



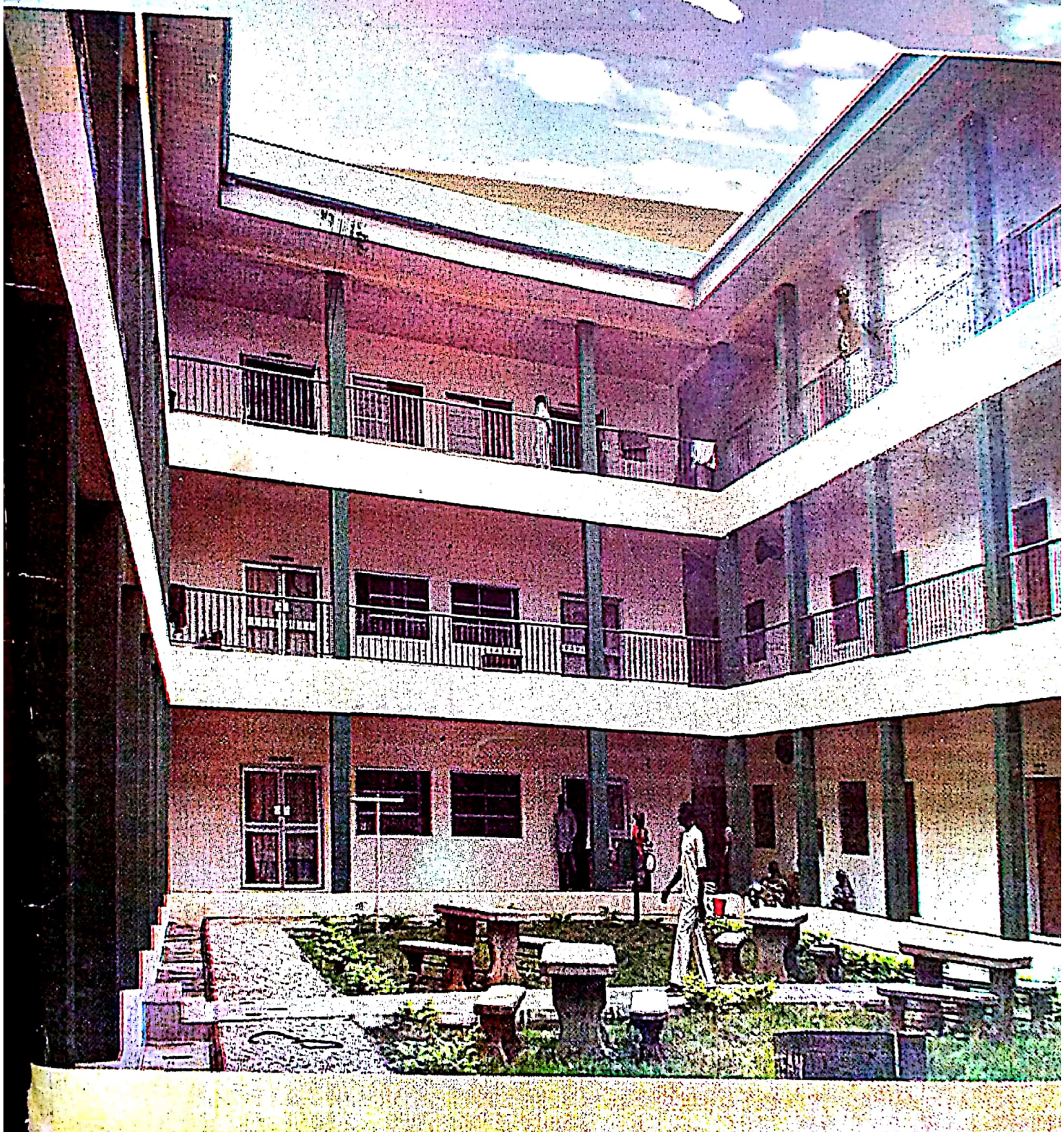
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APPLICATION OF TEACHING MODES AND METHODS: a means of increasing academic productivity of architecture students

O. K. AKANDE & I. ODIAUA

Architecture Programme, Abubakar Tafawa Balewa University, Bauchi.

