree) to 7(strongly agree).

Participants were asked to respond to four questions focused on inclusion of design histories of non-Western cultures in design curricula, inclusion of women's issues in design curricula, the impact of non-Western cultures, race, gender, and ethnicity on the built environment. Additionally, students were presented a draft of the proposed instruction on Nigerian designs, which formed part of this study and were asked their opinion of the instruction and for recommendations for improvement. The recommendations were to include another country and additional cultures from South Africa to offer a broader study covering a more diverse area. Additional recommendations included questions that addressed knowledge of Nigerian and South African spatial forms.

The final pre-test questionnaire that was used for this study was broken down into three parts. Part I focused on demographic information such as gender, age, race and major. Part II was based on a Likert-type scale from 1 (strongly disagree) to 7(strongly agree) and an option was added for don't know. Eight questions were used to determine students' baseline knowledge at the inception of the study. Questions 1 to 3 focused on the inclusion of design histories of non-Western cultures in design curricula, and the impact of ethnicity on the built environment. Questions 4 to 7 focused on students' perceived competence of designing in a non-Western cultural setting like Nigeria and South Africa and their understanding of using precedents from these cultures as

references for discussing design. Question 8 focused on their interpretation of design theories and diverse background.

Part III was based on eight open-ended essay questions focused at students' culture-based design experience. Questions 1 to 5 focused on asking students about their knowledge of design elements and principles from Nigeria and South Africa and important aspects of their spatial organization. Question 6 focused on the impact of environmental issues such as sustainability or climatic factors in Nigeria and South Africa. Question 7 focused on testing students' knowledge of Nigerian and South African culture, history, and government and how that impacts Nigerian, South African and other African architecture. Question 8 directly asked students to name some Nigerian, South African or other African designers they know. See Appendix 1 for the full Pre-test questionnaire.

Video recording and observation of instruction and design problem-solving process

Another data source for this study was video recording and observation of instruction and the design problem-solving processes the students utilized. I video recorded students' response to the instruction on Nigerian and South African cultures and spatial forms, students' presentations on the traditional and contemporary design from Nigeria and South Africa, and students' conceptual, schematic and final designs for their projects in a different cultural setting. In addition, I video recorded students' workspaces in the computer lab as they interacted with their groups and worked on their design solutions. A co-observer

took notes during instruction and students' presentation of their designs. In addition, at the end of each class period, I wrote summary notes.

Design Projects

The design projects developed by the students were a significant data source. The most significant pieces of the design projects were the design solutions presented by the students for a restaurant in Lagos, Nigeria or Johannesburg, South Africa to highlight the country's culture and food for tourists. Other data sources during the design process included students' presentation of the traditional and contemporary designs from Nigeria and South Africa, as well as students' conceptual and schematic designs for the restaurant at the preliminary stages of the design process.

Post-test Questionnaire

The post-test questionnaire was similar to the pre-test questionnaire and was broken down into three parts. Part I focused on demographic information such as major. Gender, age, and race, which were already collected during the pre-test were left off the post-test questionnaire. Part II was based on a Likert-type scale from 1 (strongly disagree) to 7(strongly agree) and an option was added for don't know. Eight questions were used to determine students' knowledge at the end of the study. Questions 1 to 3 focused on the inclusion of design histories of non-Western cultures in design curricula, and the impact of ethnicity on the built environment. Questions 4 to 7 focused on students perceived competence of designing in a non-Western cultural setting like Nigeria and South Africa and their understanding of using precedents from

these cultures as references for discussing design. Question 8 focused on their interpretation of design theories and diverse background.

Part III was based on eight open-ended essay questions focused on students' culture-based design experience. Questions 1 to 5 focused on asking students about their knowledge of design elements and principles from Nigeria and South Africa and important aspects of their spatial organization. Question 6 focused on the impact of environmental issues such as sustainability or climatic factors in Nigeria and South Africa. Question 7 focused on testing students' knowledge of Nigerian and South African culture, history, and government and how that impacts Nigerian, South African and other African architecture. Question 8 directly asked students to name some Nigerian, South African or other African designers they know. See Appendix 2 for the full Post-test questionnaire.

Interview data

The interview data formed the final piece of data sources. Upon conclusion of the course after grades were posted, some students were invited for a formal interview. The goal was to interview at least one participant from all groups. It was not necessary to audio record the interviews, since I could take notes and students were uncomfortable with being audio recorded. I conducted the interviews using five questions. Question 1 focused on collecting general feedback and comments from the participants about the project. Question 2 asked how they chose their culture for the design project. Question 3 asked how comfortable they are now after the experience of designing in a non-

Western setting like Nigeria or South Africa. Question 4 focused on finding out how the students feel Nigerian or South African cultures have made an impact on design or architecture. Question 5 focused on asking what the students liked or did not like about the project. See Appendix 3 for the interview questionnaire.

Procedure - Stage 2

This section is an overview of the procedure followed in this study. I obtained IRB approval for the study on October 14, 2010. The narrative in this section is an overview of Stage 2: Delivery of Instruction and Inception of Data Collection shown in Figure 1. The ethnographic study was an actual unit in my Interior Design third year studio course. Stage 2 which involved the delivery of instruction and beginning of data collection was conducted during the last six weeks of the fall 2010 semester over ten class periods. Class met twice a week and each class period was four hours long.

On the first day, a co-observer obtained consent and administered the pre-test questionnaire to the students enrolled in the course. Next, I introduced the students to the project, which was to design the interior and lighting of a restaurant in Nigeria or South Africa. After the introduction, I allowed students to split themselves into groups. The final groups were three groups with four students, one group with five students and one group with three students.

On the second day, I began instruction by introducing students to several lectures and resources that use Nigerian and South African spatial forms as references for learning and discussing design using teacher-centered expository methods. In the first part of the instruction, I started with the notion

that Nigeria and South Africa exhibit Mazrui's (1986) "triple heritage" with influences deeply rooted in indigenous, western and Islamic cultures and that African architecture is a product of cross-cultural encounters from indigenous, western and Islamic cultures. In the second part, I presented information on the location, population, climate, history, languages, government, culture and ethnic groups of Nigeria and South Africa. In the third part, I covered the architecture of both countries. In the fourth part, I introduced students to ethnographies and other anthropological methodologies such as phenomenology, biography, participant observation, life histories, genealogies, photography, and study of proxemics as techniques for studying cultural groups.

In the fifth part, I presented them information on location, history, spatial organization, artistic expression, and gender roles/division of labor from seven cultural groups from South Africa (Basotho, Zulu, Ndebele) and Nigeria (Hausa-Fulani, Igbo, Edo, and Yoruba) that I developed using anthropological methods. In the sixth part, I discussed a recent study in which I used phenomenology to study hairdressing among the Yoruba and highlighted the relationship of natural hairstyles to the built environment and architecture using Eglash's (1999) fractal theory. In the seventh part, I presented information on traditional and contemporary Nigerian and South African spaces.

In the eighth part, I presented two prominent architects from Nigeria and South Africa and their design work. I also shared the websites of the Nigerian Institute of Architects and South African Institute of Architects with the students. Finally, I played two videos that featured images of several African capital cities,

two videos of Nigerian cities and two videos of South African cities (Appendix 4 is a summary of the lecture presented on Day 2). To provide some historical context for the students, I posted four book reviews I wrote on *African Cities and Towns before the European Conquest* by Richard Hull, *Modern Africa Change and Continuity* by Richard Hull, *Nigeria: Background to Nationalism* by James Coleman, and Nelson Mandela's autobiography *Long Walk to Freedom* on the class website.

At the end of class, I assigned students an exercise where they learned by discovery. The assignment was to pick a Nigerian or South African ethnic group and develop conceptual ideas based on the traditional and contemporary design from that ethnic group. Students were asked to include the following in their conceptual ideas: location, brief history, philosophy, form and space, spatial organization, and material technology.

On the third day, five student groups presented conceptual ideas based on traditional and contemporary designs from Nigeria and South Africa. Two student groups selected the Yoruba, a Nigerian ethnic group. One student group selected three Nigerian ethnic groups, Yoruba, Igbo and Hausa. One student group selected the Swazi ethnic group from South Africa. The Swazi ethnic group are predominantly found in Swaziland, an independent kingdom in Southern Africa. One student group selected Zulu ethnic group from South Africa. After the student presentations, each group worked on their conceptual designs for the restaurant and I gave each group feedback during desk critiques.

The next task for all the groups was to prepare for pin up of their conceptual design for the restaurant during the next class period. On the fourth day, all five groups pinned up and presented their conceptual designs for the restaurant. Three groups presented plans and three-dimensional sketches for restaurants in Nigeria, while two groups presented plans and three-dimensional sketches for restaurants in South Africa. I gave each group feedback during and after their presentations.

On the fifth day, all the students worked with their groups during the class period to develop schematic designs that included conceptual sketches, plans, elevations, and three-dimensional sketches for the next review. On the sixth day, all five groups pinned up and presented their schematic designs, which included conceptual sketches, plans, elevations, and three-dimensional sketches for the restaurant in Nigeria and South Africa during the first half of class. I gave feedback during and after each group's presentation.

On the seventh day, all five groups worked on further refining their design solutions mainly in the computer labs and I gave feedback during desk critiques to each group. On the eighth and ninth days, all five groups worked on developing their final presentations mainly in the computer labs and I gave feedback during desk critiques to each group. On the tenth day, the co-observer administered the post-test questionnaire at the beginning of class. After all students completed the post-test questionnaire all five groups presented their final presentation for the design of a restaurant in Nigeria or South Africa.

Stage 3 which involved the evaluation of student work post instruction occurred after the class was over. In Stage 4, ten students were selected for 45 minutes to one-hour formal interviews in the spring 2011 in compliance with IRB requirements after the grades for the class had been posted. In Stage 5, the data was analyzed and interpreted.

CHAPTER 4

RESULTS

This chapter will describe and summarize the data. The next chapter will provide the analysis and interpretation of the data. In this chapter, I will first present the pre- and post-test data. Next, I will present observational data from day-to-day observations of the design process and the design projects. Finally, I will present the interview data.

Stage 2: Inception of Data Collection

Pre- and Post-test Data

Part I: Demographic Information

There were seventeen participants who consented to the study except one student who was not able to participate in the survey because he was gone that day. However, he consented to the interview and all other parts of the study. As the demographic information in Table 4 show, the students were similar to one another. The table also illustrates the five groups and the cultures chosen. The table shows all the 21 students enrolled in the class who all participated in the design project.

Part II: Culture Based Design Experience

Data collected in Part II of the questionnaire was based on a Likert-type scale from 1 (strongly disagree) to 7(strongly agree) and an option was added for “don’t know” on eight questions that were used to determine students’ knowledge at the inception and end of the instruction. As illustrated in Table 5,

a paired-samples t-test was conducted to the pre- and post-test questions to determine if there was significant difference at the end of instruction.

The first question asked if historical survey in design curricula should include design histories of various non-Western cultures. There was no significant difference in the pre- and post-test. The second question asked if non-Western cultures have made a significant impact on the built environment. There was no significant difference in the pre- and post-test. The third question asked if ethnicity has an impact on the design of the built environment. There was no significant difference in the pre- and post-test. The fourth question asked if participants were comfortable solving design problems in a non-Western cultural setting like Nigeria. There was no significant difference in the pre- and post-test.

The fifth question asked if participants were comfortable solving design problems in a non-Western cultural setting like South Africa. There was a significant difference in the pre- and post-test. As expected, the mean went up at post-test. The sixth question asked about participants understanding of how to use Nigerian precedents as references for discussing design ideas. There was a significant difference in the pre- and post-test. As expected, the mean went up at post-test. The seventh question asked about participants understanding of how to use South African precedents as references for discussing design ideas. There was a significant difference in the pre- and post-test. Again, the mean went up at post-test as expected. The eighth question asked if design theories have diverse backgrounds. There was no significant

difference in the pre- and post-test.

Table 4
Groups, Culture, and Demographic information of participants

Group	Culture	Gender	Age	Race	Major
A	Yoruba, Igbo, and Hausa, Nigeria	4 females	3 students (18-24) 1 student (40-49)	4 White students	Interior Design
B	Swazi, South Africa and Swaziland	4 females	4 students (18-24)	4 White students	Interior Design
C	Yoruba, Nigeria	3 females	3 students (18-24)	3 White Students	Interior Design
D	Yoruba, Nigeria	4 females 1 male	5 students (18-24)	4 Whites 1 Asian	4 Interior Design 1 Architecture
E	Zulu, South Africa	4 females	4 students (18-24)	4 White students	Interior Design

Note. Table 4 shows all the 21 students enrolled in the class who all participated in the design project since they were enrolled in the course.

Table 5
Means, Standard Deviations for Pre- and Post-test data and t Test results

Survey Questions	Pre-test		Post-test		Sig.
	Mean	SD	Mean	SD	
Q1	5.82	1.29	5.65	1.41	0.58
Q2	5.85	1.28	5.61	2.02	0.74
Q3	5.60	1.59	5.60	1.76	1.00
Q4	4.35	1.41	5.29	1.65	0.07
Q5	4.35	1.41	5.71	1.36	0.01
Q6	3.18	1.94	5.09	1.45	0.05
Q7	3.00	2.05	5.00	1.34	0.04
Q8	5.73	1.62	5.80	2.04	0.93

Note. Because I computed eight separate t tests, I increased the possibility for a Type I error (false rejection of the null). However, given my small sample size, I was more concerned about Type II error. Therefore, no adjustment was made.

Part III: Culture Based Design Experience Short Essay Questions.

Part III was based on eight open-ended essay questions focused at students' culture based design experience. When asked about design elements and principles from Nigerian, South African or other African architecture at the pre-test, 56% of participants reported not knowing any. 44% of participants reported general ideas such as texture, line, form, shape, unity, natural elements, color and bold patterns. However, at the post-test, all participants reported richer descriptions of design elements and principles from Nigeria, South Africa, and other African architecture. For example, one participant noted on Nigeria, "Hausa use a lot of arches, heavily influenced by Muslims. Cities and towns were laid out to reflect the emphasis on extended family. They use patterns that are large patterns made up of smaller patterns" (Group A). Another participant reported South Africa's "use of environmental materials, curvilinear lines and forms, repetitive patterns and motifs" (Group E).

When asked which important design elements vary in Nigerian, South African or other African architecture at the pre-test, 44% of participants reported not knowing any and 56% of participants reported general ideas such as form, shape, texture, color, and space. However, at the post-test, all participants reported richer descriptions of African design elements. For example, one participant commenting on Nigeria noted "form and shape varies across cultures, some are very geometric, while others are more natural and has a lot to do with religion. Each color has certain meaning in each culture" (Group A).

Another participant noted regarding South Africa “there are lots of geometric shapes and patterns. Colors seem to represent nature. However some art uses vibrant brighter colors as well. There seems to be harder more abstract textures. The forms that I saw were more solid and geometric in shapes” (Group B).

When asked which important design principles vary in Nigerian, South African or other African architecture at the pre-test, 50% of participants reported not knowing any and 50% of participants reported general ideas such as unity, rhythm, emphasis, scale and proportion. However, at the post-test, a majority of the participants reported richer descriptions of design principles. For example on South Africa, one participant reported “rhythm is a major part of Zulu culture in South Africa. Since music is a basis of who they are, their buildings and interior play off that” (Group E).

When asked about aspects of spatial relationships that vary across Nigerian, South African or other African architecture at the pre-test, 67% of participants reported not knowing any, while 33% of the participants noted close proximity of communities, gathering spaces for rituals, education, and religious purposes as spatial aspects that vary. However, at the post-test 72% of the participants reported in both Nigeria and South Africa, emphasis was more on community noting the importance of compounds.

When asked about important spatial organizational principles from Nigerian, South African or other African architecture at the pre-test, 83% of the participants reported not knowing any. However, at the post-test, 78% of the

participants noted aspects such as open planning, community spaces, less important spaces radiating from centrally located more important spaces, and organic and geometric shapes as important spatial organizational principles from Nigeria and South Africa.

When asked about important environmental issues such as sustainability or climatic factors that impact Nigerian, South African or other African architecture at the pre-test, 44% reported not knowing, while 56% of the participants indicated the use of natural materials and sustainability were important factors. At the post-test, a majority of the participants demonstrated a better understanding of the climate, material technology, and sustainable issues in both Nigeria and South Africa.

When asked about some important aspects such as culture, history, and government that impact Nigerian, South African or other African architecture at the pre-test, 56% reported not knowing any, while 44% reported culture, religion, history, government, western, and Islamic influences as important aspects. At the post-test, 94% of participants reported importance of culture, religion, history, government and external influences in more detail. For example, one participant noted “Nigeria is a country made up of many different people groups, each with their own culture. The history, the settlement of a country will influence its architecture” (Group A). Another participant noted “Culture, depending on regions can influence local architecture; government; whether democratic or imperial also reflect city and urban planning development and architecture” (Group D). Other participants observed the

importance of cultural, religious beliefs, food, dancing and music in the art and architecture of Nigeria, South Africa, and other parts of Africa after the experience.

Finally, when asked to name some Nigerian, South African or other African designers and architects and indicate any information known about them at the pre-test, all the participants indicated not knowing any. At the post-test, 78% indicated not knowing any but 22% noted remembering learning about some, but could not remember their names.

Observational data

Description of Day-to-Day Observations of Design Process

The narrative in this section was developed from my notes, the co-observer's notes and video recording of the instruction and design problem-solving process the students utilized. As discussed in the preceding chapter, the study occurred in five distinct stages. Stage 1 involved the development of instruction, Stage 2 involved the delivery of instruction and beginning of data collection, Stage 3 involved the evaluation of student work post instruction, Stage 4 involved interviews of selected participants, and Stage 5 involved the data analysis and interpretation. The description of the day-to-day observations of the design process encompasses Stage 2 which involved the delivery of instruction and beginning of data collection during the last six weeks of the fall 2010 semester over ten class periods.

Day One – Introduction of the study

On Day One a co-observer recruited students for the project, obtained consent and administered the pre-test questionnaires while I was not in the room (per IRB procedures). When I returned, I presented the project requirements and objectives to the class. The requirement of the project was to design the interior and lighting of a restaurant in an urban setting in Lagos, Nigeria or Johannesburg, South Africa to highlight the country's culture and food for tourists.

The interior space of the restaurant was required to portray energy, kinetic movement, cultural flavor, color and entertainment. Students were given existing drawings of a space in which to locate their solution. The space was constrained by walls on three sides, with complete daylight access on the fourth side with a sidewalk. In addition to giving students paper copies of the requirements, the project sheet and drawings were also available online at the Desire to Learn (D2L) course website for the class. Students were required to present their design solutions using floor plans, lighting plans, elevations, sections, details, perspectives and schedules. Students seemed attentive during the introduction to the project. Their questions mainly related to getting a better understanding of the floor plan. After students were presented the project requirements, they were asked to split themselves into groups. At the end of the class period, the students formed work groups.

Day Two

The goal for Day Two was to lecture about Nigerian and South African cultures and spatial forms and assign a conceptual assignment to each group to pick a Nigerian or South African ethnic group and summarize the traditional and contemporary design from that culture using word analogies and visuals. However, I began the class period with an overview of the floor plan because one student wanted a more detailed explanation of the assigned floor plan and CAD drawings. I projected the drawings on the screen and after a detailed description of the floor plan, I told the students what the lecture for Day Two entailed. I incorporated methods from education, anthropology, and history. I used Grant's (1991) inclusion and contribution approaches to structure the lecture. Using the inclusion approach, I utilized examples from Nigeria and South Africa to discuss form and space, ornamentation and color, interior/exterior relationships, courtyards and verandahs, and material and construction techniques.

Using the contribution approach (Grant, 1991), I presented and analyzed contributions by several Nigerian and South African designers and architects. I introduced Nigeria and South Africa and their geographical locations. I lectured about Nigerian and South African cultures and spatial forms with the emphasis of helping students develop declarative knowledge. I presented information about pre-colonial, colonial and post-colonial influences in Nigeria and South Africa, and introduced the notion of Ali Mazrui's "triple heritage." I made a clear distinction between ethnicity and national identity in my lecture. The different

cultural groups were clearly identified as ethnic groups and the countries of Nigeria and South Africa identified as national groups.

I included videos on African cities that illustrated the architecture of capitals of major African countries to give students a context of the geographical location of the project. Using anthropological methods, I focused on information developed from ethnographies of Basotho, Zulu, Ndebele, Hausa-Fulani, Igbo, Benin, and Yoruba ethnic groups such as location, history, spatial organization, artistic expression, and gender roles/division of labor. I also discussed how phenomenology was used to study hairdressing and the relationship to fractal geometry. After my presentation, several students observed how the images they saw in the lectures were very different from the Africa portrayed by the media as impoverished.

After the lecture, I assigned each group a conceptual assignment to pick a Nigerian or South African ethnic group and summarize the traditional and contemporary design from that culture. Each group was also required to select their culture and inform me before the end of that class period. I went around and met with each group and answered questions. By the end of that class period all the groups had selected their ethnic group and country. One group selected Zulu, South Africa, one group selected Swazi, South Africa and Swaziland, two groups selected Yoruba, Nigeria, and one group selected three ethnic groups Yoruba, Igbo and Hausa from Nigeria. There was some switching around within two groups on Day Two, because two students preferred to be in the same group. This resulted in the five groups of four

students per group becoming one group of three, three groups of four and one group of five.

Day Three

On Day Three, during the first two hours of class each group presented their conceptual assignments to the entire class, instructor and co-observer. The first group (Group A) presented on three Nigerian cultures; Yoruba, Igbo, and Hausa. They first highlighted the culture, history, philosophy, ceremonies, art and crafts, and carvings from all three cultures. Next, they described the spatial organization, the relationship between form and space and material technology from all the three cultures. Their presentation was lengthy and rich with information covering indigenous, western and Islamic influences. They emphasized the impact of Islam on Hausa spatial organization and how privacy affected the layout of the spaces for men's multiple wives. Their observations about the Igbo focused on their beadwork, artwork, and their philosophy of the three types of supernatural beings: God, the spirit, and ancestors. Their highlights of the Yoruba focused on their beliefs in a supernatural creator with many other gods underneath him, and their artwork and beadwork.

The second group presentation was about Yoruba, Nigerian culture (Group C). They focused on Lagos City and how Yoruba philosophical beliefs emphasize that "all humans have the destiny to become one in spirit with Olodumare (God)." This group also focused on more contemporary features in Yoruba culture with little information on traditional or indigenous aspects. A

major highlight of their presentation was the importance of beadwork in Yoruba culture.

The third group presentation was about Zulu, South African culture (Group E). They focused on the location, history, and Shaka Zulu, a prominent Zulu king. They included the Zulu philosophical belief of man being composed of two parts: the body and the spirit. They also highlighted Zulu conical and beehive huts, their beadwork and basketry, and their intense use of geometric patterns and colors. This group's presentation contained very detailed information about Zulu culture and they summarized their presentation with the word analogies that inspired their concepts. The following word analogies were derived from their research: circular form, community, family gatherings, social, warmth, generosity, and heritage.

The fourth group presentation was about Swazi, South African and Swaziland culture (Group B). This group presented a cultural analysis of contemporary Swazi culture. While a majority of the Swazi are located in Swaziland, this group wanted to focus on the Swazi located in South Africa. This group used a lot of the resources I presented to them and combined them with some of theirs on Nelson Mandela and South African architecture. Their research focused on detailed information about South Africa, Johannesburg, the Swazi ethnic group, and South African art and architecture.

The fifth group presentation was about Yoruba, Nigerian culture (Group D). A prominent notion in their presentation was the earth and sky being infinitely large and equal in size. They noted the relationship between the four

major Yoruba deities and the four day Yoruba week. They also presented information about the Yoruba monarchy system. When the presentations were over, after a ten-minute break, the students met with their groups to discuss their concepts. I met with each group to discuss their concepts and how their research will be implemented in their design solutions. I discussed with them their task for the next class period, which was to present their conceptual design sketches for the restaurant.