ABSTRACT: *Architectural educators in the 21st century are faced with the formidable task of enabling their students achieve profitable learning. This is because educational aims and objectives, professional expectations, and curricular contents and capabilities are only achievable when operated through pedagogic means. Hence, effective integration of diverse methods and modes of teaching becomes the key pedagogic issue that impinges on the effectiveness of architectural education. This paper examines how an effective application of teaching methodology can enhance productivity in architecture students. It begins by highlighting the various teaching methods, from various disciplines, which can be applied by architectural educators to invoke creativity and enhance academic productivity in their students. The paper recommends other teaching methods, along side the conventional ones, for the achievement of the objectives of architectural education and concludes that in order to meet the demands of changing social and urban needs - lifestyles, technologies and specificities of the university education the use of emerging design tools (e.g. computers), teaching modes (e.g. distance learning), innovation and experimentation of various teaching methods, must be encouraged.*

Keywords: *academic, education, effective, pedagogic, productivity.*

INTRODUCTION

Students in the 21st century learn in ways different from all the generations of the past. Hence, teachers of today must use innovative teaching strategies to meet the needs of the diverse student population. It is important then for a university teacher to understand that the learning approach of students will strongly influence the quality of their learning outcomes (Chin and Brown 2000). In quantitative studies, the teacher's approaches to teaching correlated with student's approaches to learning (Kember and Gow 1994). Teaching and learning are inseparable, because learning is a criterion and product of effective teaching. Teaching is part of a whole that comprises the teacher, the learner, the content of the discipline, the teaching/learning process, and the evaluation of both the teacher and the learner. To encourage a deep approach to learning which leads to good learning outcomes, teachers should use an appropriate teaching style. What then is the most effective way to teach?

Although there are many ways to teach effectively, all require that the teacher understand three things: the material being taught, the best instructional strategies to teach the material, and how students learn. Recognition of the fact that students must be active learners to learn effectively requires a teacher-centred approach being replaced by a student-centred approach. Student-centred approaches place much greater emphasis on how people learn. The approaches are aimed at the interaction between the existing knowledge or beliefs of the learner and the new experiences students are receiving. In recent times, advancement in technology has transformed both the strategies of teaching and learning. Today, the use of many of the same antiquated teaching methods that have existed for decades persists. This, along with societal factors, has no doubt led to the increasing failure of students in our educational system. In order to arrest this situation, the use of innovative teaching methods, to maintain the attention of students who are increasingly more easily distracted, should be encouraged.

Furthermore, changing circumstances all over the world show that today's students also require instant feedback on their progress. Nigeria is not immune from this. Technological developments in communication and information dissemination have had a large potential impact on the practice of teaching because it is an activity in which information communication and dissemination are significant aspects. None of these factors are likely to go away, so it is unlikely that concern about teaching methods in Universities will subside. On the contrary each is likely to become more compelling and so too, therefore, will concern about teaching methods. While greater effectiveness and efficiency in teaching and learning should be promoted at all levels of architectural education while on the other hand innovation in teaching and learning should consistently be focused on as a key to quality enhancement of increased academic productivity of the architectural students. As educational aims and objectives, professional expectations, and curricular contents and capabilities can only be achieved in architectural education when operationalised in pedagogic means. Each educational and/or professional objective may variously require specific teaching methods and medium. The issues then to be addressed in this paper are the possible advantages of the effect of the application of teaching and learning methods in architectural education on the productivity of architecture students.

INCREASING PRODUCTIVITY AND IMPROVING THE QUALITY OF ARCHITECTURALEUCATION

Productivity, in the simplest terms, is defined as a measure of output per unit of input. In education, productivity can be measured in terms of units, such as average class size, or it can be measured in monetary terms, such as the quality or value to students relative to the cost of educating students (Poole, 2005). These definitions allow one to evaluate how a change in costs, quality, or quantities influences productivity. Productivity will increase if student quality increases more than the cost

of educating students. Student quality here refers to the knowledge and skills they gain from a university education which should be the primary goal of any institution of higher learning. Increasing student quality however, remains unclear to a vast majority of the academia. One reason for this lack of clarity is that many academicians apply the wrong teaching strategies and thus fail to bring out the best in their students.

Another reason, according to Guskin, (1996), is that most lecturers do not have training in good teaching strategies. However, Chickering and Gamson (1991) summarised as follows: encouraging student/teachers' contact, encouraging active learning, encouraging cooperation among students, giving prompt feedback, communicating high expectations, encouraging more time on each task, and respecting diverse talents and ways of learning. An important point noted by Poole (2005) is that the current passive lecture format in most universities does not account for most of the practices just discussed. Nevertheless, there are other strategies and even new opportunities to employ new technologies such as the Internet to enhance productivity and improve students' quality.

CONCEPT OF TEACHING AND LEARNING STYLE

Teaching is seen by some people as an art and a science (Agbo and Yakubu, 2002). Art here implies being able to create, as a result of being familiar with many teaching methods which produce the desired result in the most effective and efficient manner in a learner. Teaching cannot be useful if it does not facilitate learning; a teacher can not teach without a learner. Within this context teaching means stimulating and guiding the learning of the student to assure the attainment of socially approved goals in the most efficient way possible. This new conception of teaching makes the architect-teacher's task more difficult and challenging: instead of having to concern himself only with a few patterns of effective presentation of the subject matter, his responsibility is one of ensuring that all that go on in the classroom are of maximum benefit in increasing the academic productivity of the

student. When teaching is referred to as a science, it does not mean the methods of sciences but the way the teacher approaches in a scientific way the problems encountered in the dispatch of his responsibilities. This implies that the teacher is conversant with the scientific principles of teaching and applies it to every classroom problem. Good teaching therefore calls for the skilful use of appropriate pedagogical techniques selected on the basis of an intelligent understanding of its strengths and limitations and of the scientific principles behind it (Agbo and Yakubu 2002).

In the case of learning, many educators agree that learning and the learner are the central concerns of education (Houle, 1974; Cross, 1976). Manning (1976) points out, that it is comparatively easy to repress or avoid the existence of individual differences whenever it is convenient, economical or comfortable to do so; while Cross (1976) affirms that it takes no special knowledge of research to recognize that each person has a characteristic "style" for collecting and organizing information into useful knowledge because, as noted by Tyler (1949), two learners may participate in the same class, but have different learning experiences. Thus the need arises to vary teaching methods so as to meet the needs of the students taught.

MULTIPLE INSTRUCTIONAL STRATEGIES AND THEIR APPLICATION TO TEACHING ARCHITECTURE

The teaching method can be defined as a particular way of organizing pedagogical activities knowingly implemented according to certain rules in order to make learners reach specified objectives. Houle (1974) believes that the methods and strategies which are utilised in the classroom are very significant since they both convey content and are considered the heart of the educational format. Meanwhile the essence of teaching and its purpose are a steady flow of information going from the teacher to the students (Hight, 1979). Thus, any method of teaching that a teacher chooses to adopt should enhance

uninhibited flow of information and increase the productivity of the learners. Architecture, for many years, has been distinctive from other subject areas through its unconventional teaching methods, largely concentrated around a series of design projects (Akande 2004). Whilst students in other disciplines receive some teaching through the traditional methods of lectures, discovery, demonstration and discussions, architecture students spend most of their time in the design studio where they draw and build scaled model developments of their design projects. This method has invariably hampered teachers of architecture from being exposed to other teaching methods from other disciplines which could increase the intellectual potentials and academic productivity of their students. However, several teaching methods exist which teachers of architecture can adopt to ensure effective learning of their students. Pitt (1996) has identified ten instructional strategies which have been effectively used in the traditional classroom. These strategies are: learning format, lecture, discussion, self-directed learning, mentorship, small group work, the project method, collaborative learning, case study, and forum. A few of these strategies, and the possibility of applying them to teaching architecture, shall be considered.

1. Lecture Format

Olaitan and Agusiobo (1981) define lecture methods as an instructional teaching by which the teacher seeks to create interest, influence, stimulate, or mould opinion to promote activity, impart information or to develop critical thinking, mainly by use of lectures, with minimum class participation. According to Farrah (1990), the lecture format is one of the most frequently used instructional methods in adult education. This method is probably the most common form of education and it allows the educator to deliver a large amount of information in a short amount of time (Newcomb et al, 1993). Although Broadwell (1980) admits that the lecture format assumes the educator to be the expert; the paper however describes the lecture as an efficient way of imparting information in a scheduled way without

interruption, and with less planning than in most other teaching methods. In architecture, the lecture format is the most common means of instruction architecture lecturers know and use. This is partly due to their lack of exposure to other teaching methods. Since the lecture format is teacher-dominated and largely a one-way form of communication, especially from teacher to students (i.e. chalk and talk) with the students as passive recipients of information listening and writing down a few notes, and asking few or no questions (Agbo, 2000), it becomes easier for the lecturers to use. However, Cox (1994) suggests that, ideally, lecturers are only there to lay foundations, show the way, and ease the passage, as the student works through the subject.