Day Four

On Day Four, the goal for each group was to present their conceptual design sketches for the restaurant. Each group was required to present design concepts, and word analogies derived from their research, and to discuss how they will be implemented in their design solutions for the restaurant. They were also required to present conceptual sketches such as plans and three-dimensional drawings. The first group presentation was on the Yoruba (Group C). They noted their emphasis was primarily on the contemporary aspects of Yoruba culture. They pinned up their sketches which were pencil drawings. They noted that they derived inspiration from the artwork and photographs of the Yoruba. They got their inspiration from two pieces of artwork from Jimoh Buraimoh, an iconic Yoruba artist. The shapes in the artwork helped them derive the spatial configuration of the floor plan. Walkways around the dining area resembled patterns from Buraimoh's art. This group noted they wanted their space to have warm colors and natural colors, and patterns. Some other characteristics they proposed for their spaces were elegant, inviting, theatrical

and stimulating. Other aspects this group proposed to incorporate in the space were seating to promote family style eating and community, including a chef show to showcase traditional cooking. They also noted not wanting their design to look like a literal African hut. This group expressed many ideas verbally in their presentation, but had very few drawings and images to represent their ideas.

The second group presentation was on the Zulu (Group E). Their concept words were community, family style, generosity, nature and inviting. Their proposal was to design their restaurant in family style, with lots of large tables to set up with large groups, since a sign of friendship found in their research was Zulu people sharing the same plate. The proposed location for their restaurant was the Newtown Cultural Precinct in Johannesburg, which is a location shared by tourists and Johannesburg residents. Their proposal included a centrally located chef show and a small stage to incorporate Zulu traditional dancing, because dancing as a form of entertainment is prominent in the Zulu culture. They proposed a red color scheme, which they derived from the vibrant colors of the beadwork. They drew inspiration from organic shapes, since the Zulu's had a lot of round shapes and domes represented in their spaces. Since symmetry was not a main part of the Zulu culture according to their research, they proposed an asymmetrical plan.

The third group presentation was the Swazi culture (Group B). Their proposal was for the restaurant to be located in Johannesburg's Main Street; considered an up and coming location. This group started by analyzing the type

of food they will serve and Swazi baskets. Their colors, design schemes and shapes for their solution were derived from Swazi artwork, jewelry, and baskets. This group presented a word web of their ideas. Their goal was to design a contemporary interpretation of Swazi culture through the use of warm colors such as yellows and bolds, because lots of restaurants they found in their research on South Africa integrated those colors. They also proposed to have their restaurant near the street and literally flow into the street. This was to reflect the strong relationship between interior and exterior space.

The fourth group presentation was on the Yoruba (Group D). Their location was Lagos and they wanted their restaurant to be freestanding. Their concept was mainly based on the mythology and philosophy of the Yoruba. A “big tree” which they proposed in the middle of the space which arcs around the restaurant was how they proposed to integrate Yoruba mythology. The tree represented Oduduwa, the founder of the Yoruba culture. The tree symbolized growth and energy. In Yoruba mythology, a prominent feature found in their research was the notion of the convex shape of the sky and earth, which they integrated in their space planning through an emphasis on the ceiling plane. Another significant aspect of their proposal was sustainability. Recycled bottles with LED lights on the back wall reflected some sustainability aspects. Their primary means of accomplishing sustainability was through the use of materials. Their furniture had a lot of curvature and their space utilized lots of circles.

The fifth group presentation was on Yoruba, Igbo, and Hausa cultures (Group A). Their proposal was to have a free-standing restaurant in Lagos to

integrate Yoruba, Igbo and Hausa cultures, since Lagos is a melting pot. Emphasis was on the history, philosophy, wall art, and carvings from the cultures. They looked at lots of pieces from the three different cultures to derive their concept squares. They wanted the space to be lively, energetic, natural, historically diverse, and communal, as well as to demonstrate indigenous heritage. They also wanted a very experiential space. They proposed to use cob (adobe) in their booth seating and a natural palette with the art in the space as the focus. I met with each group to discuss their projects after all the presentations were over. Their task for the next class period was to work in their groups to develop their schematic design.

Day Five

Day Five was a workday for each group to develop their schematic designs for the next pin up review during the next class period. Each group worked on their concepts, plans, elevations, and three-dimensional sketches required for their next presentation.

Day Six

On Day Six, the goal for each group was to present their schematic design. The first group's schematic presentation was for the Zulu cultural restaurant in South Africa (Group E). This group presented their floor plans and three-dimensional wireframe models in CAD. Their design inspirations from the culture were predominantly shapes that were curvilinear and asymmetrical. Beading and vibrant colors from the Zulu informed their design solution. They

proposed traditional style chairs made predominantly of wood. Part of their space had big tables to mimic the communal nature of Zulu spaces.

The second group schematic presentation was for the Yoruba cultural restaurant in Nigeria (Group C). This group emphasized that their concept was derived from Jimoh Buraimoh's beaded painting. Color was important and they discussed the notion of color in Yoruba culture. Open planning was another important aspect derived from Yoruba culture. This group presented their drawings via three-dimensional wireframe models. The third group schematic presentation was for another Yoruba cultural restaurant in Nigeria (Group D). This group presented plans, lighting plans and three-dimensional model. Their concept was derived from the philosophy of the Yorubas centered around the semicircular domes of the earth and the sky, and the symbolism of Oduduwa as the tree of life. Sustainability was a key contributor to their design solution.

The fourth group schematic presentation was for the Swazi cultural restaurant in Johannesburg, South Africa (Group B). Their inspiration was from baskets, bright colors, and natural wood tones. The bar was represented in hut form in an abstract non-literal way. This group noted that showcasing artwork was critical and ceiling patterns included art from Swazi culture. Circular and geometric shapes were major elements in their solution. This group presented plans, lighting plans and a three-dimensional model.

The fifth group schematic presentation was for the Yoruba, Hausa, and Igbo cultural restaurant in Lagos, Nigeria (Group A). This group presented plans, lighting plans and three-dimensional models for their solution. Their

space derived spatial elements from the Zaria Mosque of the Hausa, especially the vaulted ceilings. This group also proposed to use the vestibule design from the Hausa in the entryway design of their restaurant. Yoruba and Igbo cultures were incorporated in the fabric and textile designs in the space.

Day Seven

On Day Seven, I did desk reviews with each group as they worked on further developing their designs in the computer lab. The first group I reviewed was designing their restaurant for Zulu culture in South Africa (Group E). Two group members were working predominantly on the three-dimensional modeling of their entire restaurant space. The remaining two group members were working on modeling the furniture for the space. The second group I reviewed was designing their restaurant for Yoruba culture in Nigeria (Group C). One group member was working on two-dimensional drawings (plan and elevations), another group member was working on three-dimensional modeling of the restaurant, and a third group member was working on details for the space.

The third group I reviewed was designing their restaurant for Yoruba culture in Nigeria (Group D). One group member was working on developing the research and programming packet for their proposal and two other group members were working on three-dimensional modeling of the restaurant space. The other two group members were absent. The fourth group I reviewed was designing their restaurant for Swazi culture in South Africa and Swaziland (Group B). All four group members were collaboratively working on three-dimensional modeling, reflected ceiling plans, and details for their design

solution. In this group, one group member noted in her three years in the Interior design program, this project was the only one she has included the most detailed three-dimensional modeling. She felt her group had to model a lot of three-dimensional details on the computer to reflect the culture in their design solution.

The fifth group I reviewed was designing their restaurant for Yoruba, Hausa and Igbo cultures in Nigeria (Group A). All four group members were working on three-dimensional modeling of the entire space. Overall, on Day Seven, all the students present seemed very intrinsically motivated and engaged in working on fine tuning detailed ideas for their restaurants. All groups were engaged in three-dimensional modeling of their spaces, thus they were thinking about the space holistically and volumetrically.

Day Eight

On Day Eight, the goal for each group was to work on their final presentation. All the groups worked on their project, three-dimensional modeling, and presentation in the computer lab. I did desk reviews with each group as they worked on developing their final presentations. The first group (Group B) had two group members working on three-dimensional modeling and rendering in 3D Studio Max, a computer modeling application, and one student was working on details for board layout. The final group member was absent. This group noted they had all of their renderings done, besides adding the details like baskets and background scene. Their technical drawings were completed.

The second group (Group A) had the task evenly distributed among each group member. One student was working on modeling the bar area. Another student was working on modeling the ceiling. Another student was working on the reflected ceiling plan and lighting plan. The fourth group member was working on modeling the furniture. One group member noted to me that she did not really like the project in the beginning, but she became really excited when designing and modeling all the details. Overall, this group seemed very motivated about the project. The third group (Group E) had one student working on the plan, reflected ceiling plan, and electrical plan. Another group member was working on the building section. Another group member was working on the rendering and fabric research for their solution. Modeling the beaded column and material selection were significant achievements for this group on day eight. Among themselves the group members debated whether to utilize a PowerPoint presentation format or actual presentation boards for their final presentation. I encouraged them by indicating that both formats were appropriate and I noted only boards can truly show the exact drawing scale, so having boards for details would be good. I also noted a PowerPoint presentation format will help them organize their thoughts and present their ideas.

The fourth group (Group D) had only three students present. One was working on three-dimensional modeling and rendering of the space, and the other two were working on the building section. The fifth group (Group C) were done with all their drawings. I reviewed their plan, section, elevation, and

perspective. All they needed to do was to add more details to their perspectives to make them more photorealistic. Overall, on Day Eight all groups seemed motivated to work on the project.

Day Nine

On Day Nine, the goal for each group was to continue working on their final presentation. I did desk reviews with each group as they worked on finishing up their final presentations. The first group (Group B) had completed their design and drawings and spent the class period collectively organizing their technical drawings and presentation boards. The second group (Group E) had also completed their design. One group member was organizing the boards. Two group members were working on board layout. One group member was working on cleaning up the drawings adding shade and shadows. Overall, the group was putting finishing touches to their project.

The third group (Group C) had completed their design and were jointly working on rendering their perspectives and layout of their boards. The fourth group (Group D) had only two group members working on technical drawings for their restaurant. The other two group members present were working on projects for another class on their computer. The fifth group (Group A) members worked on final layout of their boards.

Day Ten

On Day Ten, after a co-observer administered the post-test questionnaires, all five groups presented their final project. The first group (Group E) started their presentation with a video on Zulu cultural dancers.

Community was a major part of their design and they incorporated large tables to reinforce the notion of community. Some of the tables were shaped in the form of a leaf. They were mainly large tables with lots of seating. They integrated a stage on the second level, a mezzanine level. The group suggested putting dancers in their design solution would allow patrons to really have a feel for the culture. They also derived inspiration from images of Zulu children, warriors, baskets and dome huts. Their design incorporated a lot of circular forms, curved lines and organic shapes. The main central column was a focus point of the restaurant and it was beaded.

The second group (Group D) noted their concept was to use locally sourced components with a focus on sustainability. Another concept of theirs was the notion of the two domes among the Yoruba, the dome of the earth and the sky. They implemented this in their design solution by incorporating elements in their ceiling plane. For example in their patio, they incorporated an undulating ceiling. In their design solution, they placed a lot of emphasis on daylighting for the day scene and artificial lighting for the night scene. A prominent back wall of recycled bottles had natural light filter through it in the daytime and at night it was lit up with LED lights. A tree was incorporated as a major element in the design to symbolize growth and unity. This group noted the ceiling delineated volume in all the spaces, yet it tied them all together. This group had several celebrity pictures in their three-dimensional renderings for scale, as well as an image of some island dancers erroneously representing

Yoruba people. They ended their presentation by saying “Odabo”, which means goodbye in Yoruba language.

The third group (Group B) noted their concept came from Swazi baskets. The group first presented their technical drawings. Next, they presented their rendered drawings. They noted their ceiling was made out of wood planks to resemble woven patterns in the baskets. The stained patterns on the concrete flooring also resembled woven patterns in baskets. The chef and bar space were located in the middle of the restaurant. Geometric patterns integrated on the columns to create semi open room dividers brought in patterns from the baskets. The patio space fence also integrated patterns from the baskets. The ceiling over the bar area resembled an abstract version of a hut. Overall, this group summarized their design solution as hugely inspired from patterns found in basketwork and an abstract version of a hut was integrated volumetrically.

The fourth group (Group A) incorporated three major cultures, Yoruba, Igbo and Hausa into their solution. They wanted a space that unified the three major ethnic groups in Nigeria. They named their restaurant “Durojaiye” in Yoruba, which means “wait and enjoy life.” They were inspired by different patterns from the three different cultures. The vaulted ceiling and arches incorporated in the space came from the Hausa culture, geometric patterns came from the carved doors and artwork of the Yoruba, and masks and artwork came from the Igbo. The group also used indigenous materials in their space. Molded cob (adobe) was used in the entry way and in the design of their booth seating.

The fifth group (Group C) located their restaurant in Lagos in a hotel near the beach, because Lagos is a coastal city. Prominent features of their concept were beadwork and the color psychology of the Yoruba. Open planning was another category they found in their research, which informed their design solution. Water was used to reflect the lighting in their space. The back area in their restaurant was elevated by three feet to delineate the space. Patterns in the space including the floor plan were inspired from Jimoh Buraimoh's beaded painting.

Stage 3: Evaluation of Work Post Instruction - Design Projects

Group A – Yoruba, Igbo, and Hausa, Nigeria

Group A set out to integrate the three predominant ethnic groups in Nigeria to create a melting pot atmosphere as shown in Figure 10 to 12. They derived ceiling elements from Hausa vaults and arches. The indigenous materials, fabric, textiles, art and sculpture derived from Yoruba and Igbo were used for the rest of the space. This group worked together very well as a team. This was apparent in how detailed and coordinated their final boards were. Their concept board illustrated the architecture, design, furniture and décor from Yoruba, Igbo, and Hausa, which in turn informed their conceptual sketches and were translated into their design solution. Their technical details, presentation boards, and perspectives were very well detailed and excellent.

Figure 10. Concept board illustrating cultural research about Yoruba, Igbo and Hausa and inspirational images and concept for the design solution (Group A).

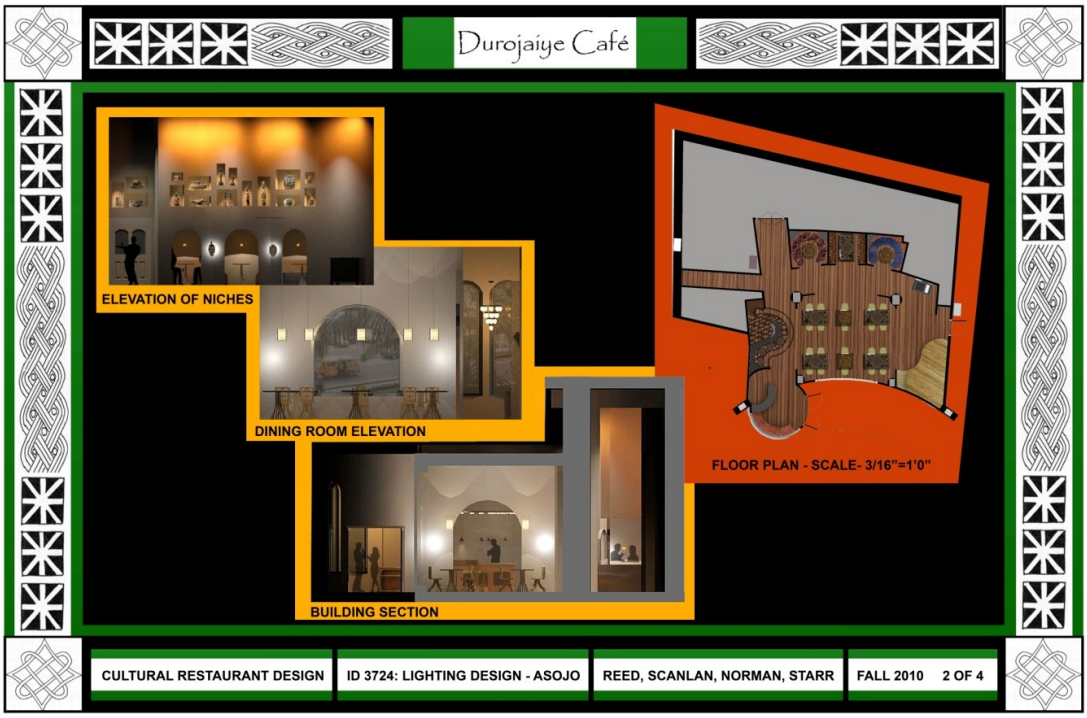

Figure 11. Plan and Elevations for Durojaiye Café (Group A).

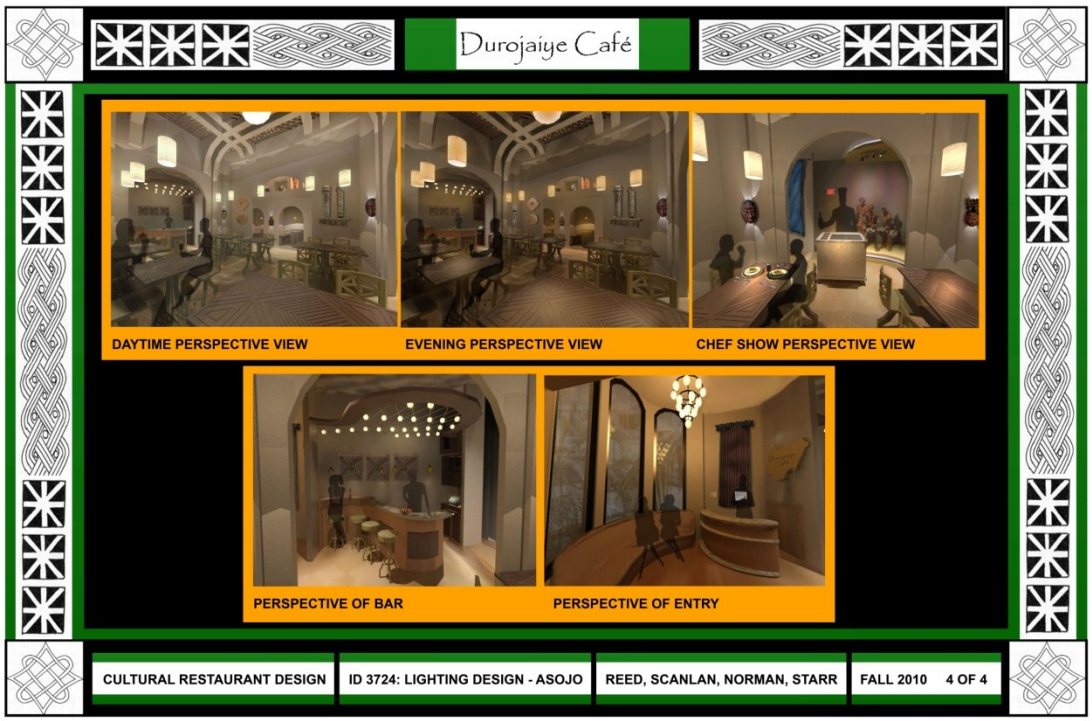

Figure 12. Perspectives for the Durojaiye Café in Lagos, Nigeria (Group A).

Group B – Swazi, South Africa and Swaziland.

Group B derived their solution from vibrant colors, arts and traditions of Swazi culture. As shown in Figure 13 to 20 their space was mainly influenced by geometric patterns from Swazi baskets. Geometric patterns from Swazi baskets were integrated in the stained patterns on the flooring, columns, room dividers, patio fence, and ceiling. The ceiling over the bar area resembled an abstract version of a hut. Overall, geometric patterns and vibrant colors from Swazi culture were major elements in this solution. This group worked very well together as a team. This was evident in their final presentations.

Figure 13. Board illustrating materials for the Swaziburg Restaurant (Group B).

Figure 14. Plan for the Swaziburg Restaurant (Group B).

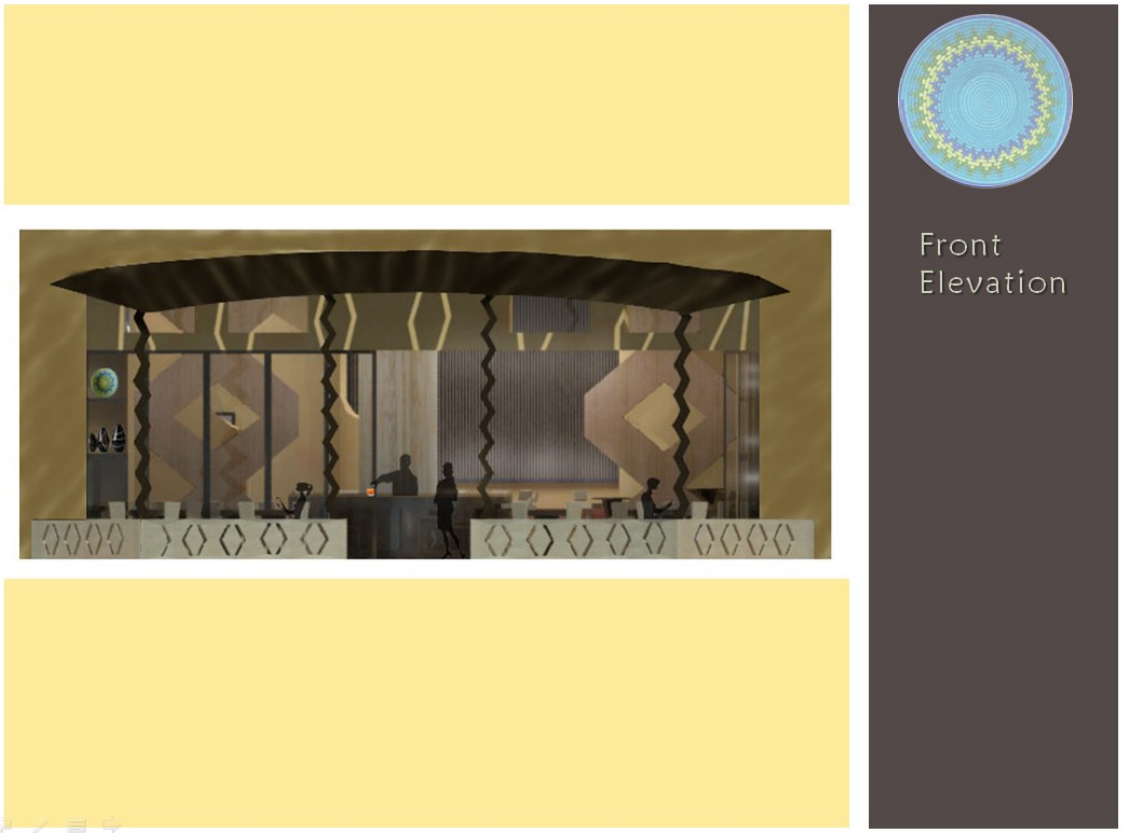

Figure 15. Front Elevation illustrating geometric patterns derived from Swazi baskets (Group B).

Figure 16. Bar and Dining Perspective showing an abstract version of a hut over the bar area (Group B).

Figure 17. Dining Perspective illustrating geometric patterns derived from Swazi baskets as furniture inspiration (Group B).