Knowles (1950) proposes that a good lecturer is one who gets to know his/her students and develops the lecture according to the students' needs. Architecture lecturers, based on the knowledge of their students' needs, can effectively use the lecture format to develop their critical and innovative thinking. However, the lecture format will be most effective in accomplishing its specific purposes when used in combination with other instructional strategies.

2. Discussion Format

Brookfield (1990) describes this method as excellent for adult education. He explains that discussion is revered as the educational method which is the most participatory and the most respectful of learners since it encourages active, participatory learning. It encourages learners to analyse alternative ways of thinking and acting and, most importantly, assists them in exploring their own experiences so that they can become better critical thinkers. As Okebukola and Ahoje (2003) rightly observe, a lower knowledge gradient is assumed as students, like the teacher, are expected to contribute to information building during the class session. This method is particularly useful in an affective area and it promotes understanding and clarification of concepts, ideas, and feelings. That was why Brookfield (1990) further argues that

discussions should be as diverse as the learners involved. Examples of application of this method that can also be adopted by the architect-teacher include panel discussions, reviews, supervised study, brainstorming, idea incubation, conferences and interviews. Architecture students could be mandated by their lecturers to attend conferences on particular topics to be treated in the class and take down notes or organise panel discussions among themselves with the lecturer as the moderator on a new trend in architectural technology. This will encourage brainstorming and lead to idea incubation increasing their intellectual capacity as well as enhancing their academic productivity.

3. Mentorship

The role of a mentor is to empower students by helping to draw out and give form to what their students already know by introducing students to the new world, interpreting it for them, and helping them to learn what they need to know to flourish in it (Parks Daloz, 1990). The aim of mentorship is to promote the development of the learner. Thus a mentor serves as a guide rather than a provider of knowledge. Mentors in education teach by interpreting the environment and modelling expected behaviours. They also support, challenge, and provide vision for their students. Therefore, for the role of architect-teachers to be complete as educators, there is a need for them to serve as mentors to each of the students they teach. Mentors not only impart knowledge in the classroom to students, but there is also frequent, and convenient, communication through weekly or daily journals that can be of help to build the intellectual capacity and enhance academic productivity of the student and which could be exchanged between the mentor and the student.

4. Project Method

The project method as described by Agbo and Yakubu (2002) is the method of teaching which centres on an assignment of interest undertaken by an individual student, a group or a whole class. In this method, the

students are given a free hand to fulfil requirements with the teacher giving a guide only when necessary. According to Knowles (1950) projects are tasks that grow out of the training being carried on in a course. Projects can be done on an individual basis or within a group. For instance in architecture when applying project method, a topic such as pollution, can be broken down into integral components or sub-topics such as air pollution, water pollution, land pollution and noise pollution. Students can then be formed into groups and assigned the sub-topics on which to carry out investigations and produce reports e.g. on causes, effects, and prevention of the assigned type of pollution for presentation to, and discussion by, the entire class. This will stimulate interest and give students an opportunity to pursue their special interests. It will also enable the students to obtain practical experience and gain a sense of accomplishment. Likewise, this method will give room for independence work and enable the students to gain an in-depth knowledge of a specific topic as well as encourage and increase students' motivation to work as well as offer opportunity for creative ability. This will provide opportunity for learners to develop his/her initiative and eventually facilitate greater understanding of how to learn. Hence, real life projects either in design or theory are a potentially useful new vehicle of teaching and learning in architecture.

There are two essential components of a project (Good and Brophy, 1994): "a question or problem that organizes and drives activities, and the activities result in a series of products that culminate in a final product that addresses the driving question". The final products should be shared with others (instructor and other participants) and criticised. The feedback participants receive enables them to reflect on and extend their emergent knowledge and to revise their products if necessary. Many of the instructional strategies discussed here fall within the realm of group projects. Group projects can include simulations, role playing, case studies, problem solving exercises, group collaborative work, debates, small group discussion, and

brainstorming (Brookfield, 1990; Gilley, 1990; Marsick, 1990; Paulsen, 1995; Rogers, 1969). As with individual projects, participants in group projects should receive feedback in order to expose them to more diverse viewpoints.

5. Case Study

According to Marsick (1990), good adult education should be experiential. It should draw upon the past experience of participants and should be participatory in nature as well as have an action component, which is a link to future experience. The case study is a method that meets these criteria. Furthermore, he claims that the key to a successful case method is the selection of the right problem situation. According to her, the problem situation must be relevant both to the interests and experience level of learners and to the concepts being taught. The case report should include facts regarding the problem, the environmental context, and the characters of the people involved in the case. However, the case report should be factual, but should also contain the opinions and views of the people involved. Learners should have access to the problem solution, but not until they have reached their own conclusions and can then compare their results with the actual decision taken to resolve the problem.