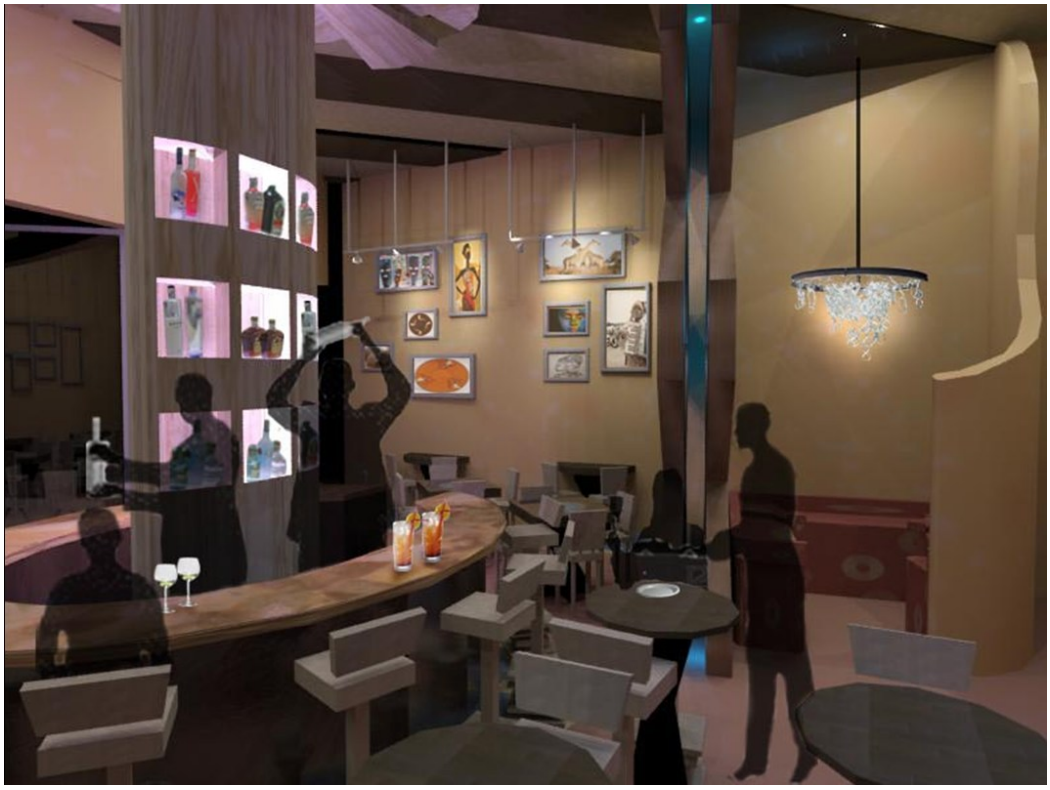

Figure 18. Bar Perspective (Group B).

Figure 19. Dining Perspective (Group B).

Figure 20. Dining Perspective (Group B).

Group C – Yoruba, Nigeria

Beadwork and the color psychology of the Yoruba were prominent features of Group C's concept. As shown in Figures 21 and 22 patterns in the space including the floor plan were inspired from Jimoh Buraimoh's beaded painting. Open planning was another category that informed their design solution. A water wall was used to reflect lighting in their space. Figure 23 shows the back area in their restaurant was elevated by three feet to delineate the space. This group worked very well together as a team. This was evident in their final presentations.

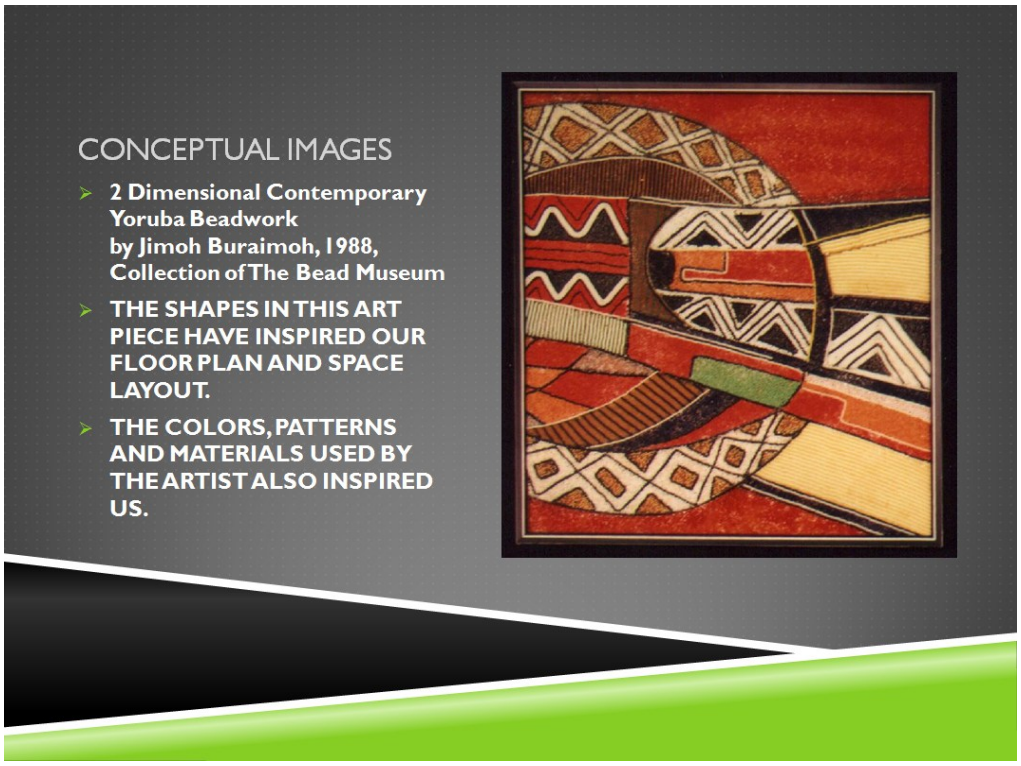

Figure 21. Jimoh Buraimoh's beaded painting which inspired space planning (Group C).

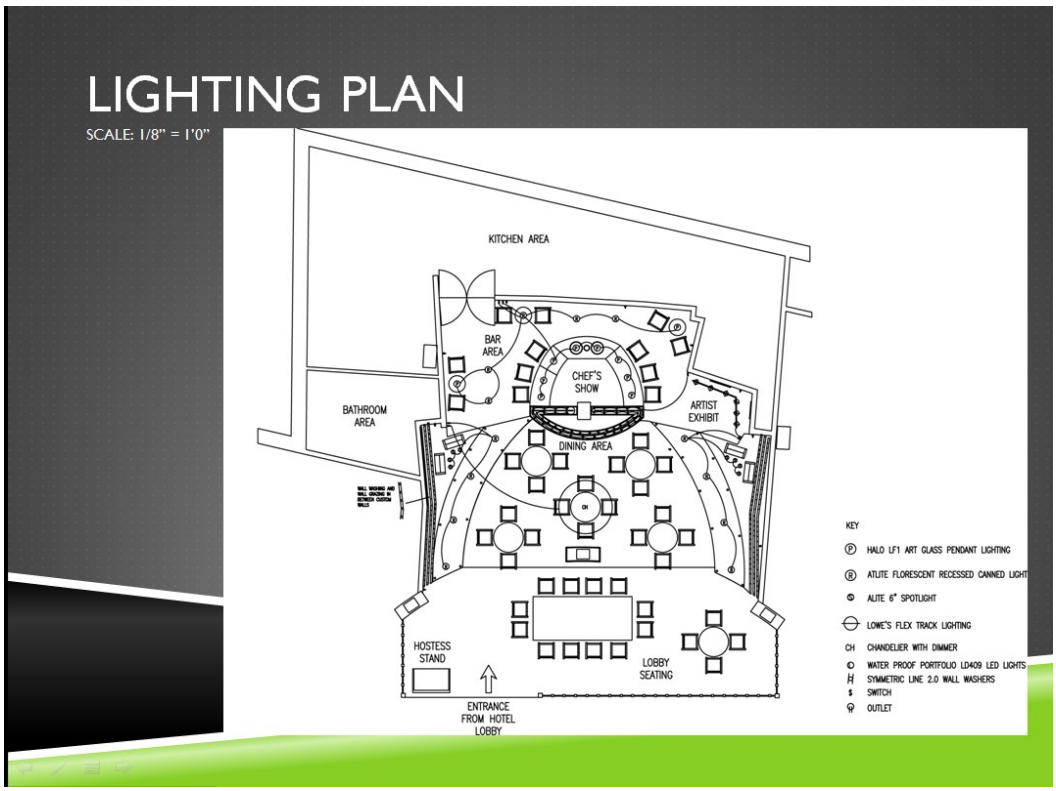

Figure 22. Lighting and floor plan with curvilinear forms inspired from Buraimoh's painting (Group C).

Figure 23. – Restaurant Perspective illustrating open planning category and curvilinear ramps along restaurant perimeter inspired from Buraimoh's painting (Group C).

Group D – Yoruba, Nigeria

Group D started their design process with the idea of significance of the concave shapes of the earth and sky in Yoruba philosophy as a space defining element which they integrated in their final solution by creating emphasis in their ceiling plane through the use of their prominent undulating ceiling with the prominent tree branches as shown in Figure 24 to 26. The tree was integrated in a prominent location inside their restaurant to represent Oduduwa, the founder of the Yoruba, and to symbolize growth and energy through the many branches.

Sustainabililty which was another key concept of this group was integrated in their use of materials. Recycled bottles with LED lights integrated into them at the bar wall was a sustainable feature of the space. They named their restaurant Omnomnom Restaurant, Bar and Lounge. A name they mentioned came from an amalgamation of words they found in Nigeria. Overall their design solution was successful in highlighting Yoruba culture. Their initial

research and design ideas were appropriate. My observation was that three students contributed more significantly than the rest of the group. The sharing of tasks equitably was not obvious.

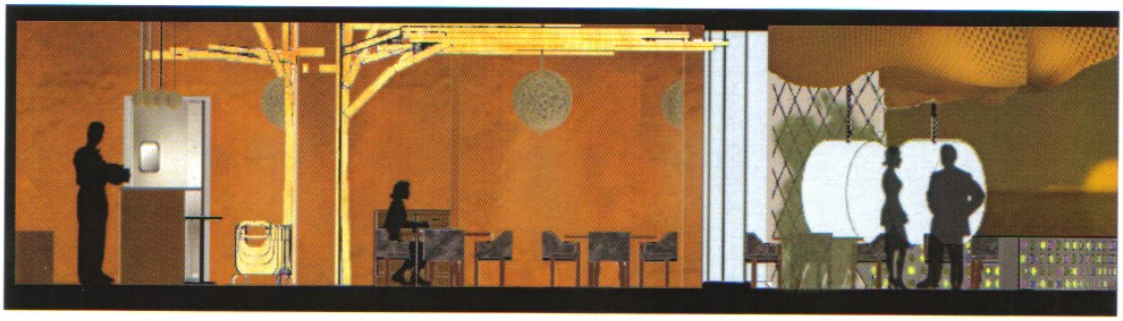

Figure 24. Section showing ceiling elements (Group D).

Figure 25. Patio perspective showing undulating ceiling plane (Group D).

Figure 26. Dining area showing tree and warm tones in the interior (Group D).

Group E

Community was a major part of this group's design concept and they incorporated large tables to reinforce the notion of community as shown in Figure 27. Some of the tables were shaped in the form of a leaf. They were mainly large tables with lots of seating. Figure 28 shows the inspiration derived from images of Zulu children, warriors, baskets and dome huts and the prominent feature of their design, the beaded column. Figure 29 shows a stage integrated on the second level, a mezzanine level. The group thought that including dancers in their design solution would allow patrons to really have a sense of the culture. Their design incorporated lots of circular forms, curved lines and organic shapes. This group worked very well together as a team. This was evident in their final presentations.

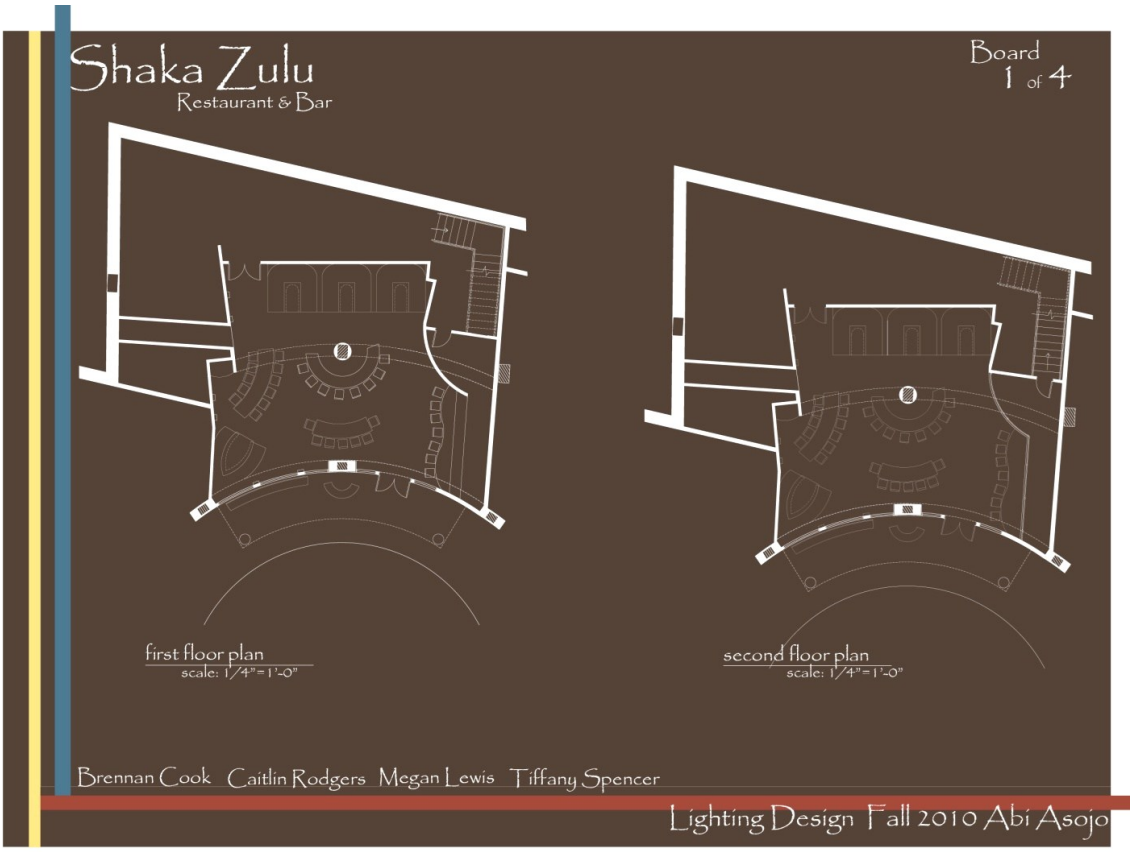

Figure 27. Plans illustrating family style tables and mezzanine stage space (Group E).

Figure 28. Inspirational images, Elevation, and Perspectives showing prominent beaded column (Group E).

Figure 29. Perspectives and Elevations (Group E).

Stage 4: Interviews

After the class ended and grades were posted, ten students were invited back for a 30-45 minutes interview. The interviews represented Stage 4. Four students were interviewed from Group A, 1 student was interviewed from Groups B and C, and 2 students were interviewed from Groups D and E. The interview was comprised of five questions. Question one requested the student to look at the project and talk about it. Question two asked the student about his or her recollection of how he or she chose their culture. Question three asked the student to describe how comfortable he or she was designing in a non-Western setting like Nigeria or South Africa. Question four asked what way the student felt Nigerian or South African cultures have made impact on design or

architecture. Question five focused on what they liked or did not like about the project.

Interview Question 1

Let's start this process by us looking at the project and you talking about it.

The categories that emerged from students' responses to this question were the following: ethnicity and cultural diversity; artifacts, arts and crafts; juxtaposition of traditional and contemporary culture; courtyard, communal space, centrally located spaces; iconic people to the cultures; sustainability; and performance arts. For example, the categories ethnicity and cultural diversity, artifacts, arts, and crafts emerged from how one student discussed how they derived their inspiration from the art and culture of the three cultural groups they focused on. This student's group integrated aspects that were defining characteristics of the culture in their space. This group member noted that the research was split up among each individual in the group. Another member of this group emphasized how their solution was rich in details and wished they got to showcase their final design presentation bigger on the LCD projector rather than on boards. This group member also noted the following about their solution:

> It is very refreshing, the colors are natural and all the architectural detailing are popping out at you. The architectural detail was our focus. We wanted an architecture which defines the three tribes and also allows a back drop for artwork. (Group A - Yoruba, Igbo, and Hausa, Nigeria)

Another group member noted the "many different cultures were a challenge. We did not know anything about the cultures, narrowing down was a challenge." (Group A - Yoruba, Igbo, and Hausa, Nigeria).

The categories artifacts, arts and crafts, and courtyard/communal space/centrally located spaces emerged from comments another student whose group designed for Swazi culture noted:

> I liked focusing on the artwork. We concentrated mostly on their basket design and their space planning, the way they live in a central hut in their community, and courtyard connection in the community. Like our lounge/bar area was the courtyard in our design. Since it anchored the rest of the spaces, the rest of the spaces were organized around this area. We wanted to keep colors neutral and natural and the only vibrant colors are baskets and artwork. (Group B –Swazi, South Africa and Swaziland)

Similarly, another group's member talked about the importance of beads in Zulu culture, which resulted in the beaded column that they integrated in their design solution. This student also reinforced the importance of community in the culture (Group E - Zulu, South Africa).

Another category, juxtaposition of traditional and contemporary culture was evident in how another group member noted the following:

> Best group I have ever worked with. There was so much chemistry within our group. Communication was fantastic. We started with our research. We decided to make our project a synthesis of three different cultures based on the prior information you gave us which was very helpful. We took different regions. The Hausa architecture was more influenced by Islam. Hausa in the north used earth to sculpt decorations and motifs. Their spaces were rectilinear. The Igbo in the Southeast had more art and pottery and we used them in the restaurant. The mask came from the Igbo. Yoruba in the Southwest had more circular forms and a lot came from the environment. Some were also rectilinear. Compounds were also common. Compounds changed with social dynamics e.g. marriage, death, etc. Compounds were more adaptable. Carved doors and tables were derived from the Yoruba. We tried to incorporate the tradition in the design, the different geometric aspects in our tabletop and chairs. We used a vestibule entry in curvilinear form from Hausa. We brought in wood and earth to be symbolic. We used niches for displaying artwork. (Group A - Yoruba, Igbo, and Hausa, Nigeria)

The category of iconic people to the cultures was evident in how a student talked about how they were inspired by Jimoh Buraimoh, a local Yoruba artist and his colorful beadwork. A combination of his beadwork and color psychology of the Yoruba contributed to their space planning. One of Buraimoh's beadwork art was used to derive their floor plan (Group C - Yoruba, Nigeria).

On the categories of juxtaposition of traditional and contemporary culture and sustainability, another student whose group designed for Yoruba, Nigerian culture noted:

> We took a more innovative approach to implementing traditional design elements we found in our design based on religious elements, philosophy and culture. You don't actually see traditional artifacts. What we did instead was to have screens where you find the innovation and information about culture. Our solution is more technological than traditional. We did not want to take it literally because it was a place for tourist to come to. We wanted to satisfy both traditional and contemporary aspects. We focused a lot on sustainability aspects. (Group D – Yoruba, Nigeria)

On the category of performance arts, one student noted liking the research component of the project. Her group chose Zulu, South Africa. On Zulu culture, she was inspired by traditional dancing because she really related to dancing as a dancer herself and that really helped her relate to the Zulu culture (Group E - Zulu, South Africa).

<u>Interview Question 2</u>

Do you recall how you chose your culture?

The categories that emerged from students' responses to this question were the following: ethnicity and cultural diversity; juxtaposition of traditional and contemporary culture; arts and crafts; philosophy and religion; and

elements and principles of design. For example, the category ethnicity and cultural diversity emerged from students who noted the following:

> You gave us the choice between South Africa and Nigeria. In your slide presentation you talked about the three cultural groups and how distinct they were and we wanted to unify the three cultural groups of Yoruba, Igbo, and Hausa equally in Lagos to emphasize the national identity. They were the three biggest groups. We were inspired by your early presentation. (Group A - Yoruba, Igbo, and Hausa, Nigeria)

> We selected Nigeria because no one else was doing Nigeria during the class period in which we were selecting our location. We wanted a melting pot atmosphere, so we focused on three cultures. We wanted multiple influences. We did not want to focus on one tribe. The three cultures we selected were the main cultures we found information about and were on the teacher's presentation. (Group A - Yoruba, Igbo, and Hausa, Nigeria)

> I think we researched different tribes and we really liked Yoruba tribe and thought we can get a lot of inspiration from them. We thought your presentation on Nigeria was interesting and a new learning experience. (Group C - Yoruba, Nigeria).

Another student noted "location was important to our group. We picked the ones with more information. The majority cultures, the groups we found information about" (Group A – Yoruba, Igbo, and Hausa, Nigeria). Another student noted "because Lagos was a melting pot of many cultures, a multicultural metropolis, we wanted to give an overall flavor by bringing in three cultures one from North, one from Southwest and one from Southeast." (Group A - Yoruba, Igbo, and Hausa, Nigeria). The arts and craft category emerged from a group member who noted:

> We chose South Africa because we were familiar with it. I had a friend who once lived there and I wanted to know more about South Africa. We chose Swazi randomly, we liked the name. We liked the artwork and baskets from Swazi. (Group B –Swazi, South Africa and Swaziland)

The philosophy and religion category emerged from a group member who responded:

> We didn't have a specific reason for choosing Nigeria. But we did a lot of philosophy research on three main Nigerian cultures you told us (Yoruba, Igbo and Hausa) and we picked Yoruba based on philosophy and religion we found. We found a lot of information on the philosophy and religion of the Yoruba. Our concept had to do with two halves e.g. dome of earth and sky and where they meet and this relates to Yoruba philosophy but I cannot recollect all the details right now. (Group D – Yoruba, Nigeria)

Another group member noted "we researched mythology and philosophy of Yoruba and Igbo and we were more intrigued by Yoruba. We chose it because it gave us design ideas. For example, the notion of the earth and sky being separate spheres." (Group D – Yoruba, Nigeria). The elements and principles of design category emerged from one student who noted:

> We just picked South Africa for no particular reason. You talked about Zulu in class that day and we liked the things you talked about and we thought we will find information on Zulu. The domes in your presentation attracted us to Zulu. We thought we could include domes in design solution. We used subtle circular ideas from the domes in final solution. For example, we integrated lots of curvilinear forms. (Group E - Zulu, South Africa)

Interview Question 3

Describe how comfortable you are designing in a non-Western setting like Nigeria or South Africa?

In addition to participants reporting being comfortable designing in multicultural and global contexts after the instruction and study, the following categories emerged from students' responses to this question: ethnicity and cultural diversity; juxtaposition of traditional and contemporary culture; element and principles of design; philosophy and religion; performance arts; and

sustainability. Students also reported being able to transfer the knowledge gained through this experience when problem-solving in a different cultural context. Students also reinforced the importance of learning to design in multicultural and global settings.

Some responses in which students indicated they were comfortable designing in Nigeria and South Africa are as follows:

> Really designing for anybody you need to do the background research and understand what they need. We needed to have a little background about the culture through research, which you gave us at the beginning of the project and through your feedback throughout the process. I enjoyed learning about the cultures. Designing multicultural projects is one of my favorites. The process you developed really helped me as I worked on another multicultural project in spring 2011. (Group A - Yoruba, Igbo, and Hausa, Nigeria)
>
> I think in a classroom setting, I will be pretty comfortable but in a real world setting I would like to visit Nigeria and learn more. The project helped me get a better understanding of how research on culture can be integrated in a project. (Group A - Yoruba, Igbo, and Hausa, Nigeria)
>
> I feel comfortable designing anywhere after the research you presented us and our research efforts. I have never been to South Africa, but I think you guided us, we researched enough and I feel comfortable. I am more confident about South Africa now that I have done a project there. (Group B - Swazi, South Africa and Swaziland)
>
> I feel comfortable now and it was definitely interesting. I have not designed anything outside of the US apart from this project, so it was a challenge for me at first. But it was interesting to learn about the Zulu culture and now I feel comfortable. (Group E - Zulu, South Africa)

The category ethnicity and cultural diversity emerged from a participant that noted “I feel moderately comfortable. Research on culture helps us learn about the culture. If you said design a restaurant for Lagos, what we would have come up with will be different from design for Yoruba culture.” (Group D – Yoruba, Nigeria). The element and principles of design; juxtaposition of

traditional and contemporary culture; and performance arts categories emerged from a comment from a student who noted the following:

> My first thought was poverty because of what we see in the media. I was not really considering high-end design like in the city areas. This process allows innovative design. As long as you do your research and understand the culture you can solve design problems. For example, in this project we incorporated vaulted ceiling, artifacts, and arches from the past in our solution. Also, we allowed the atmosphere to entertain and bring back traditional music. (Group A - Yoruba, Igbo, and Hausa, Nigeria)

The philosophy and religion category emerged from a student who responded "it helped instead of just looking at design, it helps me to look at a culture's spiritual life and way of living and incorporate it in design. Now that I have had experience I feel more comfortable." (Group B – Swazi, South Africa and Swaziland). The sustainability category emerged from one student who responded: "we tried to use the research we did to respond to the problem. Group style eating, connection to nature, and sustainability were some of our findings" (Group D – Yoruba, Nigeria).

Participants also reported the idea of transferring the knowledge gained through this experience when problem-solving in a different cultural setting. For example a group member noted feeling more comfortable and will transfer the things learned when researching another culture and designing another project (Group A - Yoruba, Igbo, and Hausa, Nigeria). Another group member observed "In the beginning I was not comfortable and did not know where to begin. I am a lot more comfortable now and if I were to get an assignment like this in the future I would know where to start." (Group C - Yoruba, Nigeria).

In reinforcing the importance of learning to design in multicultural and global settings, one student noted:

> I think going in I was already comfortable doing non-western design because I have done previous projects like a Museum in China and an Armani Store in China. Since I am half Chinese, it is easier for me to accept multicultural projects and this helps me understand better. As designers we can't just focus on America. As students, it is necessary to do these kinds of projects. We will have to function in a global environment. (Group D – Yoruba, Nigeria)

Interview Question 4

4a. In what way do you feel Nigerian or South African cultures have made impact on design or architecture?

The categories that emerged from students' responses to this question were the following: ethnicity and cultural diversity; juxtaposition of traditional and contemporary culture; arts and crafts; performance arts; community; open planning; courtyard; philosophy; sustainability; and social interaction. These categories emerged from the following comments by the participants. For example the categories of ethnicity and cultural diversity; open planning; arts and crafts; performance arts; courtyard and social interaction emerged from one student who noted the following about Nigerian cultures:

> History of the cultures impact design, for example, the traditional architecture, traditional dancing/music, and traditional artifacts. We wanted to create open spaces to allow social interaction. We incorporated traditional circular entry way and a main dining representing traditional courtyard between all the spaces of the home. For example, in the traditional homes they had courtyard and everything around it, so in our solution the main dining area is the courtyard and all the rest of the function are around the dining area similar to traditional spaces. We used play of volumes to define space. (Group A - Yoruba, Igbo, and Hausa, Nigeria)

The category of sustainability emerged from another group member who noted:

> I remember reading in our research that when the modern movement came in and started building modern buildings, they did not work with the climate, whereas the indigenous buildings were more appropriate for the climate and culture. As soon as technology and modern comes in, everyone thinks it is better and they abandon and go with technology, sometimes old ways are better. (Group A - Yoruba, Igbo, and Hausa, Nigeria)

The categories of open planning and juxtaposition of traditional and contemporary culture emerged from one student who noted the following on Swazi, South African culture, “open architecture similar to US is a major impact. Buildings open to exterior. People stick to traditional aspects. The contemporary building still reflects culture (traditional environment).” (Group B –Swazi, South Africa and Swaziland). The arts and crafts categories emerged from a comment on Yoruba, Nigerian culture by one student who noted “I think their style and influence have impacted others. For example, Nigerian art has allowed the opportunity to combine the architecture and art from there to create new styles. You can see this in some of the new buildings there.” (Group C - Yoruba, Nigeria).

The philosophy category emerged from one student who noted the following on Yoruba culture: “I did not really look for general contribution from Nigeria maybe if we had more time. We didn’t take idea from architecture, we took ideas from the cultural philosophy and distilled them into built component.” (Group D – Yoruba, Nigeria). The juxtaposition of traditional and contemporary culture category emerged from another student who noted “we did not do a lot of research outside of Nigeria based on this project. We did find that Nigerian traditional buildings were influenced by Islam.” (Group D – Yoruba, Nigeria).

4b. For example, describe how you would use precedents from Nigeria or South Africa as references for discussing design ideas? By that I mean, what aspects or design elements could you use for discussing design ideas?

In addition to describing how they will use precedents from Nigeria or South Africa for discussing design ideas after the study, the following categories emerged from students' responses to this question: color; rhythm; symmetry; patterns and textures; arts and crafts; open planning; community; social interaction; interior versus exterior relationships; courtyard; juxtaposition of traditional and contemporary culture; and sustainability. Students also reported the importance of learning about culture and problem-solving in different cultural settings.

The categories of color; symmetry; arts and crafts; courtyard; patterns and textures; and juxtaposition of traditional and contemporary culture emerged from participants who noted the following:

> Color was very important in all three groups. Artwork had a lot of saturated tones, which translated to our design. We wanted a neutral background in the restaurant to highlight the colors of the artwork and fabric. The Hausa and Igbo doors were very geometric and we derived a lot of geometric forms and details for our space such as carved tabletops and the general forms of our space. The Yoruba was more organic, so we implemented that in the artwork and design of the bar. The bar flowed in a more organic way than the rest of space. We looked very heavily at how the villages were organized and we made the courtyard our main dining space and the rest of the spaces surrounded it. The entrance was a circular vestibule and we made our waiting space a circular vestibule like that of the Hausa before you entered the main space. (Group A - Yoruba, Igbo, and Hausa, Nigeria)

> Their philosophy inspired how we designed the layout and it has a meaning. Yoruba philosophy helped us determine to use simple forms because according to our research into Yoruba philosophy, they are well-

balanced people. In the form and space, they are heavy on symbolism. We used solid colors on our main wall and simple furniture made out of wood and color came from the accessories and artwork. Openness was important for us just like in Yoruba spaces. From the front of the restaurant you could see the back. The only divider is the water wall, which is transparent. Relationship to nature made us use the water wall and we wanted to keep it simple. Our main inspiration came from the artwork and it inspired our entire space planning. (Group C - Yoruba, Nigeria)

Color pigmentation in beads are very prominent in their design. I think they were one of the first cultures to use color intensely (the bright colors). Symmetry was prominent in their design. Most spaces were designed for groups and very family oriented. We found spaces to be grouped; families lived together in circular domed huts in indigenous environments. Geometric designs and patterns from Zulu basketry influenced our design. We used the patterns in our chairs. We tried to make it a contemporary example on Zulu design. (Group E - Zulu, South Africa)

The categories of rhythm; patterns and textures; arts and crafts; open planning; community; social interaction; interior versus exterior relationships; and sustainability emerged from the following comments by some participants:

Traditional patterns, textiles and pottery and we used all those and put them in our design. For example, traditional fabric on booths and traditional door patterns on tabletops. Popular geometric patterns and symbols on tabletops and back of chairs. Around the drums there is yarn that is beaded, so we took the beaded string from the drum and used as the canopy above the bar. I will implement this by using repetition of patterns (rhythm), open floor plans for social interaction. In Nigeria, there is a lot of social interaction between dancing and eating. In terms of material culture, I will use natural materials wood, thatch, adobe/mud, and environmental sustainability. (Group A - Yoruba, Igbo, and Hausa, Nigeria)

A lot more rhythm, pattern, and lot more geometry. Visual interest because of geometry and patterns. We can take some of those patterns and apply in a western setting. A lot of patterns had sequence to them. We incorporated a lot of exterior views. Showcasing artifacts was important, we wanted culture to stand out in our interior. (Group A - Yoruba, Igbo, and Hausa, Nigeria)

> The idea of the compound is a good solution for some design in terms of security. From what I remember each space had a function. Because this design was geared towards bringing in the culture to make them visible, we focused on being more literal. The difference in this project was to show the culture. For example, bringing in the motifs and designs. It really helped to use the different geometrical forms and motifs in the cultures to showcase them. It was more about translating the culture into design in this project. They have lots of color and textiles on the rugs and clothing particularly the Yoruba. Ideas from sustainability in terms of open courtyards, nature, centralized, natural elements (water and gardens) are some aspects I take away from this experience. Privacy in planning, for example, the entry vestibule, the relationship between exterior and interior: transition between outside to inside. (Group A - Yoruba, Igbo, and Hausa, Nigeria)

> Rhythm of the baskets, non-symmetrical balance and balance between spiritual, cultural, artistic and family life are examples. (Group B –Swazi, South Africa and Swaziland)

Additionally, participants reported the importance of learning about culture and problem-solving in different cultural settings. For example, several students noted the following:

> The fact that I went into it not knowing much about Yoruba culture, process is what I can take from the experience. For example, in researching how different cultures use spaces different, we found Yorubas were big on family style. (Group D – Yoruba, Nigeria)

> Now I would be able to talk about the form and shape a lot of the Nigerian architecture have exhibited. For example, traditional elements like rhythm and balance are important. It is reflected not only in culture but in design. With our design solution, we just wanted the philosophical aspects exhibited through our forms and space planning. (Group D – Yoruba, Nigeria).

> Dancing influenced our design and helped us make our solution very volumetric. We saw a Shaka Zulu restaurant in London, which is not near South Africa. I don't know where the designer came up with the idea, but it made an impact. It was a night life upscale bar. The interiors would be helpful for clients or users to learn about Zulu culture. (Group E - Zulu, South Africa)

4c. In what way do you feel non-Western cultures have made impact on design or architecture?

The categories that emerged from students' responses to this question were the following: juxtaposition of traditional and contemporary culture; sustainability; social interaction; community; arts and crafts; and color. Students also noted the importance of learning about global implications of design. For example, the categories of juxtaposition of traditional and contemporary culture; community; social interaction; and sustainability emerged from participants who noted the following:

> I do know that when world travel and trade routes opened up lot of cultures travelled and there was a mixing and sharing of ideas and the cultures had influences on each other. I know from the history class there were revivals. For example, people would rediscover what they knew about and they became influential again. More sustainable ideas originated in non-Western cultures. When western cultures experienced industrial revolution, emphasis was on factories and mass production and not caring about environmental impact but non-western cultures were concerned about harmony with nature. Western focuses on nuclei, but non-Western was more community oriented. Harmony with nature and community orientation began as a more non-western belief and we are adopting that now and are affecting western beliefs. (Group A - Yoruba, Igbo, and Hausa, Nigeria)
>
> I feel like cultures like this bring a different experience for people in the west. Design has global influences. I created the solution from your research. I am not very familiar with existing buildings and how they influence each other. The topic is too broad to make a general observation. Non-western cultures have always influenced the west. For example, we learned American craftsman is from India. (Group A - Yoruba, Igbo, and Hausa, Nigeria)
>
> The use of local and naturally available materials. For example, in the US we are trying to be sustainable. Communal environment is important in non-Western cultures. (Group A - Yoruba, Igbo, and Hausa, Nigeria)
>
> Modern style tends to approach solution that one size fits all, the problem with modern is it desensitizes and dehumanizes. Indigenous architecture

> used the materials found locally, e.g. raffia and adobe. The materials were local. You lose cultural things when you build modern building but with indigenous there is a lot of culture. There is little environment impact when dealing with local cultures. I was stunned or surprised by how modernized Africa had become because so many of the documentaries show poverty. Juxtaposition of contemporary and indigenous is also apparent. (Group A - Yoruba, Igbo, and Hausa, Nigeria)
>
> I did not really make any connections because I was concentrated on South Africa. Their emphasis on family is important. This emphasis is still divided in western culture. (Group B –Swazi, South Africa and Swaziland)
>
> Any contribution of non-Western would be defined in the context of the culture. For example, we used family eating concept in our solution. Japanese cultures developed long overhangs, because they didn't have tall trees, In Southwest US, the Native American's adobe huts were made from mud and straw. The specific impact on design must be taken in the context of the cultures. The way we designed the Yoruba cultural restaurant was adapted to the way they dine together and socially interact. (Group D – Yoruba, Nigeria)

The categories of arts and crafts and color emerged from participants who noted the following:

> The Zulu restaurant in London we found in our research showed us how as designers other people can learn about Zulu culture through design. I am assuming that the use of color from Zulu has impacted the rest of the world. You can easily see a grouping of primary colors and it reminds you of Africa or design inspired by culture. (Group E - Zulu, South Africa)
>
> I think they have made an impact because they open up our eyes to history and more ideas to gain inspiration from. The art and beadwork is unique from what we are used to. There is a different unique texture. (Group C - Yoruba, Nigeria)

On the importance of learning about global implications of design a participant noted:

> We are moving to a more global design, so we see influences from different cultures everywhere and it will be ignorant to be unaware. For example, America is not the only place that design innovation takes place. I know what you are asking but it is difficult to word my answer. Because there is so much involved, it is everywhere. Innovative

> techniques could be a contribution from China. You see the projects from non-Western more conceptually. For example, the Bird Nest in China, you see the concept and why it was built that way. You actually see it and there is a meaning and you know why. Many non-Western design solutions have a meaning and you see it in the concept. (Group D – Yoruba, Nigeria)

Interview Question 5

What did you like or not like about this project?

In addition to giving feedback about the project and their groups, the categories that emerged from students' responses to this question were the following: ethnicity and cultural diversity; arts and crafts; sustainability; and competition/protection of ideas. Participants also noted the initial declarative knowledge about Nigeria and South Africa, as well as the feedback I gave along the process were extremely helpful. A participant also raised the idea of wanting to continue learning about cultures after the study. The categories of ethnicity and cultural diversity; arts and crafts; sustainability; and competition/protection of ideas emerged from participants who noted the following:

> I enjoyed learning about other cultures and the challenge of a concept that portrays that culture into the design. I liked my group. I had the best group. There was nothing I did not like. (Group A - Yoruba, Igbo, and Hausa, Nigeria)

> I really liked the project. I enjoyed looking at a culture that I didn't know about and learn about them. We were able to achieve a complete project because it felt a little less rushed. Unlike a regular studio, we were able to focus more on the creative design of it. It seemed a lot easier to focus on creative aspects in this project than past projects. We had a really good group (team). I enjoyed and I like modeling the details a lot, particularly the furniture. I focused on integrating patterns and forms of the three cultures. For the furniture, we got lots from Igbo, Hausa the vaulted ceiling, the bar and artwork from Yoruba. (Group A - Yoruba, Igbo, and Hausa, Nigeria)

I did not like how many people in the group. It was hard to decide solution between four. Two would have been ideal and we would have gotten more experience. I enjoyed the group. I personally like being an independent worker. I feel like presentation on an LCD projector would showcase work better and save paper and you get the point way easier. The information from your presentation was very useful. It gave us a frame of reference. I feel like we could have learned more. I wish we could have a class and make food and experience the culture hands on. For future make it mandatory to use two textbooks to get information. Internet was confusing for some of us who used it. All the books my group member found were very hands-on. Books are more valuable than the Internet. (Group A - Yoruba, Igbo, and Hausa, Nigeria)

I like that we got to design in a different culture. You never know who your clients can be. Research was overwhelming, too much to take in. We needed more time for the research phase. My team was good and the tasks were divided and we collaborated as much as possible. (Group A - Yoruba, Igbo, and Hausa, Nigeria).

I did not like the footprint (plan). I like that you made us do research and checked up on us about that. Research is tedious and not fun. I liked seeing all their artwork and baskets. I liked learning about the culture eventually. At first I didn't like it but eventually I liked it. The baskets were more important but we ended up using artwork, sculptures and figurine in lighting fixture. Our furniture was inspired by the basket patterns geometric forms. I liked my group. I am very detail oriented and on task. We all had good design skills in my group. One group member designed the chairs and tables, another group member designed the light and a fourth group member designed the art sculpture and barstool. (Group B – Swazi, South Africa and Swaziland).

I liked the project. It taught me different things from what I had done in previous courses and it helped me think outside the box. It taught me a lot about Nigerian culture. There is nothing I did not like. It was a good project. Our team worked well together. (Group C - Yoruba, Nigeria)

I liked the process we took in starting the project. I liked the analysis of designing for the culture. I didn't like how it developed from that. It got into personal taste of what did we like and not what fit best for the culture. For example, what is most cost effective. It seems there was a lot of informed decision in setting groundwork, but not a lot of informed decision in the development of the project. I thought my group did a good job of having informed decision. For example, glass bottle wall highlighted sustainable concept, the chairs were picked because we liked them. I think we can still come to a good conclusion by making more informed decision. Teamwork is a difficult thing, if people have

different goals. My group worked together well. The design development was arbitrary because we were not familiar with the culture informed decision was difficult. In future, more time and more reason will be important. In an educational environment there is more to be learned by having informed decision about solutions rather than relying on personal taste. The beginning process of taking cues from traditional culture carried into design development. (Group D – Yoruba, Nigeria)

I liked that it was multicultural. I liked the research. Your checking us along on the way helped. I think my group (team) was the biggest struggle. The people were more challenging we would have been fine with four people and people procrastinated because it seemed we had more than enough people (5 in the group). I ended up doing a lot of the work and correcting work by others done incorrectly. It was a tough group because I did all the drawings. In the future, with the scale of this project maybe three people or so will be alright. I think more work gets done evenly with a smaller group. Too many people was our major struggle. (Group D – Yoruba, Nigeria)

I liked the fact that we got to branch out and we have not done anything outside of the US. It forced us to branch out and learn about culture. Your feedback was very important to us. Our bead concept was very innovative and original when we presented it and no other groups said anything about beads. After we pinned up and shared our ideas our bead concept and stage concept became popular in other solutions at the next pin up. I like to pin up but maybe next time I will rather present to just you alone so my group's idea can remain unique. (Group E - Zulu, South Africa)

I liked my group. We enjoyed our research so it made it fun for us. It is fun to do projects that are different instead of having them in Norman all the time. The initial information you gave us gave us a strong foundation. (Group E - Zulu, South Africa)

CHAPTER 5

STAGE 5: DATA ANALYSIS AND INTERPRETATION

In this chapter, the findings of this study will be presented in terms of the following four research questions:

Question 1: How do students respond to an instructional program that utilizes Nigerian and South African spatial forms to learn about design?

Question 2: Is there evidence that students are able to synthesize design ideas for different cultural settings using design theories?

Question 3: Is there evidence from different data sources that students were able to use examples from non-Western perspectives as references for discussing design ideas?

Question 4: Do students report being better at solving design problems in a different cultural setting?

Question 1: How do students respond to an instructional program that utilizes Nigerian and South African spatial forms to learn about design?

In order to discuss how students respond to an instructional program that utilizes Nigerian and South African spatial forms to learn about design, I will present the themes that were developed from several data sources. The data sources used to answer this question include the following: the post-test questionnaire; video recording and observation of instruction and design problem-solving process; actual design projects developed; and, interviews. Together with the observer we generated nineteen categories and collapsed them to five themes by going back and forth through the data and thinking of

how each category fits with the data. The process of constant comparison was used (Miles and Huberman, 1994; Stake, 2006). Throughout the process, we kept comparing how the data related to one another so that the categories could collapse into a smaller number of themes. Similar themes were grouped under broader and more abstract categories (Strauss & Corbin, 1998). The final results are the following five themes, which were prominent among the groups: social dynamics, juxtaposition of traditional and contemporary culture, visual and performance arts, elements and principles of design, and sustainability. As shown in Figure 30, social dynamics and juxtaposition of traditional and contemporary culture were considered abstract themes, while visual and performance arts, elements and principles of design, and sustainability were considered concrete themes. The abstract themes were considered theoretical, while the concrete themes were more grounded in the physical world.

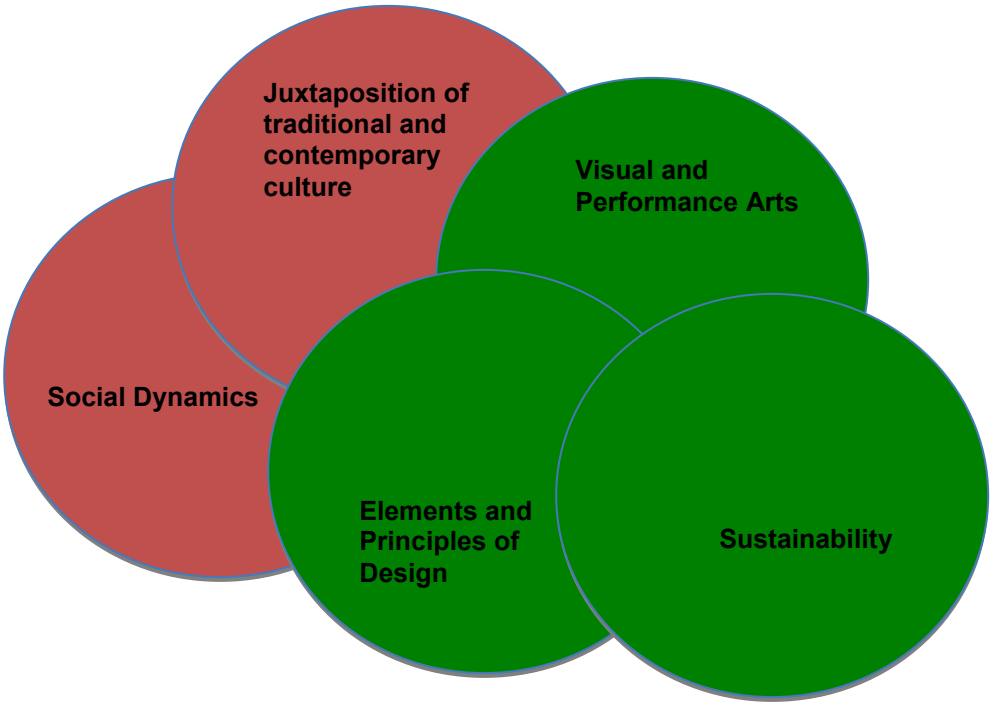

Figure 30. The five themes developed from the data.

Social Dynamics

Social dynamics is an abstract theme used to characterize the following prominent notions uncovered in the study: ethnicity and cultural diversity; philosophy and religion; government and iconic people in the cultures; and community, social interaction, and family. Ethnicity and cultural diversity was prominent among the participants' ideas and statements. Culture was considered important considering the large number of ethnic groups noted by participants were found in both Nigeria and South Africa. They found culture extremely important and it varied from area to area. Every group addressed several defining characteristics of the culture in their design solution. For example, as shown in Table 6, Group A endorsed the idea of a multicultural metropolis and community focusing on Yoruba, Igbo, and Hausa cultures. Group B emphasized family, community and the balance among spiritual, cultural, and artistic elements among the Swazi. Group E emphasized community and social interaction among the Zulu.

The notion that religious and philosophical beliefs impact art and architecture was another prominent idea. For example, participants drew inspiration from traditional religious beliefs in the case of the Yoruba, Islamic beliefs in the case of the Hausa, and Zulu philosophical beliefs. As shown in Table 6, Group A focused on the Islamic influences on the Hausa architecture. Group D focused on the mythology and philosophy of the Yoruba, and Oduduwa, the founder of the Yoruba. Group E focused on Zulu philosophical beliefs.

Table 6
A synopsis derived from different data sources collected during the study illustrating the abstract themes

Group	Culture(s)/ Country	Data sources	Abstract Theme 1 Social Dynamics	Abstract Theme 2 Juxtaposition of traditional and contemporary culture
A	Yoruba, Igbo, and Hausa, Nigeria	Observations, Interviews, Post-test, and short essay questions.	The idea of Lagos as a melting pot and a multicultural metropolis led to this group using three cultures, one from Southwest, Southeast, and North. Creating spaces to foster social interaction, reinforcing the importance of community, and focus on extended family were prominent notions to this group.	The notion of Western and Islamic influences impacting Nigeria architecture along with the indigenous influences. Emphasis placed on influences from Mosque architecture.
B	Swazi, South Africa and Swaziland	Observations and Interviews	Idea of emphasis on family and community. Balance between spiritual, cultural, artistic and family life. Nelson Mandela as an iconic person to South African culture.	The idea that contemporary buildings still reflect culture.
C	Yoruba, Nigeria	Observations and Interviews	Design inspiration derived from the artwork of Jimoh Buraimoh, an iconic Yoruba artist.	An emphasis on developing contemporary solutions based on Yoruba Culture.
D	Yoruba, Nigeria	Observations, Interviews, Post-test, and short essay questions	Design inspiration derived from the mythology and philosophy of the Yoruba. Oduduwa, the spiritual leader of the Yoruba, as an iconic person.	The idea that government whether democratic or imperial was reflected in city, urban planning and architecture.
E	Zulu, South Africa	Observations and Interviews	Derived inspiration from Shaka Zulu, a prominent Zulu king and Zulu philosophical beliefs. Community and social interaction were major design determinants.	The idea of creating a contemporary expression of Zulu design in their design solution.

Another prominent notion was the impact of government and iconic people in the cultures. For example, Group D participants observed that government, whether democratic or imperial, was reflected in the architecture of Nigeria. Some iconic people in the cultures mentioned were Nelson Mandela in South Africa (Group B), Jimoh Buraimoh in Nigeria (Group C), Shaka Zulu, a Zulu king (Group E), and Oduduwa, the spiritual founder of the Yoruba (Group D). Participants noted the focus on family, community involvement, and traditional values impacted the orientation of compounds, living proximity and cities were laid out to reflect emphasis on the importance of the extended family (Group A, B, and E). Community, social interaction and family were reflected in several design solutions in their layouts by promoting family style eating using larger tables, a melting pot atmosphere, and open planning.

Juxtaposition of traditional and contemporary culture

Juxtaposition of traditional and contemporary culture is the second abstract theme uncovered in the study. The notion of juxtaposing traditional with contemporary was prominent in all five groups in several ways. Participants were very conscious of the indigenous influences and discussed the importance of interpreting them in their design solutions in a non-literal, non-stereotypical way, as opposed to what they often perceived in the media's depiction of Africa as impoverished and underdeveloped. They recognized that both Nigeria and South Africa demonstrated aspects of Mazrui (1986) and Elleh's (1997) "triple heritage" in the history and architecture of both countries. Mazrui (1986) noted that African culture is deeply rooted in the "triple heritage" reflecting indigenous,

western, and Islamic influences. Elleh (1997) also observed the “triple heritage” in the architecture of most Nigerian and South African cities. These factors make Nigerian and South African cities different from most part of the world because their built environments incorporate indigenous, western and Islamic influences.

Participants acknowledged how cross-cultural exchanges from western and Islamic influences impacted the architecture of both Nigeria and South Africa as demonstrated in Table 6. Each group began their design process by developing rich visual and descriptive information about indigenous, western and Islamic influences in Nigeria and indigenous and western influences in South Africa. Their final design solutions were contemporary interpretations of the Yoruba, Igbo and Hausa cultures from Nigeria and the Zulu and Swazi cultures from South Africa and Swaziland, thus reinforcing the notion of the “triple heritage.”

Visual and performance arts

Visual and performance arts is first of three concrete themes uncovered in the study. Visual art is used to collectively characterize artifacts, arts, and crafts, which participants considered to be important aspects of culture that impact architecture. Performance art is used to characterize dancing, music, and other performances which participants also considered important aspects of culture. Motifs, dress, fabrics, hairstyles, body decoration, metal work, carving, pottery, basketry, beadwork, and wall decoration were aspects of the visual arts from Yoruba, Igbo, Hausa, Zulu and Swazi, cultural groups that

informed participants design solutions during their concept development and final designs. The artwork served as inspiration for the custom furniture design in three group projects (Groups A, B and C).

Beadwork was a major concept in two other groups (Groups C and E), while basketry was a major concept in another group (Group B). Figure 12 (Chapter 4, p.80) illustrates the custom furniture for the Yoruba, Igbo and Hausa restaurant. Figures 13 to 20 (Chapter 4, p. 81-85) illustrates custom furniture for Swazi restaurant. Figures 28 and 29 (Chapter 4, p. 91-92) illustrates the prominent beaded wall in the Zulu restaurant. Performance arts were present through dancing, music or stage performance in all groups.

The relationship between visual and performance arts uncovered in this study is consistent with the notion that art is an extension of architecture in the African built environment and the arts cannot be separated from architecture in an African cultural context. This is in line with Balogun's (1979) observation:

> African artistic genius was strongly asserted in the decorative embellishment of the built environment. Varying decorative patterns could be found sculpted or painted on walls and wooden doors, which ranged from figurative designs to complex abstract patterns which revealed an exquisite balance of form, color and shading. Painting was carried out as an extension of architecture rather than an independent medium. (p. 69-70)

Both visual and performance arts were integrated in the overall designs of the participants in this study as summarized by Tables 7 and 8. Therefore, this reinforces the strong relationship between art and architecture in the Nigerian and South African cultural contexts.

Table 7

A synopsis derived from different data sources collected during the study illustrating the concrete themes (Groups A and B)

Group	Culture/ Country	Data sources	Concrete Theme 1 Visual and Performance Arts	Concrete Theme 2 Elements and Principles of Design	Concrete Theme 3 Sustainability
A	Yoruba, Igbo, and Hausa, Nigeria	Observation, Interviews, Post-test, and short essay questions	Design solution highlighted artwork and fabric of three cultures. Inspiration for space planning and furniture design were derived from geometric patterns of Hausa, Igbo, Yoruba doors, drums, and fabrics. Performance stage was integrated to enliven the environment. Restaurant was named "Durojaiye", meaning "wait and enjoy life"; therefore evoking a feeling of entertainment and reviving traditional music.	Open planning, vaulted ceilings creating emphasis, hierarchy in radial spaces, courtyard, and circular vestibule are elements from indigenous spaces that inspired this solution. Color and artwork were important solutions using a neutral background in the restaurant to highlight the colors of the artwork and fabric. Geometric patterns from Hausa and Igbo doors inspired details for the carved tabletops, furniture and other spatial forms. Organic forms came from the Yoruba as well as the artwork and design of the bar. Motifs in the space were large patterns made up of smaller patterns similar to fractals.	Emphasis on natural forms and materials. Extensive research on indigenous materials. Adobe was used in the design of the entry vestibule and booth in the restaurant. Natural lighting integrated in design solution. Emphasis on sustainability being part of indigenous cultures and have abandoned sustainable practices as they urbanized.
B	Swazi, South Africa and Swazila-nd	Observations, Interviews, Post-test, and short essay questions	Swazi baskets, and artwork impacted space planning and volumetric design for this restaurant.	Bright colors, vibrant textures, warm tones, geometric shapes, circular forms and patterns derived from Swazi baskets were major design concepts. Spaciousness a key concept. Strong interior and exterior relationship. Volumetric abstraction of hut forms in interior.	

Table 8

A synopsis derived from different data sources collected during the study illustrating the concrete themes (Groups C, D and E)

Group	Culture/ Country	Data sources	Concrete Theme 1 Visual and Performance Arts	Concrete Theme 2 Elements and Principles of Design	Concrete Theme 3 Sustainability
C	Yoruba, Nigeria	Observations and Interview	Forms from Jimoh Buraimoh's beadwork served as an inspiration for the design solution.	Colors in Nigeria had meaning; opening planning; non-symmetrical form; geometric patterns and forms from beaded painting inspired space planning; color psychology of the Yoruba, warm colors, patterns and natural colors from Buraimoh's beaded painting.	A water wall was a prominent natural feature in the space.
D	Yoruba, Nigeria	Observations and Interviews		Concave shapes of earth and sky in Yoruba philosophy used as space defining element in ceiling plane. Prominent undulating ceiling and tree branches in the space.	Sustainabililty a key concept of this group in use of materials. Recycled bottles with LED lights integrated into it at the bar wall a major sustainable feature of the space.
E	Zulu, South Africa	Observations, Interviews, Post-test, and short essay question	Dancing, music and performance arts considered important aspects of Zulu culture were highlighted. Small stage incorporated Zulu traditional dancing, a form of entertainment prominent in Zulu culture.	Curved forms, earth tones, and vibrant colors from ethnic arts and crafts; red color from arts and crafts prominent; rhythm is evident in patterns; asymmetry; round forms; and dome shapes were major design determinants. Large tables with shapes derived from nature to promote community.	

Elements and Principles of Design

Elements and principles of design are used to collectively characterize the second concrete theme uncovered in this study. The seven elements of design are point, line, form, shape, space, texture and color (Ching, 2007). The seven principles of design are balance (symmetrical or non-symmetrical), rhythm, emphasis, proportion, scale, unity/harmony, and movement (Ching, 2007). Participants found the elements and principles of design present in Nigerian and South African examples.

Nigerian motifs were based on geometric designs using lines, shapes, textures and rhythms. The motifs were predominantly recognized to be geometric patterns among the Hausa in Nigeria, since Islam forbids figurative images. As illustrated in Table 7, rectangular, circular, and organic shapes were found in the spatial organization of the Yoruba, Igbo, and Hausa (Group A). Therefore, participants concluded that both geometric and organic forms were important. They emphasized the way that Nigerian cultures, depending on religion and social structure, created hierarchy among spaces. There was also emphasis in the intricate volumetric vaulting of the Hausa mosque ceilings. As illustrated in Table 8, asymmetry was also considered important in spatial configuration among the Yoruba in Nigeria (Group C).

Participants found textures and colors very vibrant and warm in South Africa (Groups B and E). As illustrated in Table 8, rhythm was found to be a very prominent part of the Zulu culture in South Africa. Group E participants observed that since music was a strong component of the culture, it manifested

itself in the rhythm of spatial elements in Zulu buildings and interiors. They also noted that Zulu culture considered asymmetry more important in their spatial configuration as shown in Table 8.

The fact that participants recognized the presence of elements and principles of design in Nigerian and South African cultures supports the idea that those cultures demonstrate principles of rational planning. The notion that African cultures demonstrate principles of rational planning has not been widely endorsed. For example, Hull (1976) observed the following:

> Another misconception about pre-colonial Africans is that their settlement patterns were a disorganized, cacophonous, sprawling scramble of random structures, exhibiting little or no regard for the elements of rational planning. Oral and written evidence reveals the importance of human relationships as a major determinant in the placement of buildings. They also suggest that utilization of space was hardly haphazard. Nevertheless, it was not space that mattered so much as the relationship of its occupants. Space was seen as a medium in which to express relationships of social, religious, ethnic, political, or occupational nature. (p. 122)

The implication here is that design precedents from non-Western cultural settings, such as Nigeria and South Africa, can inform design discourse as demonstrated by the participants in this study. Therefore, examples from Yoruba, Igbo, Hausa, Zulu and Swazi cultures can be used pedagogically to discuss elements and principles of design.

Sustainability

Sustainability is the third concrete theme used to characterize the following prominent notions uncovered in the study: importance of natural environment; local materials; climatic considerations; and, natural lighting. The notion that indigenous and contemporary buildings in Nigeria and South Africa

respond to their context through the use of locally available materials was very prominent among the participants. Participants researched a lot of natural materials that where appropriate to the climate and used them in their design solutions. As illustrated in Table 7, Group A conducted extensive research on natural materials.

Another prominent notion was that participants found Nigerian and South African indigenous building practices to be synonymous with today's sustainable practices. As indigenous societies became more urbanized, these sustainable practices have been abandoned. Other ways participants introduced these sustainable aspects in their design solutions included creating open environments into the exterior, using resources economically, engaging in efficiency in planning, and introducing of natural lighting and water elements. These aspects were so prominent in Group D, which based its entire concept on sustainability. However, they used a more western approach with recycled materials and LED lighting in their design solution as illustrated by Table 8.

Summary

As demonstrated by the preceding discussion about Research Question 1 and summarized in Tables 6, 7 and 8, the abstract and concrete themes are evidence of how students respond to instruction that uses Nigerian and South African spatial forms to learn about design. Social dynamics is an abstract theme which brought together a variety of research categories: ethnicity and cultural diversity; philosophy and religion; government and iconic people in the cultures; community cohesion; social interaction; and family structure. These

factors are important in problem-solving in these cultural settings. Juxtaposition of traditional and contemporary culture, the second abstract theme is the idea that the African built environment contains indigenous, Western, and Islamic influences which affect their space organization.

Visual and performance arts, one of the three concrete themes uncovered in the study reinforced the notion of how the arts and architecture are integral in Nigerian and South African spaces. Elements and principles of design, used to collectively characterize the second concrete theme uncovered in this study reinforce the notion that principles of rational planning are also present in Nigerian and South African spaces. Therefore, precedents from these cultures can be used to inform design discourse. As demonstrated in this study, today's design students are open to these ideas. Sustainability, the third concrete theme brought to limelight the importance of the natural environment, local materials, climatic considerations, and natural lighting in indigenous Nigerian and South African cultures. Together the abstract and concrete themes combine to demonstrate how students in this study responded to the instruction.

Question 2: Is there evidence that students are able to synthesize design ideas for different cultural settings using design theories?

In order to demonstrate that there is evidence that students are able to synthesize design ideas for different cultural settings using design theories, I will illustrate the extent to which students are successful in problem-solving in a different cultural setting. The data sources used to answer this question were

the video recording, the observation of instruction and design problem-solving process, and the actual design projects developed. As mentioned in preceding chapters, in this study, I set out to build upon the existing body of knowledge by developing a pedagogical model of how diverse, culture-based design perspectives are introduced in studio.

Using Grant's (1991) inclusion, contribution, and transformational approaches, design students explored design in Nigeria and South Africa, after I guided students through the study of Nigerian and South African design precedents and cultures. The hope was that students, in designing a restaurant in an urban setting in Lagos, Nigeria or Johannesburg, South Africa would develop a "critical and analytical eye" which will enhance their appreciation of the importance of culture-based knowledge within design. The extent to which this occurs would determine the success of the instructional approach and demonstrate that students are able to synthesize design ideas for different cultural settings using design theories.

As summarized in Tables 9 and 10, which was developed from the students design solutions, students demonstrated creative thinking, critical thinking and decision-making skills in problem-solving in Nigerian and South African cultural settings. I utilized categories such as spatial organization, artistic expression, color, materials and furniture similar to Tables 2 and 3 (Chapter 2, p. 18-19) from the instruction to illustrate how the different groups demonstrated their understanding of the diverse background of design theories through their design solutions.

The spatial organization category illustrates how the groups articulated their configurations for their design using abstract or concrete themes from the culture. The range of ideas varied from utilizing forms, art, and icons derived from the culture to the philosophy of the culture. The artistic expression category illustrates how the groups articulated the impact of visual and performance arts in their design solutions. The final category illustrates how the groups synthesize color, materials, and furniture in a different cultural setting.

Summary

As demonstrated by the preceding discussion about Research Question 2 and the summary in Tables 9 and 10, the spatial organization, artistic expression, color, materials and furniture categories developed from the video recording, observation of instruction, design problem-solving process, and the actual design projects are evidence that students are able to understand the diverse background of design theories. This is evident in each group's articulation of their design solutions.

Table 9

A synopsis derived from the design solutions developed by the participants and how they demonstrate critical thinking, creative thinking and decision-making skills in a Nigerian and South African cultural setting, Group A, B, and C

Group	Culture and Location	Spatial Organization	Artistic Expression	Color, Materials, and Furniture
Group A	Yoruba, Igbo, and Hausa Cultures Lagos, Nigeria	Durojaiye restaurant, a free-standing restaurant in Lagos integrating Yoruba, Igbo and Hausa cultures, the three predominant ethnic groups in Nigeria to create a melting pot atmosphere. Space is lively, energetic, natural, historically diverse, and communal. Space is very experiential in its demonstration of indigenous heritage. Ceiling elements derived from Hausa vaults and arches.	Emphasis was on history, philosophy, wall art, and carvings from Yoruba, Igbo and Hausa cultures. Indigenous materials, fabric, textiles, art and sculpture derived from Yoruba and Igbo cultures.	Warm natural palette with art in the space as focus. Adobe used in booth seating for more natural palette. Geometric patterns from motifs, textiles and fabrics informed custom furniture design.
Group B	Swazi Culture Johannesburg South Africa and Swazila-nd	Swaziburg restaurant located in Johannesburg's Main Street; considered an up and coming, great location. Restaurant located near the street and literally flows into the street to reflect strong relationship between interior and exterior environment. This group in their contemporary interpretation of Swazi culture used geometric patterns in Swazi baskets and abstraction of forms from the traditional hut. Geometric patterns are present in their entire volumetric design.	Geometric patterns from Swazi baskets integrated in stained patterns on the flooring, columns, room dividers, patio fence, and ceiling. Ceiling over bar area resembled abstract version of a hut.	Colors, design schemes and shapes for their solution derived from Swazi artwork, jewelry, and baskets. Warm colors, yellows, and bolds found in Swazi baskets, artwork and jewelry integrated in the space.
Group C	Yoruba Lagos, Nigeria	Opening planning was a key consideration in this design; spatial configurations inspired by forms from Jimoh Buraimoh, a famous Yoruba artist's who executes beaded paintings. Water wall, a major focal point added to reflect lighting in the space.	Shapes from Buraimoh's artwork helped derive spatial configuration of floor plan. Walkways around dining area resembled patterns from Buraimoh's art.	Yoruba color psychology a prominent feature of group's concept. *Pupa* (warm tones – orange, red, pink and yellow), *Funfun* (white, silver, pale gray and chrome) and *Dudu* (blue, purple, green, brown, black, and dark gray), which were combined together in Buraimoh's beaded painting, inspired their concept. Proposed space has warm colors, patterns and natural colors from beaded painting. Furniture organization promoted family style eating and community.

Table 10

A synopsis derived from the design solutions developed by the participants and how they demonstrate critical thinking, creative thinking and decision-making skills in a Nigerian and South African cultural setting, Group D and E

Group	Culture and Location	Spatial Organization	Artistic Expression	Color, Materials, and Furniture
Group D	Yoruba Lagos, Nigeria	Omnomnom restaurant, bar and lounge, name this group derived from amalgamation of words they found in Nigeria. Concave shapes of earth and sky in Yoruba philosophy used as a space defining element by creating emphasis in their ceiling plane through the use of prominent undulating ceiling and prominent tree branches in ceiling.	Tree was integrated in prominent location inside restaurant to represent Oduduwa founder of the Yoruba and symbolize growth and energy.	Sustainability another key concept of this group was integrated in use of materials. Recycled bottles with LED lights integrated on bar wall is a sustainable feature of the space. Furniture had a lot of curvature and their space utilized lots of circles.
Group E	Zulu Johannesburg South Africa	This group's restaurant was located in the Newtown Cultural Precinct in Johannesburg, a location for both tourists and residents. Community was major part of group's design concept and they incorporated large tables to reinforce the notion of community. A prominent feature of their design was the beaded column. Their design incorporated lots of circular forms, curved lines and organic shapes. Since symmetry was not a main part of the Zulu culture, according to their research, they proposed an asymmetrical plan.	Dancers were integrated in design solution to allow patrons to have a feel for culture. Stage was integrated on second level, the mezzanine level. Derived inspiration from images of Zulu children, warriors, baskets and dome huts.	Group proposed a red color scheme, which they derived from vibrant colors of beadwork. Some tables shaped in form of leaf. Mainly large tables with lots of seating to promote family style eating.

Question 3: Is there evidence from different data sources that students were able to use examples from non-Western perspectives as references for discussing design ideas?

In order to demonstrate that there is evidence from different data sources that students were able to use examples from non-Western cultures as references for discussing design ideas, I will discuss findings from the pre- and post-test questionnaires, observation data, and interview questions. In the pre- and post-test questionnaires, participants were asked about their understanding of how to use Nigerian and South African precedents as references for discussing design ideas in separate questions. When asked after the study about their understanding of how to use Nigerian and South African precedents as references for discussing design ideas, there was a significant difference at post-test, as illustrated in data presented in Table 5 in Chapter 4, p.57. Therefore, participants reported understanding how to use non-Western perspectives from Nigeria and South Africa as references for discussing design.

In the short essay questions in the pre- and post-test questionnaires, when asked about design elements and principles from Nigeria and South Africa, students demonstrated significantly richer descriptions of the elements and principles of design from both countries after the study. While in their responses at pre-test there was a tendency to just list the different elements and principles of design, at post-test they articulated their implementation of the elements and principles of design in Nigerian and South African indigenous spaces more descriptively.

Examples of these richer descriptions are detailed in the section on Culture Based Design Experience Short Essay Questions in Chapter 4, p. 58-61. When asked which important design elements vary in Nigerian, South African or other African architecture at the pre-test, several of the participants reported not knowing any and others reported general ideas such as form, shape, texture, color, and space. However, at post-test as indicated in Tables 7 and 8 by Group A, B and E, participants reported richer descriptions of the design elements and their integration in Nigerian and South African spaces. When asked which important design principles vary in Nigerian, South African or other African architecture at the pre-test, half of participants reported not knowing any and half of participants reported general ideas such as unity, rhythm, emphasis, scale and proportion. However, at the post-test, a majority of the participants reported richer descriptions of the implementation of design principles in Nigerian and South African spaces as evidenced by Tables 7 and 8.

The pre- and post-test short essay questions about aspects of spatial relationship and spatial organization principles from Nigeria and South Africa highlighted significant changes. While at pre-test a majority of participants indicated not knowing any spatial relationship or organization principles from Nigeria and South Africa, the opposite was the case at post-test. The abstract and concrete themes of social dynamics, juxtaposition of traditional and contemporary culture, visual and performance arts, elements and principles of design, and sustainability were very evident in participants' responses to their

short essay questions and on how they articulated their design solutions at the post-test.

As evidenced by Tables 7 and 8, participants noted aspects such as open planning, community spaces, less important spaces radiating from centrally located important spaces, and organic and geometric shapes as important spatial organizational principles from Nigeria and South Africa. The synergy between the five themes in Figure 30 was particularly evident because every group's solution had at least four themes present in their design solutions and participants at post-test used all five themes for discussing design ideas from Nigeria and South Africa.

The evidence that students were able to use examples from non-Western cultures as references for discussing design ideas after the study was very apparent in the observational data. This was evident in the rich lengthy discussion and description presented in Chapter 4 in the day-to-day observations of the design process. The abstract and concrete themes of social dynamics, juxtaposition of traditional and contemporary culture, visual and performance arts, elements and principles of design, and sustainability were very evident as participants presented their concepts and final design solutions for their restaurant. Significant evidence of the success of this study lies in the observational data and the actual design projects developed by the participants as summarized in Tables 6, 7, 8, 9 and 10 presented earlier.

Another source of evidence that students are able to use examples from non-Western cultures as references for discussing design ideas was found in

the interviews conducted at the end of the study. When asked about how Nigerian or South African cultures have made an impact on design or architecture after the study, the idea of juxtaposition of traditional and contemporary culture in new buildings in Nigeria and South Africa was a prominent notion mentioned by the participants. This served as a concept for the design solutions for all the groups in varying degrees as indicated in Table 6.

Another prominent notion was the impact and presence of visual and performance arts in Nigerian and South African architecture. During the interviews after the study, participants were asked directly to describe how they might use precedents from Nigeria or South Africa as references for discussing design ideas. As evidenced by Tables 6, 7 and 8, the five abstract and concrete themes were prominent in their responses and participants discussed the themes in the context of the cultures and how they were implemented in their design solutions. When asked about the impact of non-Western cultures on design and architecture, participants discussed their contributions in terms of the following abstract and concrete themes: social dynamics, juxtaposition of traditional and contemporary culture, visual and performance arts, elements and principles of design, and sustainability. Participants also reinforced the notion that design has global roots.

Summary

As demonstrated by the preceding discussion about Research Question 3 and the pre- and post-tests, observational, and interview data, there is

evidence from multiple data sources that students were able to use examples from non-Western cultures as references for discussing design ideas.

Question 4: Do students report being better at solving design problems in a different cultural setting?

An interview question and four (two each) pre- and post-test questions directly addressed whether students reported being better at solving design problems in a different cultural setting after the study. When asked if participants were comfortable solving design problems in a non-Western cultural setting like Nigeria, there was no significant difference in the pre- and post-tests ($p=0.072$, Table 4, Chapter 4 p. 57). The lack of significant difference found in this question can be attributed to the fact that all participants, including those who did not design for Nigerian cultures, answered this question.

In the questionnaire, I did not separate participants into different groups based on their country of design. I wanted to see whether through my instruction, their research, presentation by other groups, and through observations of their peers design for other cultures, if participants would feel comfortable in being able to transfer their knowledge to another cultural setting. Another issue is that Group D, who based their concept for design predominantly on abstract themes and western notions of sustainability might not have demonstrated adequate concrete ideas to impact other participants. Group D also had some team issues. Despite having five members, only three members contributed equally to the group. The two members who had limited contributions did not participate in the study because they did not consent.

When asked if participants were comfortable solving design problems in a non-Western cultural setting like South Africa, there was a significant difference in the pre- and post-tests (p=0.012, Table 4, Chapter 4 p. 57). When asked in an interview after the study to describe how comfortable participants were in designing in a non-Western setting like Nigeria or South Africa, the selected participants reported feeling comfortable with their ability to transfer knowledge to another multicultural project and developing a positive perception of Africa that deviated from negative perception. The participants also reported that information presented in the instruction and the process the instructor utilized were very beneficial to their understanding of the cultures. Also, the initial research the instructor presented them, at the beginning of the study, contributed to their comfort level while designing in a different cultural context.

Summary

As demonstrated by the preceding discussion about Research Question 4 and the pre- and post-tests questions and interview data, students reported being better at solving design problems in a different cultural setting after the study.

Summary of Findings

As noted in the preceding discussions about the research questions, participants responded positively to the instructional program that utilized Nigerian and South African spatial forms to learn about design. The participants used a combination of abstract and concrete themes to develop their design solutions for the restaurant. The groups with a combination of abstract and

concrete themes had more sophisticated design solutions. They also were more successful in demonstrating how they integrated the cultures in their design solutions.

There is abundant evidence of the participants' ability to synthesize design ideas for different cultural settings using design theories from how students demonstrated creative thinking, critical thinking and decision-making skills in problem-solving in Nigerian and South African cultural settings. This is evident in how the different groups articulated their spatial organization and implemented aspects from the cultures artistic expressions in their solutions. Participants also demonstrated an understanding of color and materials in the different cultures. There is evidence from different data sources; the questionnaires, observational data, and interviews that students were able to use examples from non-Western perspectives as references for discussing design ideas. Additionally, through multiple data sources, students report being better at solving design problems in a different cultural setting.

CHAPTER 6

SUMMARY AND CONCLUSIONS

Overview

I began this study with the objective of building on the existing body of knowledge on global issues and diversity issues in design curricula, because I found few studies that examined instructional approaches that use non-Western, African design forms. This led to the goal of the study, which was to develop and test instruction on Nigerian and South African spatial forms in an Interior Design studio in a Southwestern University (N=17). The research questions focused on how students respond to the instructional program, their ability to synthesize design ideas for different cultural settings using design theories, their utilization of examples from non-Western perspectives as references for discussing design, and their ability to solve design problems in a different cultural setting.

Like Hurtado (2000) and Denison and Chang (2009), I aimed at testing how students' assess their learning, their development of design critical thinking skills after instruction, and their ability to design in Nigerian and South African contexts. The hope was that the extent to which their skills improve will significantly prepare them for solving design problems in different cultural settings, a tool necessary in a diverse and global society. The findings in this study indicated that students' skills improved significantly after the instruction and the restaurant design project in a Nigerian and South African cultural setting. After the study, students reported richer descriptions of design elements

and principles, spatial relationships, spatial organizations, environmental issues, and aspects of culture, religion, history, and government from Nigeria and South Africa. There was evidence that participants gained civic benefit after the study, because participants noted that the culture-based experience was important, particularly because of the diverse and global societies in which we live. They reported transferring the knowledge gained in this process to other design projects in different cultural settings that they undertook in subsequent courses.

The instruction was developed using one facet of ACT-R learning theory (Anderson, 1995), anthropological methods (Creswell, 2009; Hall, 1966; Kingsolver, 1998; Silverman, 2005), and Grant's pedagogical approaches (Grant, 1991). The distinction between declarative and procedural knowledge was used to help students learn about Nigerian and South African spatial forms and how to apply those forms. Anthropological methods were used to elucidate information about Nigerian and South African design aesthetics. Grant's (1991) pedagogical approach of introducing diversity in design education was embedded in the instruction in three steps: the inclusion approach of developing examples from Nigeria and South Africa as references for discussing design; the contribution approach of selecting Nigerian and South African designers and architects, and analyzing their design contributions; and the transformational approach, where students problem solve in a cultural setting to help them synthesize design ideas for different cultural settings using design theories.

ACT-R theory's (Anderson, 1995) general implication for teaching procedural knowledge that was used to organize the instruction into the distinct parts was found to be very systematic and helpful in promoting learning and leading students to higher-level thinking. The distinct parts into which the instruction and study were organized were teacher-centered and discovery-centered information. I used significant amounts of feedback to foster automatization. The results highlight the importance of helping students with the development of declarative knowledge on Nigeria and South Africa and that teacher-centered and discovery methods, and that feedback fosters a state of automatization. Participants reported achieving some level of automatization at the end of the study, since they noted being comfortable problem-solving in a different cultural setting and exhibiting the ability to transfer the knowledge when posed with similar design problems. During the interviews after the study, a participant noted applying the knowledge gained in this study while designing in a different cultural setting in another design class.

Four student groups worked very well together as a team. However, one group that did not work well as a team brought to limelight the importance of promoting metacognition, which Ormrod (2008) found to be a shortcoming of ACT-R theory. Anderson's ACT-R theory is very systematic, but nothing about metacognitive strategies such self-regulation or self-monitoring skills are part of the theory. In future studies, I hope to integrate components that promote metacognitive strategies which help students with self-regulation or self-monitoring (Ormrod, 2008), with the hope that this might help in team settings.

Examples of some of the metacognitive strategies recommended by Ormrod (2008) are encouraging students to reflect on and describe their study strategies, working cooperatively with classmates, and monitoring and evaluating their own learning.

Grant's (1991) three-step pedagogical approach of introducing diversity in design education was also found to be very systematic and helpful to promote learning and lead students to higher-level thinking. The process of guiding students through the study of Nigerian and South African design precedents and culture using the inclusion and contribution approaches was successful as indicated by the data sources. The success of the transformational approach was evident in the process of designing a restaurant in urban settings in Nigeria and South Africa to highlight the cultures of the countries. Findings from the study discussed in detail in Chapters 4 and 5 illustrated that students developed a "critical and analytical eye" in their understanding of design theories in cultural settings and an appreciation for the importance of culture-based knowledge in design.

Based on the qualitative and quantitative data the anthropological methods used to elucidate information about Nigerian and South African cultures were successful instructional tools. They provided a model to participants on how to conduct research about non-Western cultures in design related fields that lack a diverse body of knowledge on non-Western design. Ethnographies, biographies, the comparative method, phenomenology, the

study of proxemics, and other methods and concepts from anthropology served as a body of knowledge participants could draw from.

I chose ethnography as an overarching method that combined case study methodology from educational research and the comparative method from anthropology to encapsulate the experiences of how participants respond to a culture-based pedagogy that uses Nigerian and South African forms. The decision to use ethnography came from the fact that I wanted to study the groups through participant observation. The decision to use a case study methodology came from the classroom based precedents I reviewed. The precedents studied helped to organize, guide and accomplish the study. As demonstrated in the Ge, Thomas and Greene (2006) study, multiple data sources were effective in capturing the experiences of participants. The data sources in this study corroborate their findings about the effectiveness of multiple data sources.

The data sources in this study were the pre- and post-test questionnaires, observational data, video recordings, actual design projects developed by participants, and interview data. Multiple data sources indicated the instructional design process was successful in helping students' problem-solve in a different cultural setting. However, a challenge of the multiple data sources was the complexity they presented in data analysis. The co-observer and I used a process of constant comparison throughout data analysis (Miles and Huberman, 1994; Stake, 2006) to organize the data and develop themes. Throughout the process, we kept comparing how the data correlated so that the

categories could be collapsed into a smaller number of themes (Strauss & Corbin, 1998).

The different data sources had some limitations and benefits. As I expected at the inception of the study, the pre- and post-test questionnaires did not yield much information given that the sample size was small. However, the short essay questions, which were part of the pre- and post-test questionnaires, provided good data on the abstract themes of social dynamics and the juxtaposition of traditional and contemporary cultures in Groups A and D, as exemplified in Table 6 (Chapter 5, p.113). Similarly, the short essay questions also provided good data on the concrete themes of visual and performance arts, elements and principles of design, and sustainability in Groups A, B, and E, as exemplified in Tables 7 and 8 (Chapter 5, p.117-118).

The observational data, video recording, actual design projects developed by participants, and interview data yielded a significant amount of information for forming constructs for the case. Examples of these are the abstract (social dynamics and the juxtaposition of traditional and contemporary cultures) and concrete themes (visual and performance arts, elements and principles of design, and sustainability) that emerged from the data. Another example was the evidence of how students demonstrated critical thinking, creative thinking, and decision-making skills in Nigerian and South African cultural settings. Participants demonstrated these skills in how the different groups articulated their spatial organization and implemented aspects from the culture's artistic expression, color and materials in their solutions. As expected

according to the data, participants self reported being better at solving design problems in a different cultural setting after the instruction and study.

Students were not surprised to have a project like the one included in this study. They were not surprised that I picked Africa. This might be because they knew of my Nigerian origin and also that they endorsed the importance of culture-based design and globalization in design education. This is evidence that their epistemological beliefs are consistent with studies that indicate students' value the inclusion of multiculturalism and globalization in education (Denison and Chang, 2009; Hurtado, 2001).

Limitations

As mentioned earlier, the small sample size of the pre- and post-test questionnaires was one limitation of this study. Another limitation was that the study was conducted in one semester and I was the teacher as well as the researcher. Having a co-observer administer questionnaires and keep them until grades were posted for the class increased the validity and objectivity of the study. The co-observer was also present during most of the study and contributed observational data to the findings of this study.

Implications for the field

It was extremely beneficial to approach this study from an interdisciplinary perspective. The disciplinary areas that informed this study were Instructional Psychology and Technology, Anthropology, and History. A facet of ACT-R theory (Anderson, 1995), a cognitive and learning theory's implication for teaching was used to guide students through the learning

process. Participants reported that it assisted in developing declarative representations of Nigerian and South African cultures. Using both teacher-centered and discovery techniques helped guide student learning. Four groups (Groups A, C, D, and E) actually selected cultures featured in the instruction, while one group (Group B) selected a culture not featured in the instruction. It was particularly helpful for students to problem-solve in the different cultural setting, because there was an opportunity during the process to see how they responded to the instruction in an authentic environment. Constant feedback was important to ensure they were moving along the right track.

Anthropological methods such as phenomenology, participant-observation, the comparative method, life histories, ethnography, photography, and proxemics were used to develop the instruction. For example, phenomenology was used to illustrate the relationship of natural hairstyles to the built environment and architecture using fractal theory (Eglash, 1999). Biographies of past leaders and public figures such as Queen Amina of Zaria (Nigeria), Shaka Zulu (South Africa), Kings of Benin and Ife (Nigeria), and Nelson Mandela during the pre-colonial, colonial and post-colonial periods were used to help students better understand the cultures. Ethnographies of the Basotho, Zulu, Ndebele, Hausa-Fulani, Igbo, Benin, and Yoruba ethnic groups was used to teach students aspects about location, history, spatial organization, artistic expressions, and gender roles/division of labor. The anthropological methods embedded in the instruction served as a model to participants to

conduct research and find resources in fields such as anthropology when studying culture.

In addition, participants were encouraged to read four book reviews (*Modern Africa Change and Continuity* by Richard Hull, *African Cities and Towns before the European Conquest* by Richard Hull, *Background to Nationalism* by James S. Coleman, and *Long walk to freedom* by Nelson Mandela) which were available on the course website. Only one group (Group B) referenced the readings and found them informative in learning about Nigeria and South Africa. However, this group did not directly relate the readings to their design problem-solving process. This was the same group that self selected a culture different from any included in the instruction.

Another group (Group A) preferred to use books for research on culture rather than the Internet as a predominant source, to ensure accuracy of information. However, a different group (Group D), at the last minute, inserted images of indigenous island dancers from the Internet in their design solution renderings to represent Yoruba dancers. Data collected indicated that this group struggled with the project. Despite being the largest group with five students, only three students reported being responsible for majority of the group's project. This might have resulted in the last minute insertion of the wrong image. One implication for future studies is the importance of integrating strategies to help participants work well in groups.

Future Directions

Overall, there is good evidence from the qualitative and quantitative data collected that I met the study objectives. This study provides educators a model to help their students gain both disciplinary and civic benefits that will allow them to view the world from multiple perspectives and equip them with skills to be actively engaged in a diverse society. Given that we live in an increasingly diverse and global environment, I plan to continue advancing the body of knowledge on culture-based design pedagogy through my research in this area. Future directions include dissemination of current findings to other educators, expanding the study to include other cultures and different cultural settings, inclusion of real-life projects working with actual clients, and other project types.

Findings in the present study illustrate how this process might be a starting point for design educators interested in culture-based design pedagogy and may integrate exercises in existing curriculum. In order for culture-based pedagogy to become routinized in design education, processes like the one in the present study can be expanded to semester long required courses. An approach might be to have a design history or seminar course focused on non-Western cultures. I recommend a book titled *Diversity in Design Perspectives from the non-Western World* which focuses on the culture, architecture, and philosophies of India, China, Turkey, Egypt, Nigeria, Algeria, Saudi Arabia, and United Arab Emirates as a resource for this seminar type course. I contributed the chapter on Nigeria to the book and the text is written to appeal to design

students and educators interested in learning about indigenous and contemporary aspects of non-Western cultures.

Design educators must also welcome the idea of taking an inclusive approach to teaching design history and studio to integrate global design into the curriculum. For example, rather than teaching about Western civilization in design history course only, as is the approach for many design schools, I recommend the history course should teach a global design history that recognizes the contributions of many world cultures. Another recommendation is for design programs to introduce global design studio courses, where the emphasis is designing in non-Western settings. I have described one intensive course, but design educators have to go beyond one course to make this approach more routinized in the undergraduate curriculum. Pedagogical experiences like these will better prepare design students for designing in global settings.

One future direction of this present study is for me to develop a text of how to design in non-Western cultural settings. The abstract and concrete themes of social dynamics, juxtaposition of traditional and contemporary culture, visual and performance arts, elements and principles of design, and sustainability uncovered in this study is one lens through which I propose that educators study and teach multicultural and non-Western design. In future studies, I plan to develop methodologies for how educators can transfer the approach in this study to other non-Western cultures.

Other researchers in the field of Instructional Psychology and Technology can build on the present study by exploring notions of creativity and motivation among students when designing in different cultural settings. Participants who mentioned not liking the project initially, but later developed a liking for the project as they modeled their design solutions in three-dimension, bring this to forefront. Another area to build on the present study is how to help participants with developing metacognitive strategies, with the hope of developing more effective team experiences. Researchers in the field of anthropology can build on the present study by integrating actual field exercises drawn from anthropological techniques such as participant-observation, life histories, genealogies, and the study of proxemics in cultural settings before solving design problems. The hope is to allow participants to gain more real-life authentic experiences in different cultural settings.

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APPENDICES

Appendix 1

Pre-test Questionnaire

Informed Consent to Participate in a Research Study

Project Title: **An Exploration of a Culture Based Design Pedagogy**

Principal Investigator: Abimbola O. Asojo
Department: Interior Design

Dear Design Student:

You are being asked to volunteer for this research study. This study is being conducted at University of Oklahoma College of Architecture, Interior Design Division. You were selected as a possible participant because you are a design student enrolled in the class that is being studied. The study is being done in conjunction with an evaluation of an existing class that is being modified to meet current standards in the field. There is only one part of the study that is for research purposes only and not for the course evaluation. If you choose not to participate in the study, information about you that comes from being in the class will not be used as data for the study.

Please read this form and ask any questions that you may have before agreeing to take part in this study.

Purpose of the Research Study

Design educators are challenged to introduce global perspectives in design curricula, but very few instructional resources exist to guide educators. A third year studio course has been modified to address this void. The purpose of this study is to directly address this void by developing and testing a course component on Nigerian and South African spatial forms in a classroom setting. The study will look at how students respond to a cultural unit embedded in a design course. This study is integrated into the course, so no extra time will be required outside of class. The study will focus on one unit of the design course.

Number of Participants

About 30 students will take part in this study.

Procedures

If you agree to be in this study, you will be asked to participate in the following steps during the semester in class:

Step 1: During Step 1, students will take a pre-test questionnaire to determine their prior knowledge about Nigerian and South African spatial forms.

Step 2: During Step 2, the instruction will begin by introducing students to several lectures and resources which use Nigerian and South African spatial forms as references for learning and discussing design. Methodologies from anthropology and instructional psychology will be used to elucidate information about Nigerian and South African design. Additionally, there will be observations and video recording of how students are engaged with the instruction.

Step 3: During Step 3, students will solve a design problem in a global non-western (Nigeria or South Africa) setting to foster an understanding of the diverse background of design theories. Design solutions and drawings from the class that students produce for the main project will be used as data along with the final project. Additionally, there will be observations, video recording of the class and informal interviews while students are working on their design solutions in class.

Step 4: During Step 4, students will be administered a post-test questionnaire. Some students will be invited for a formal interview.

Length of Participation

The length of participation is a period of six weeks. No additional time outside of class will be required of the study, unless the student is willing to be interviewed.

Benefits of being in the study are

There are no direct benefits to the participating student beyond what he/she will gain from participating in the class. The primary benefit of this study is to serve as an example for design educators. Design educators are constantly being challenged to introduce global issues in design education and are responsible for integrating global design discourse into design curricula. In order to effectively design in today's world, design students have to understand the cultural, social, economic, and political circumstances of the people they are designing for. While previous researchers and authors have discussed and illustrated the significance of integrating global issues, diversity issues in design curricula and designing in diverse cultural settings, none have actually tested instructions that use non-Western design forms.

Confidentiality

In published reports, there will be no information included that will make it possible to identify you without your permission. Research records will be stored securely and only approved researchers will have access to the records. All audio and video information will be used as data for analysis and not be available to anyone outside of the approved researchers named here. Please note Dr. Greene will collect the signed consent documents and retain the consent forms until after course grades are posted, so researcher will not know who participated in the study until grades have been posted.

Please answer the following two questions to enable researcher identify if you consented while maintaining confidentiality of your identity at the end of the study.

What is the day of your birth? For example January 5=5 _____

What is the name of your favorite pet? Say none if you never had a pet_____

Compensation

You will not be reimbursed for your time and participation in this study.

Voluntary Nature of the Study

Participation in this study is voluntary. If you withdraw or decline participation, you will not be penalized or lose benefits or services unrelated to the study. If you decide to participate, you may decline to answer any question and may choose to withdraw at any time.

Waivers of Elements of Confidentiality

Your name will not be linked with your responses unless you specifically agree to be identified. Please select one of the following options

_____ I consent to being quoted directly.

_____ I do not consent to being quoted directly.

_____ I consent to having my name reported with quoted material.

_____ I do not consent to having my name reported with quoted material

Audio Recording of Study Activities

To assist with accurate recording of participant responses, interviews may be recorded on an audio recording device. You have the right to refuse to allow such recording without penalty. Please select one of the following options.

I consent to audio recording. ___ Yes ___ No.

Video Recording of Study Activities

To assist with accurate recording of your responses, interviews may be recorded on a video recording device. You have the right to refuse to allow such recording. Please select one of the following options:

I consent to video recording. ___ Yes ___ No.

Photographing of Study Participants/Activities

In order to preserve an image related to the research, photographs may be taken of participants. You have the right to refuse to allow photographs to be taken without penalty. Please select one of the following options.

I consent to photographs. ___ Yes ___ No.

Contacts and Questions

If you have concerns or complaints about the research, the researcher(s) conducting this study can be contacted at

Abimbola O. Asojo: (405) 325-6409 or aasojo@ou.edu

Dr. Barbara Greene: (405) 325-1534 or barbara@ou.edu

Dr. Betty Harris: (405) 325-4500 or bharris@ou.edu

Contact the researcher(s) if you have questions or if you have experienced a research-related injury.

If you have any questions about your rights as a research participant, concerns, or complaints about the research and wish to talk to someone other than individuals on the research team or if you cannot reach the research team, you may contact the University of Oklahoma – Norman Campus Institutional Review Board (OU-NC IRB) at 405-325-8110 or irb@ou.edu.

You will be given a copy of this information to keep for your records. If you are not given a copy of this consent form, please request one.

Statement of Consent

I have read the above information. I have asked questions and have received satisfactory answers. I consent to participate in the study.

Signature Date

An Exploration of a Culture Based Design Pedagogy: Pretest

Part I: Demographic Information

1. What is the day of your birth? For example January 5=5 _____

2. What is the name of your favorite pet? Say none if you never had a pet
   _____

3. What is your gender?
   __Female
   __ Male

4. What is your age?
   __ 18-24
   __ 25- 29
   __ 30-39
   __ 40-49
   __ 50+

5. What is your Race?
   __ Black
   __ White
   __ Asian
   __ Native American
   __ Hispanic
   __ Other _____

6. What is your Major?
   __ Interior Design
   __ Architecture
   __ Other

7. If you answered other to Question 6, please list your major.
   _____

Part II: Culture Based Design Experience

Please answer the following questions based on your Culture-Based Design experience

1. Historical survey in design curricula should include design histories of various non-Western cultures.

	Strongly disagree			Neutral			Strongly agree	Don't Know
Rating Scale	○	○	○	○	○	○	○	○

2. Non-Western cultures have made a significant impact on the built environment.

	Strongly disagree			Neutral			Strongly agree	Don't Know
Rating Scale	○	○	○	○	○	○	○	○

3. Ethnicity has an impact on the design of the built environment?

	Strongly disagree			Neutral			Strongly agree	Don't Know
Rating Scale	○	○	○	○	○	○	○	○

4. I am comfortable solving design problems in a non-Western cultural setting like Nigeria.

	Strongly disagree			Neutral			Strongly agree	Don't Know
Rating Scale	○	○	○	○	○	○	○	○

5. I am comfortable solving design problems in a non-Western cultural setting like South Africa.

	Strongly disagree			Neutral			Strongly agree	Don't Know
Rating Scale	○	○	○	○	○	○	○	○

6. I understand how to use Nigerian precedents as references for discussing design ideas.

	Strongly disagree			Neutral			Strongly agree	Don't Know
Rating Scale	○	○	○	○	○	○	○	○

7. I understand how to use South African precedents as references for discussing design ideas.

	Strongly disagree			Neutral			Strongly agree	Don't Know
Rating Scale	○	○	○	○	○	○	○	○

8. Design theories have diverse backgrounds.

Part III: Culture Based Design Experience Short Essay Questions

Please answer the following questions based on your Culture-Based Design experience.

1. What are some design elements and principles from Nigerian, South African or other African architecture? Feel free to list traditional and/or contemporary principles you know.

2. Of the important design elements such, as line, form, shape, space, texture, and color, which would you say vary in Nigerian, South African or other African architecture?

3. Of the important design principles such as balance, rhythm, emphasis, proportion, scale, unity/harmony, which would you say vary in Nigerian, South African or other African architecture?

4. What are some aspects of spatial relationships that vary across Nigerian, South African or other African architecture?

5. What are some important spatial organizational principles from Nigerian, South African or other African architecture?

6. What are some important environmental issues such as sustainability or climatic factors that impact Nigerian, South African or other African architecture?

7. What are some important aspects such as culture, history, government that impact Nigerian, South African or other African architecture?

8. Name some Nigerian, South African or other African designers and architects and indicate any information you know about them?

Appendix 2

Post-test Questionnaire

An Exploration of a Culture Based Design Pedagogy: Post-test

Part I: Demographic Information

1. What is the day of your birth? For example January 5=5 _____
2. What is the name of your favorite pet? Say none if you never had a pet

   _____

3. What is your Major?
   __ Interior Design
   __ Architecture
   __ Other
4. If you answered other to Question 4, please list your major.

   _____

Part II: Culture Based Design Experience

Please answer the following questions based on your Culture-Based Design experience

1. Historical survey in design curricula should include design histories of various non-Western cultures.

	Strongly disagree			Neutral			Strongly agree	Don't Know
Rating Scale	○	○	○	○	○	○	○	○

2. Non-Western cultures have made a significant impact on the built environment.

	Strongly disagree			Neutral			Strongly agree	Don't Know
Rating Scale	○	○	○	○	○	○	○	○

3. Ethnicity has an impact on the design of the built environment?

	Strongly disagree			Neutral			Strongly agree	Don't Know
Rating Scale	○	○	○	○	○	○	○	○

4. I am comfortable solving design problems in a non-Western cultural setting like Nigeria.

	Strongly disagree			Neutral			Strongly agree	Don't Know
Rating Scale	○	○	○	○	○	○	○	○

5. I am comfortable solving design problems in a non-Western cultural setting like South Africa.

	Strongly disagree			Neutral			Strongly agree	Don't Know
Rating Scale	○	○	○	○	○	○	○	○

6. I understand how to use Nigerian precedents as references for discussing design ideas.

	Strongly disagree			Neutral			Strongly agree	Don't Know
Rating Scale	○	○	○	○	○	○	○	○

7. I understand how to use South African precedents as references for discussing design ideas.

	Strongly disagree			Neutral			Strongly agree	Don't Know
Rating Scale	○	○	○	○	○	○	○	○

8. Design theories have diverse backgrounds.

Part III: Culture Based Design Experience Short Essay Questions

Please answer the following questions based on your Culture-Based Design experience.

1. What are some design elements and principles from Nigerian, South African or other African architecture? Feel free to list traditional and/or contemporary principles you know.

2. Of the important design elements such, as line, form, shape, space, texture, and color, which would you say vary in Nigerian, South African or other African architecture?

3. Of the important design principles such as balance, rhythm, emphasis, proportion, scale, unity/harmony, which would you say vary in Nigerian, South African or other African architecture?

4. What are some aspects of spatial relationships that vary across Nigerian, South African or other African architecture?

5. What are some important spatial organizational principles from Nigerian, South African or other African architecture?

6. What are some important environmental issues such as sustainability or climatic factors that impact Nigerian, South African or other African architecture?

7. What are some important aspects such as culture, history, government that impact Nigerian, South African or other African architecture?

8. Name some Nigerian, South African or other African designers and architects and indicate any information you know about them?

Appendix 3

Interview Questionnaire

Dear Student,

You are being asked to volunteer for the interview part of the Culture Based Design Pedagogy research study. This study is being conducted at University of Oklahoma College of Architecture Interior Design Division. You were selected as a possible participant because you were enrolled in the Lighting Design (ID 3724) junior studio course. This part of study will just entail me interviewing you about your experience.

If you agree to participate you will be asked the following questions 1 to 5, the process will take about 30-45 minutes:

Please sign here _____ Date _____

1. Let's start this process by us looking at the project and you talking about it.

2. Do you recall how you chose your culture?

3. Describe how comfortable you are designing in a non-Western setting like Nigeria or South Africa?

4. In what way do you feel Nigerian or South African cultures have made impact on design or architecture?

   For example, describe how you would use precedents from Nigeria or South Africa as references for discussing design ideas? By that I mean, what aspects or design elements could you use for discussing design ideas.

In what way do you feel non-Western cultures have made impact on design or architecture?

5. What did you like or not like about this project?

There are no direct benefits to the participating.

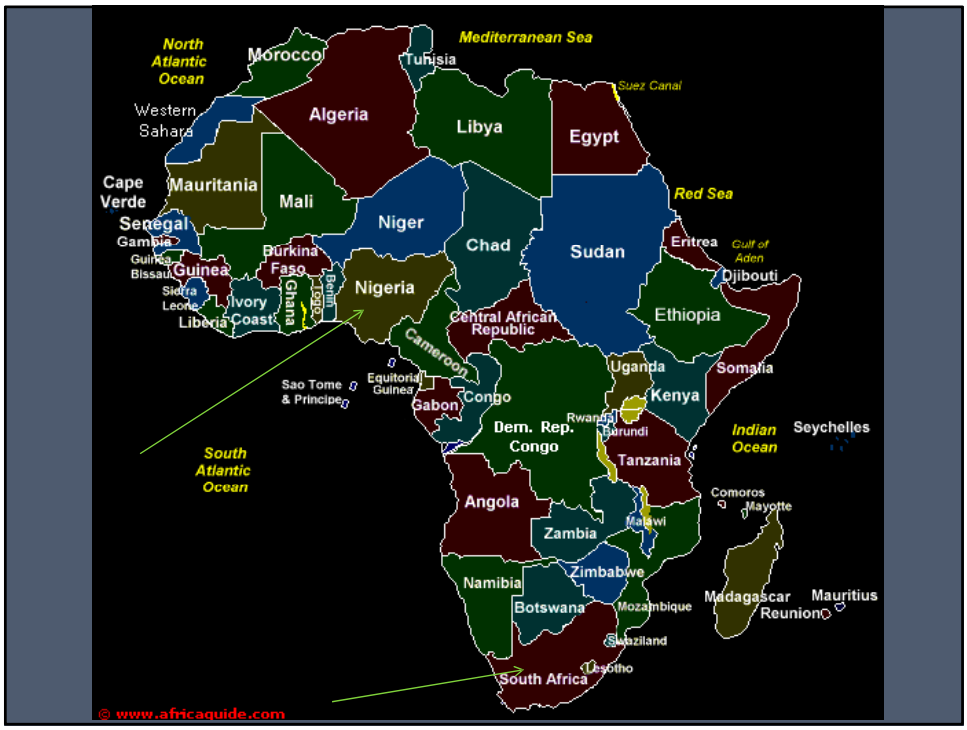
Thank you for participating

Appendix 4

Summary of Lecture Presented on Day 2

NIGERIA AND SOUTH AFRICA

A unique commonality is that both countries exhibit Mazrui's 1986 triple heritage with influences deeply rooted in the indigenous, western, and Islamic cultures. This triple heritage is what Elleh (1997) also observed the architecture of most African cities. These factors combine to form African cities and made them different from any other part of the world. African architecture is a product of cross-cultural encounters from indigenous, western and Islamic cultures.



NIGERIA

Nigeria is the most populous country in Africa with a population of about 140 million. This population is made up of about 250 ethnic groups. Three of them, Hausa, Ibo, and Yoruba are the major groups and constitute more than 40 percent of the country's population.

Government and brief History The Federal Republic of Nigeria is a democracy led by an elected president. There are three distinct branches: the executive, legislative, and judiciary. Nigeria is divided into 36 States and Abuja, the federal capital territory. Before Lord Lugard amalgamated Nigeria in 1914, various ethnic groups existed independently with their own forms of government. Empires such as Benin, Kanem Borno, Oyo, and Sokoto Caliphate existed and traded with each other. Europeans came to Africa in the mid 14th Century and the Atlantic Slave trade that continued for four hundred years impacted Nigeria, as well as the continent of Africa. It not only influenced the demographic growth rates in Africa but it also impacted the political and social organizations.

In terms of the impact of slave trade on the built environment, the Portuguese are noted to have brought medieval European fortress architecture to Africa. Their influence was mainly along the West and South West African coast. Their main theme was defense; they built forts to withstand attacks from Africans, rival slave hunters and other European countries (Elleh, 1997).

In 1807 after the British Parliament abolished Slave trade educated Africans like Bishop Ajayi Crowther emerged. Bishop Ajayi Crowther translated the bible from English to Yoruba. Even after the abolishment of slave trade Europeans continued to dominate Africa politically. That period has been referred to as the partitioning of Africa. Iliffe (2007) notes "during the last twenty years of the nineteenth century European powers swiftly and painlessly partitioned the map of Africa among themselves... The colonizers were British, French, Belgians, Portuguese, Italian and Spanish. (p. 193-207). During the early part of the nineteenth century, the British conquered Nigeria and established control in the Northern and Southern Protectorates. Protectorates which were controlled by the British government were created in their colonies. After Lord Lugard amalgamated Nigeria in 1914, his wife derived the name Nigeria from the River Niger by combining Niger and area together to form Nigeria. The 1950s to the 1980s were the years of independence from colonial rule.

Iliffe (2007) notes "these were years of optimism. Unprecedented demographic growth swelled Africa's population from something more than 200 million in 1950 to nearly 500 million in 1980, driven by medical progress and increased fertility. A youthful, liberating momentum destroyed European rule, fostered individual opportunity and mobility, and inspired attempts to create nation states" (p. 251). In 1957, the Gold Coast gained independence and Nkrumah renamed the country Ghana. By 1960, Nigeria, Togo, Ivory Coast, Cameroon, Gabon, Congo, Niger, Chad, Mauritania and a majority of African countries gained their independence. Notable Nigerian nationalists such as Sir Herbert Macaulay, Dr. Nnamdi Azikwe, Chief Obafemi Awolowo, Chief Anthony Enahoro, and Sir Ahmadou Bello struggled for Nigeria's freedom between 1922 and 1959.

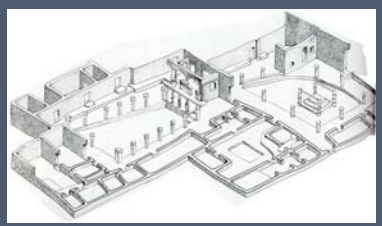
Architecture of Nigeria

Exhibits elements of Mazuri, 1986 and Elleh, 1997 triple heritage.

The architecture of the Nigeria exhibits influences from traditional architecture, western, and Islamic influences.

Traditional architecture varies from tent structures, beehive style houses, Sudanese style, Impluvium style, Palaces, Obelisk, and Monumental structures.

Impluvium Style Housing – Common in Yoruba Architecture



Architecture of Lagos

Western Influences lie in Gothic, English, Dutch, Roman, International style etc.

Islamic Influences through Trans-Saharan trade, Mosque architecture.

Gothic Style Anglican Cathedral, Central Lagos

Gothic Style Christ Church Cathedral Central Lagos

International Style National Theater, Lagos, Mainland.

SOUTH AFRICA

South Africa has a population of about 50 million people. The 2010 midyear population estimates indicates 79.4% are black Africans, 9.2% are White, 8.8% are colored and 2.6% are Indian or Asians. Major ethnic groups include the Zulu, Xhosa, Basotho, Venda, Tsonga, Swazi, Ndebele, Tswana, and Bapedi. The white population originates from many ethnic groups such as the Dutch, Flemish, Portuguese, Norwegian, German, Greek, French, English, Polish, Irish, Italian, Scottish, and Welsh.

Iliffe (2007) notes "modern South Africa deserves separate treatment, because the discovery of Gold at the Witwatersrand in 1886 gave the south a trajectory different from the rest of the continent, moving towards an industrial economy, the entrenchment of local white power, and a unique system of racial repression culminating in the apartheid program of 1948, a centrally imposed program of racial segregation under white domination (p. 273). After many years of apartheid, South Africa gained its independence in 1990. In the 1994 elections Mandela's ANC won 63 percent of the vote and became South Africa's first black president.

Africa in the twenty first century.

Iliffe notes "as the twenty first century began, the African continent was experiencing both crises and renewal" (p. 288). Due to economic decline in the 70s many African countries accepted structural adjustment programs that exposed their citizens to abject poverty. The International Monetary fund (IMF) gave numerous loans contingent on African countries adopting structural adjustment programs. All these coupled with bad leadership, greed, and corrupt leadership on the part of many African countries led to the collapse of many economies.

Architecture of South Africa

Exhibits elements of Mazuri, 1986 and Elleh, 1997 triple heritage.



Architecture of South Africa





ETHNOGRAPHIES

Ethnography is an anthropological field technique which Creswell (2009) defines as "a qualitative strategy in which the researcher studies an intact cultural group in a natural setting over a prolonged period of time by collecting primarily observational and interview data" (p. 230).

Other anthropological methodologies include research traditions such as phenomenology, biography, participant observation, life histories, genealogies, photography, grounded theory and the study of proxemics.

Culture: Basotho

Location
Present day Lesotho

Spatial Organization Conical beehive roof with a cylindrical structure made of pliable materials.

Artistic Expression Walls of huts were decorated with simple patterns which were hand drawn. Colors such as earth tones, red, yellow, cream and browns are used. Stone mosaic are also used as decorative elements on the exterior (Aston, 1952).
Traditional Basotho straw hats were conical in shape similar to their huts.

Lesotho, Republic of South Africa, Traditional architecture
Source: American Geographical Society Collection,
The University of Wisconsin-Milwaukee Library

Swaziland, Republic of South Africa, Traditional architecture
Source: American Geographical Society Collection,
The University of Wisconsin Milwaukee Library

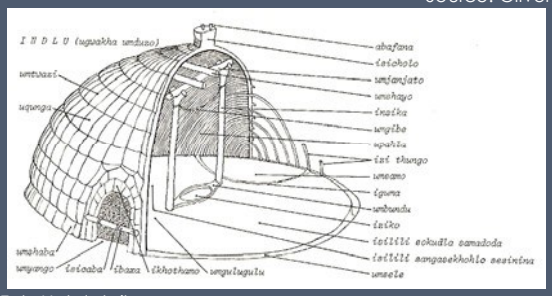
Basotho Woman with straw hat
Source: Wikipedia

Culture: Zulu

Location
Present day South Africa.

Spatial Organization
Cities or settlements were circular in form.
Huts were domical or beehive in form.

Zulu Kraal
Source: Oliver, 1971



Zulu Hut detail
Source: Oliver, 1971

Zulu Hut detail
Source: Oliver, 1971

Culture: Zulu

Artistic Expression Renowned for their basketry and beadwork. Zulu beadwork combined geometric shapes and color. Zulu baskets were made by men and women and similar to their bead work it integrated some geometric patterns and colors.

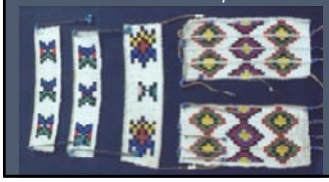
Zulu Hut
Source: Oliver, 1971

Culture: Zulu

Gender Roles/Division of labor

Krige (1974) notes "though the head of the village often has a large number of wives, things run very smoothly in a Zulu village, because each woman is independent. She has her own hut, her own fields which she cultivates to supply the needs of her own household, and also cattle appointed to her hut for its own Special use. These cattle are inherited by her eldest son, and, once they have been apportioned, do not strictly belong to the husband anymore. Each wife is expected to grow sufficient food to supply her own household and, though she cooks for the inmates of her own hut only, she must always send food to her husband" (p. 47).

Economic activities such as cattle rearing and agriculture take place within the village. Krige (1974) notes "these are carried on in no haphazard way but with a clearly demarcated division of labor based upon sex. On the whole, the rougher task requiring strength are done by the men, while to the women falls the work that requires more continuous attention. The housework naturally falls within the sphere of woman's activities, and cooking and beer making, sweeping, washing of utensils, and the fetching of firewood and water are work of women" (p. 184). Among the Zulu's, preliminary clearing of new land for farming is done by men. Women are involved in pot making, mat making, and making of ropes for thatching. Huts are usually thatched by women. All cattle work is done by men. Krige (1974) notes "the men play little part in agriculture, they merely hew the bush where new fields are to be cultivated, and at harvest or in spring may sometimes help with reaping or weeding. Hut building, except for the thatching, is the work of men. Wooden utensils, such as milk-pots and spoons, are all made by men who do a good deal of basketry besides; they also dress skins for clothes, and sometimes specialize in metal work which is always a man's occupation" (p. 185).



Zulu beadwork illustrating geometric patterns and shapes

Culture: Ndebele

Location - Present day South Africa and Zimbabwe

Basic layouts were made up of rectangular walled compounds with a centrally located main house which was divided into the front and back. The courtyard served as an outdoor room. It was used for cooking, washing and socialization.

Renowned for the wall paintings and art by the women. Ndebele paintings were typically bold, brightly colored and predominantly made up of geometric designs with black outlines.

Culture: Hausa-Fulani

History

Located west of Borno during 1,000 A.D., Hausas built Kano, Zaria, Daura, Katsina, and Gobir empires. The Hausas had a common language, culture and religion (Islam) but they did not have a common monarchy system. Kano became the most powerful of the states in the 16th and 17th Centuries but clashes with other states ended Kano's preeminence. The Fulani's led by Usman Dan Fodio in 1804 set up the Hausa-Fulani Caliphate centered in Sokoto ruling the area from Katsina in the north to Ilorin near River Niger. Arches and vaults were common in northern Nigeria Hausa mosque architecture. Dmochowski (1990) notes "the Masallaci Juma'a in Zaria, the main hall of which is called *Umar Masallaci,* was erected during the reign of Abdulkarim (1834 of Fulani dynasty- the first Fulani installed king, who ended the centuries-old Habe autonomy of Zazzau. This was translated for me as 'Mother Masallaci'. (According to Revd GP Bargery, *Uwar Daki*=a woman to whom a man looks for advice and help; Uwargida=the head wife)

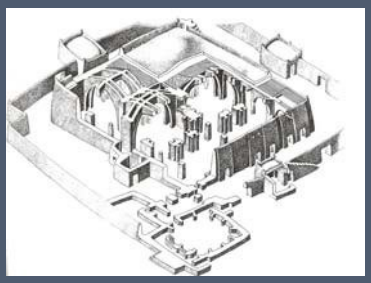
Masallaci Juma'a , Zaria, North aisle facing East
Source: Dmochowski, 1990

Culture: Hausa-Fulani

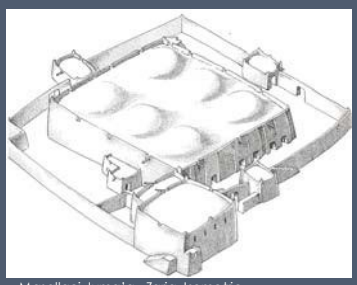
Location
West Africa

Spatial Organization Street patterns were radial in Hausa-Fulani cities which had authoritarian communities. Spaces were sometimes based on rectilinear or curvilinear geometry or a juxta positioning of both. Buildings had dome or flat roof sometimes on quadrangular or square forms. The center was important in Hausa-Fulani culture. Arches and vaults were predominant.

Artistic Expression Wall decoration and painting was very predominant. Resurfacing of walls was an annual ritual. Hausa-Fulani specialized in ironwork, leather, pottery and goldsmithing. Arabic scripts and geometric patterns were sculptured on walls.



Masallaci Juma'a , Zaria, Isometric of Interior
Source: Dmochowski, 1990

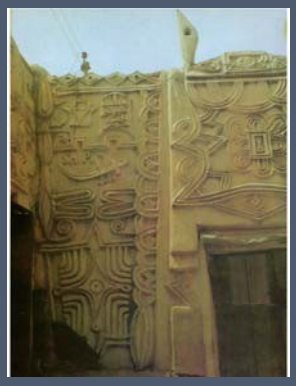


Masallaci Juma'a , Zaria, Isometric
Source: Dmochowski, 1990

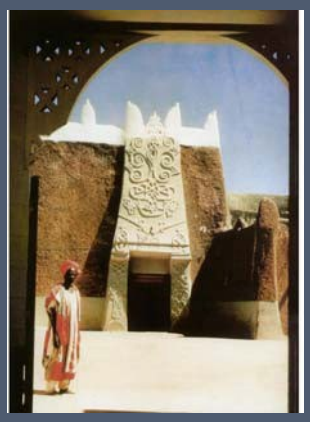
Culture: Hausa-Fulani

Masallaci Juma'a , Zaria, Section
Source: Dmochowski, 1990

Interior of the Mosque at Daura, Nigeria
(Source: Prussin, 1976).



Entrance Façade of a House in Zaria, Nigeria. In the upper left are some of the material symbols of Islam – the Scimitar, the Teakettle, and the Crescent as well as the owner's name in Arabic
(Source: Prussin, 1976).



Entrance Portal of the emir's Palace at Bauchi, Nigeria
(Source: Prussin, 1976).

Culture: Igbo

Location
Nigeria

Spatial Organization Street patterns were based on winding labyrinths in Igbo societies which had more diffused authority.

Artistic Expression Wall decoration and painting was very predominant and women painted the interiors and exteriors of the family Obi.

Igbo Women adding final touches to the family Obi, a place of meeting. The painting is an effort between mother and daughter, Nigeria.

An Igbo woman painting the wall of the Obi.

Culture: Edo (Benin)

Location Nigeria

Spatial Organization Street patterns based on a modified grid in Benin which had authoritarian communities. Buildings were based on impluvium style with central courtyard.

Artistic Expression Famous for ancient carvings and artistic work Made of ivory which adorn many Museums in the West. Benin City was made up of the Edo a single Ethnic group. Hull (1976) notes "for centuries, the city was organized into wards based

such as wood-and ivory-carving) and ritual priesthoods connected with ancestor worship. At the center of urban authority was the Oba, or king, who also ruled over the entire realm(p. 78)." Benin developed various artifacts out of bronze, iron and ivory, the bronze heads of the Obas of Benin (King's of Benin) are in European and American museums.

View of Benin city in 1891 before British conquest illustrating gridiron street pattern
Source: H. Ling Roth, Great Benin, Barnes and Nobles.

Culture: Edo (Benin)

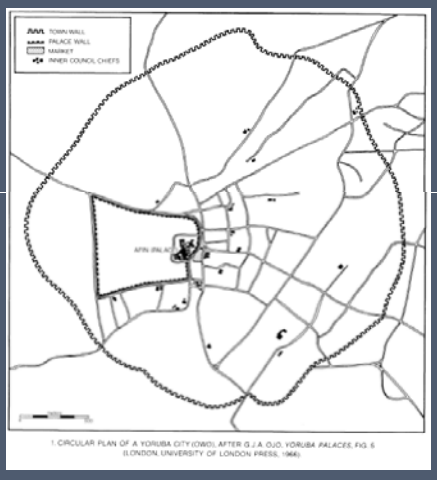
Gender Roles/Division of labor

Pre colonial Benin women played active roles in politics, economics and religious lives and they Were active participants in communities, as well as leaders. In Benin Kingdom, Emotan was renowned for her effort that led to the enthronement of a tyrannical king. Early traditions document the presence of an Important female figure in Benin kingdom called the Iyoba (King's mother).

Benin Pendant ivory mask, court of Benin, 16th century
Source: http://en.wikipedia.org/wiki/Benin_kingdom

Culture: Yoruba

Located in the western part of Nigeria, Yoruba had many powerful states. Ile-Ife was the first of these and is regarded as the cradle of civilization. Naturalistic terracotta, bronze heads and other artifacts dating as far back as the 10 Century show how early the Yoruba developed an advanced civilization. Later in the 16th and 17th Century, the armies of Oyo kingdom dominated Yoruba cities and Oyo became the most powerful West African kingdom. Oyo Kingdom collapsed as a result of Fulani invasion and internal power struggles in the early 19th century.



1. CIRCULAR PLAN OF A YORUBA CITY (OWO). AFTER G. J. A. OJO, *YORUBA PALACES*, FIG. 6 (LONDON: UNIVERSITY OF LONDON PRESS, 1966).

Culture: Yoruba

Location

West Africa

Spatial Organization

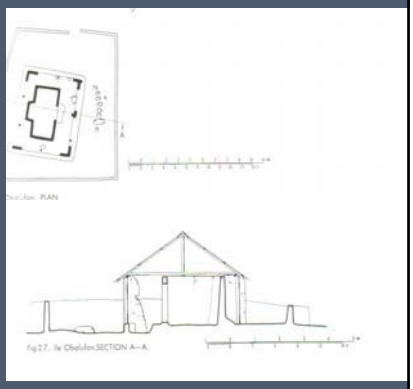
Street patterns were radial in Yoruba cities which had authoritarian communities.

King's Palace, Owo, Nigeria largest palace in Yorubaland covers 44 hectares. Images depict elaborately carved entrance doors. The beams, lintels and boards of ceilings are carved with human, mythological and animal figures and geometric patterns.

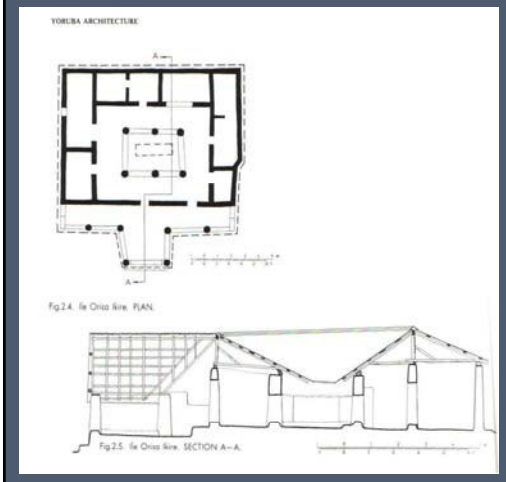
Culture: Yoruba

Gender Roles/Division of labor

Asojo and Asojo (2000) note "women traders in different societies competed keenly with men, their economic affluence was often so significant that many of them became strong forces. For instance, in many Yoruba societies, the office of the Iyalode (mother of the town) was the creation of this prowess. A Distinguished woman in the society was honored with the title Iyalode. In addition to settling disputes especially those involving women, Iyalode served as a voice for women. She actively participated in the decision-making for the community" (p. 56). This Iyalode office is still practiced among the Yoruba today. Asojo and Asojo (2000) "women participated in religious functions such as divination, midwifery and rituals. Often Women acted as native doctors with full knowledge of herbs. For example, in many societies women are considered powerful metaphysically. Women features as co-celebrants in the festivals of Egungun (an annual masquerade festival prevalent in all of Yorubaland in honor of ancestral spirits). They added honor and beautified the ceremony with their thematic functions. There are stories of many women including Yemoja, Oya, Oronsen Iyamapo who were elevated to the level of deities. They are approached even today for protection, health, procreation, wealth, and other vital aspects of human needs" (p. 57).



Culture: Yoruba



Yorùbá Language

Yorùbá is one of the main languages of Nigeria and is a member of the Niger-Congo family of languages. It is spoken by about 22 million people in southwest Nigeria, Benin, Togo, the UK, Brazil and the USA.

Yorùbá first appeared in writing during the 19th century. The first Yorùbá publications were a number of teaching booklets produced by John Raban in 1830-2. The person who made the biggest contribution to Yorùbá literacy was Bishop Ajayi (Samual) Crowther (1806-1891), who studied many of the languages of Nigeria, including Yorùbá, and wrote and translated in some of them. Crowther was also the first Christian bishop of West African origin. A Yorùbá orthography appeared in about 1850, though it has undergone a number of changes since then.

The Yorùbá Alphabet (Abidi Yorùbá)

Aa	Bb	Dd	Ee	Ẹẹ	Ff	Gg	GBgb	Hh	Ii	Jj	Kk	Ll
ah	bi	di	hay	hen	fi	gi	gbi!	in	he!	ji	ki	li
[a]	[b]	[d]	[e]	[ɛ]	[f]	[g]	[ɓ]	[h]	[i]	[ʒ]	[k]	[l]
Mm	Nn	Oo	Ọọ	Pp	Rr	Ss	Ṣṣ	Tt	Uu	Ww	Yy	
mi	ni	oh	or!	pi	ri	si	shi	ti	uh!	wi	yi	
[m]	[n]	[o]	[ɔ]	[ƥ]	[r]	[s]	[ʃ]	[t]	[u]	[w]	[j]	

Phenomenology

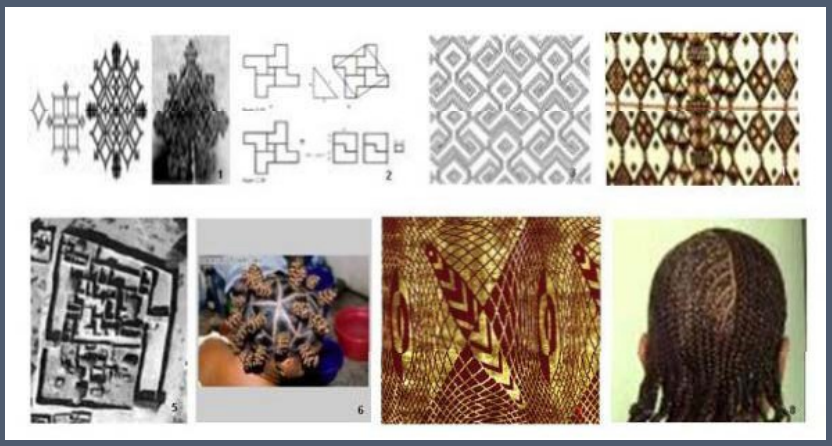
In a recent study, I used phenomenology to study hairdressing among the Yoruba, a Nigerian major ethnic group. The study highlighted the relationship of natural hairstyles to the built environment and architecture using fractal theory (Figure 1). Fractals are swirling patterns for modeling in biology, geology, and the natural sciences.

The five components of fractal geometry are recursion, scaling, self similarity, infinity, and fractional dimension. Fractals occur in a loop, the output for one step is the input for the next step. Ron Eglash (1999), in his book *African Fractals: Modern Computing and Indigenous Design,* notes "while fractal geometry can indeed take us into the far reaches of high science, its patterns are surprisingly common in traditional African designs, and some of its basic concepts are fundamental to African knowledge systems" (p. 3).

Eglash finds the self similarity of fractals in what is characterized as "circles of circles of circular dwellings, rectangular walls enclosing smaller rectangles" which were the basis of many Nigerian and South African ethnic groups. Fractals are often seen in carvings, architecture, ornamentation, jewelry and hairstyles in both Nigerian and South African cultures. Fractal geometries are present in Ndebele material culture (South Africa) and Hausa, wall paintings (Nigeria), as well as, in Zulu (South Africa) and Yoruba (Nigeria) spatial organizations.

Phenomenology can be used to study the phenomena of carving, jewelry making, ornamentation, fabric making, and building construction to understand more about Nigeria and South Africa.

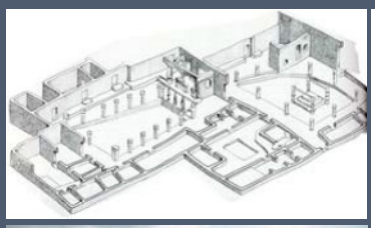
Phenomenology

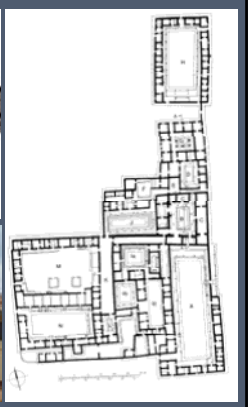


Images illustrate how traditional settlements tend to use fractal structures- rectangular walls enclosing rectangles with streets that branch down to tiny footpaths with striking geometric repetition. Fractals are often seen in carvings, architecture, ornamentation, jewelry and even hair styles.

1. FORM AND SPACE
2. ORNAMENTATION AND COLOR
3. INTERIOR/EXTERIOR RELATIONSHIPS
4. COURTYARDS AND VERANDAHS
5. MATERIAL AND CONSTRUCTION TECHNIQUES

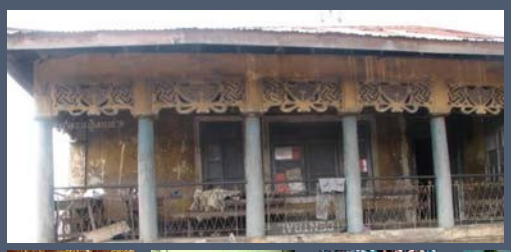
TRADITIONAL YORUBA SPACES FORM AND SPACE The traditional architecture of the region includes rectilinear clay structures, tents, round houses, obelisks, palaces, and monumental structures.

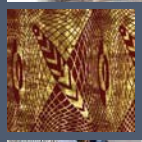


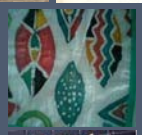


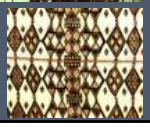
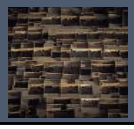
TRADITIONAL YORUBA SPACES ORNAMENTATION AND COLOR

Traditional Yoruba spaces depict utilization of decorative embellishment. Verandah columns in ordinary houses were decorated with religious symbols and Kings palaces had caryatids in the form of human figures supporting the verandah roofs.



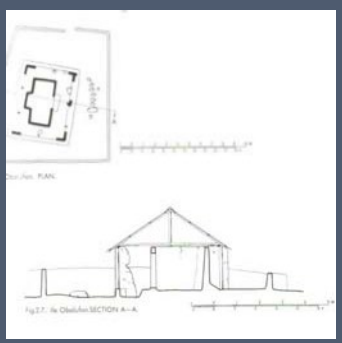


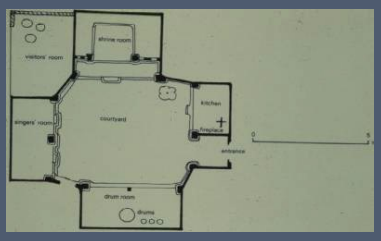

TRADITIONAL YORUBA SPACES INTERIOR/EXTERIOR

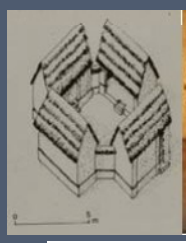
Transitional spaces between public and private spaces were clearly defined. Paths, verandahs, large and small courtyards, and balconies served as transitional spaces to clearly define public and private spaces. The Parlor in residences represented the transitional space from outside inside.



TRADITIONAL YORUBA SPACES

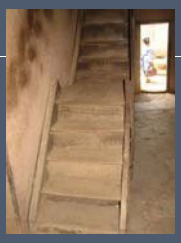
COURTYARDS/VERANDAHS Courtyards allow for cross ventilation in the hot arid regions. It serves as a transitional space, for communal activities, climatic, and social functions. Used primarily for cooking, meeting and socialization.

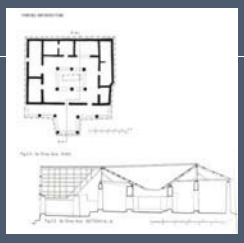






TRADITIONAL YORUBA SPACES
MATERIALS AND CONSTRUCTION TECHNIQUES





Construction Materials: Adobe, Wood, Brick, Stone

Construction Techniques: Beam

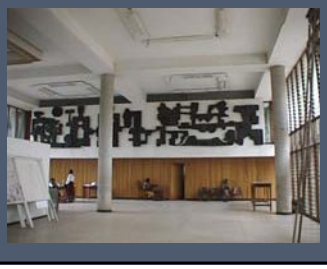
COLONIAL NIGERIAN SPACES

In Africa, Western influence began with the Greeks in 333 B.C. continuing through the settlements of Romans in 146 B.C. to the Europeans in mid 14th century. This resulted in the proliferation of classical style influences across African countries, as well as Yoruba societies.

POST COLONIAL NIGERIAN SPACES

In the late nineteenth and early twentieth century, before most African countries gained their independence from colonial rule, expatriate architects or builders who practiced in many African Nations designed and built numerous International style buildings.

These buildings were utilized for governmental offices, schools and institutions of higher learning. International style buildings designed by various expatriate architects like Maxwell Fry, Godwin Hopewood, and Ove Arup dominate the skyline of major Yoruba cities, like most African countries today.



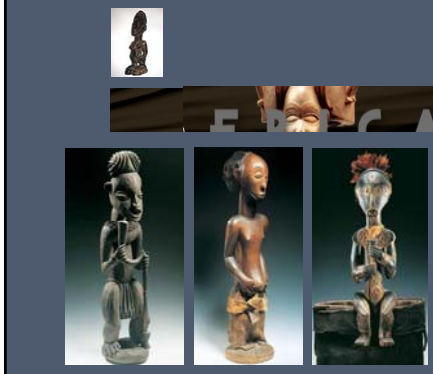
POST COLONIAL NIGERIAN SPACES

Since the era of independence from colonial rule in the 1960s, there has been a cultural revival in many African nations. Today, designers are striving to recapture elements from traditional African spaces lost since colonial rule in order to integrate them in contemporary design practices.

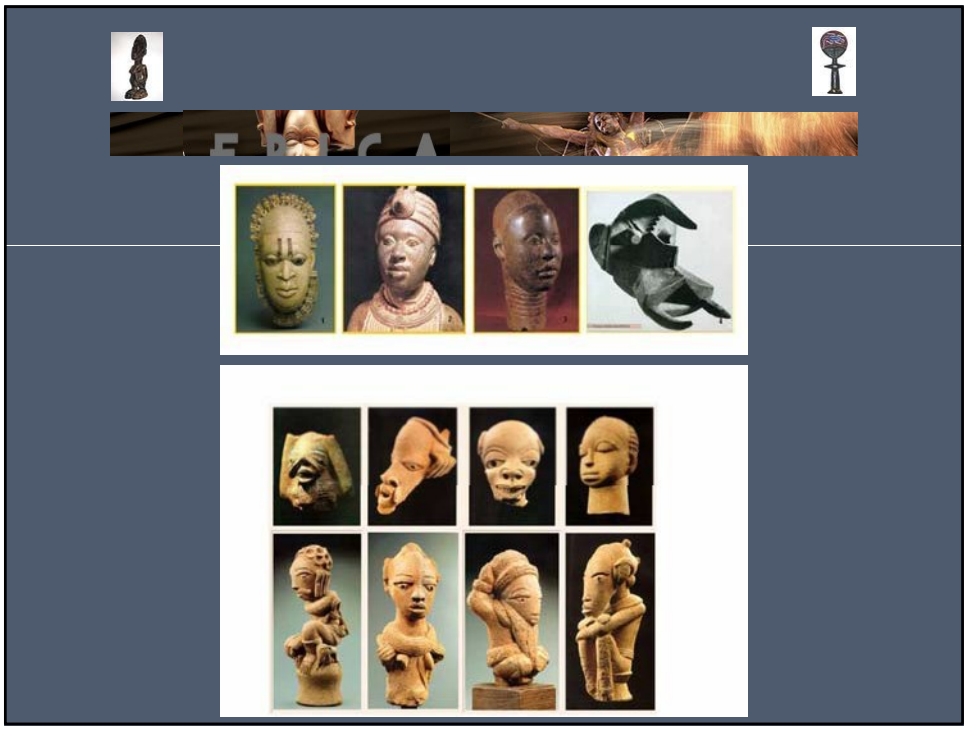
Nigerian architect Demas Nwoko's Catholic Church in Ibadan, Nigeria is an example. African forms are integrated in Nwoko's church design through the use of natural materials; the concrete masonry unit wall is left plain and unfinished, the steeple on the roof is roughly fashioned, and the walkway around the perimeter of the church is finished in cobbled stone. A pond around the perimeter of the church relates to the Yoruba's appreciation of natural forms.

POST COLONIAL NIGERIAN SPACES

Most of these designs are a tropical version of the International style common in temperate climates. The buildings are predominantly white with the main structural frame constructed from reinforced concrete. Emphasis is on continuous fenestration, sun shading devices, and courtyards to allow cross ventilation.



African Art displays clear abstract qualities. African Art is bold and simple, the shapes are also simplified, they are rarely colored and if they are they used a limited palette; these are characteristics of an abstraction.

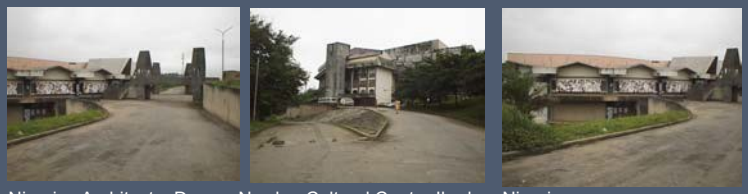


Contemporary Nigerian and South African Spaces

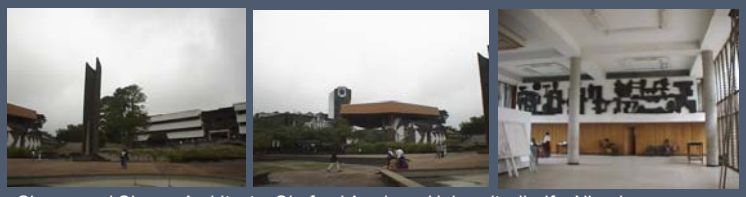
South African Architect - Luyanda Mpahlwa

http://www.mmaarch.co.za/home.asp

Mpahlwa's inspiration is from traditional South African architecture's use of local materials. He uses bags full of sand because of its abundance and the exterior is plastered. In many cases, members of the community gathered together to pack sand bags to be used for construction. This is a community oriented process remnant of traditional societies.



Nigerian Architect – Demas Nwoko, Cultural Center Ibadan, Nigeria



Sharon and Sharon Architects, Obafemi Awolowo University, Ile-Ife, Nigeria

More Contemporary Nigerian Spaces illustrating geometry, repetition in the surface articulation and form

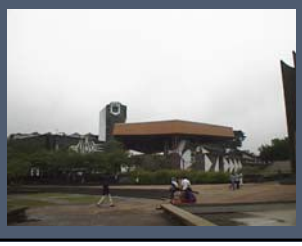
Today, the architecture of African cities is dominated by expatriate architects and African architects. International style buildings designed by various expatriate architects like Maxwell Fry, Godwin Hopewood, and Ove Arup dominate the skyline of major cities. Most of these designs are a tropical version of the International style. The buildings are predominantly white with the main structural frame constructed from reinforced concrete. Emphasis is on continuous fenestration, sun shading devices, and courtyards to allow cross ventilation.

Most government offices, university campuses, and government residential areas have these buildings which have deteriorated through the years due to lack of maintenance and the economic crises plaguing third world countries.

SMA Ibadan, Nigeria
modeled on the traditional hut using concrete

Oduduwa Hall, OAU, Ile-Ife, Nigeria by Sharon and Sharon Architects
Amphi theater mimics the form of a bronze head from traditional societies

landscaping is a major consideration to express importance of nature.
Surface articulation recalls patterns from traditional Yoruba geometry.



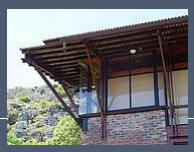
Contemporary Interiors

This beautiful tree house is the great example of using traditional forms, materials, furniture and incorporating it into the contemporary.

Lake Manyara, tree house, Lake Manyara, Tanzania

Elemental Evocation, house Cape Town, South Africa

Some creative South African contemporary detailing integrating traditional forms



Videos from Africa

Africa - http://www.youtube.com/watch?v=826tpNNrCF0

Cities of Nigeria -http://www.youtube.com/watch?v=olkZy1lmEFM&feature=related

Africa - http://www.youtube.com/watch?v=AfPkg8S4Fio&feature=related

Nigeria - http://www.youtube.com/watch?v=77rAZACdGds&feature=fvw

South Africa
http://www.youtube.com/watch?v=twQ77ZW139k&p=76872A9659
2F213D&playne xt=1&index=4

South Africa - http://www.youtube.com/watch?v=--RUiWU7xxc&feature=related

Nigerian Institute of Architects Website - http://www.niarchitects.org/

South African Institute of Architects - http://www.saia.org.za/

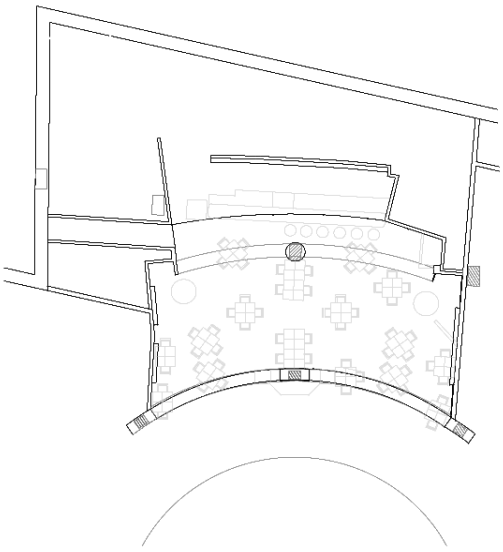
Conceptual Design Assignment Due on Thursday

Assign students the task to pick a Nigerian or South African ethnic group and summarize the traditional and contemporary design or space from that culture.

Ask students to include the following topics: location, brief History, philosophy, form and space, spatial organization, and material Technology.

Appendix 5

Project Sheet



ID 3724: Interior Design II: Lighting Design

Project 4: Interior and Lighting Design of Restaurant in Nigeria or South Africa

Design a restaurant in an urbane setting in Lagos, Nigeria or Johannesburg, South Africa to highlight the country's culture and foods for tourist. You can pick a location such as an airport or within the city limit or a central business district. Use the Computer Aided drawings files (plan and section) located on Desire to Learn as your existing lease space.

Hours of operation are 11:00 am – 12:00 midnight

Interior Space should portray:

- Energy
- Kinetic movement
- "Cultural Flavor"
- Color
- Entertainment

Lighting solution should take into consideration the long opening hours of the restaurant. In your solution, create a different scene for lunch, chef show, and dinner.

Presentation Requirements due on December 9

Lighting Concept illustrating ideas from the culture and lighting brightness hierarchy
Floor plan - Scale ¼"= 1'-0"
Lighting plan – Scale ¼"= 1'-0"
Elevations - Scale ¼"= 1'-0"
Sections - Scale ¼"= 1'-0"
Details – Scale 3"=1'-0" or 1-1/2"=1'-0"
Perspectives

Schedules
Cut-Sheets for fixture selection

Project Schedule

Week 11

November 4 Consent forms and Pre-test questionnaire obtained by Dr. Greene
Lecture on Restaurant Lighting by Dawn Hollingsworth, Principal Visual Terrain California.
Introduction to Project 4 – Multicultural Project in Nigeria and South Africa.
Split class into groups.

Week 12

November 9 Lecture: Nigerian and South African Cultures and Spatial Forms

Conceptual Assignment: Pick a Nigerian or South African Ethnic group and summarize the traditional and contemporary design from that culture using word analogies and visuals.

November 11 Present Conceptual Design
Group work on Restaurant Conceptual Design in class, Desk Crits

Week 13

November 16 Pin up Conceptual Design for Restaurant, plan, 3d-sketches

November 18 Group work in team out of town.

Week 14

November 23 Pin up review- Schematic Design – include conceptual sketches, plan, elevation, 3D sketches, Test Review

November 25 Thanksgiving vacation

Week 15

November 30 Test and Desk Crit

December 2 Design Development – Work on final presentation

Week 16

December 7 Design Development - Work on final presentation

December 9 Project 4 due
Post Test Questionnaires obtained by Dr. Greene
Final Presentation