The case analysis, according to Marsick (1990) can be carried out with the learners working independently or in groups. If groups are used, then the group should be provided the opportunity to brainstorm their perceptions of the case before discussion. The use of the Socratic Method is encouraged by Marsick (1990), a probing, critical discussion that raises new perspectives and digs for underlying assumptions that may not be apparent. In architecture, this teaching method can be adopted by asking students to carry out a case study for instance on the menace of collapse buildings in Nigeria and proffer solutions on their own based on the causes they have identified. This case study may not necessarily be a project or dissertation writing but can be used to teach proper construction procedures and process. One advantage of using the case method is that it

emphasises practical thinking. Just as in a real situation, learners are required to make decisions under time pressure with an inadequate stock of information. Marsick (1990) further believes that the case method assists learners in identifying principles after examining the facts of the case and then applying those principles to new situations; thus they learn to formulate problems as well as solve them. Case analysis is equally effective when used in combination with other instructional strategies.

6. Forum

Sisco (1990) defines the forum as an open discussion carried on by one or more resource persons and an entire group. Responsibilities of the moderator include guiding discussion during which the audience is encouraged to raise and discuss issues, make comments, offer information, or ask questions of the resource person(s) and each other. There are two variations of the forum: the panel and the symposium. The panel, according to Sisco (1990) is defined as a small group of three to six persons, who sit around a table in the presence of an audience and have a purposeful conversation on a topic in which they have specialized knowledge. Guided by a moderator, the panel is informal in nature, but allows for no audience participation. The symposium is a series of presentations given by two to five persons of notable authority and competence on different aspects of the same theme or closely related themes. Although the symposium is formal in nature, questions from the audience are encouraged once the presentations have been given. When considering this method for architectural teaching, experts from the profession outside the institution can be invited for a forum of discussion or symposium on a critical issue in architectural practice or building industry to expose the student to the practicalities of what they have been taught theoretically. An obvious benefit of this method, when applied to architectural teaching is that the symposium will give the architecture student-learners exposure to a variety of experts' viewpoints and offers an opportunity for them to clarify points made

by the speakers.

7. Field Trips

One of the methods of teaching science in higher education is taking the students out to the field to have first hand experience of happenings in natural and technical settings. Some of the concepts grasped cannot be had in the classroom. For example in architecture, certain construction technologies and processes cannot be understood except when construction sites are visited; such technologies and processes are usually not fully comprehended when they are only theoretically discussed in the classrooms. Therefore, the field trips/work offer experiences that can be used to introduce new topics, thus facilitating future instruction for the students while the experiences gained are vivid, lasting and often bring more meaning to the students.

8. Computer supported method (Electronic discussions)

In contemporary computer-supported education, the electronic discussion represents a mode of asynchronous communication. This communication doesn't require the physical or virtual presence of all participants at once, it doesn't happen realtime and it permits certain delays in interaction. They are widely used in many educational domains, like business, literature, and languages (Pascale, 2002). The interaction within an electronic forum is a demonstration of the virtual presence of students in the virtual classroom. While the presence of the tutor can be manifested in many other ways (by frequent publishing and updating course materials, adding the latest course announcements, setting different tasks etc), the presence of the student is materialised just in contributing his messages on the discussion board. Like in the traditional method, some students are happy just to observe without an active participation. However, after a couple of messages they normally understand that without their posted contributions, they practically do not exist in the virtual classroom. Architecture, by its nature, presumes a high level of interaction among participants in its conceptualisation and

realisation (Radojeric, 2003). If the intention of architectural education is, above all, to prepare future architects to communicate their ideas clearly and to interact effectively within creative teams, then the implementation of the online education technology in existing educational concept is a step toward preparing future architects for the life long professional development on the global market.

Although there are many particularities in architectural education, there is a range of topics taught similarly as in many other fields. Therefore, it is acceptable to adopt some previous experiences in the application of internet tools from similar professional areas (construction, civil engineering, mechanical engineering, industrial design, fine arts, sociology etc). There is a range of issues that could be communicated via an electronic discussion. They include (but are not limited to): presenting and discussing the design concepts, commenting on design projects, simulation of the negotiation processes related to architecture, etc. Adopting this method will actually challenge our approach to teaching architecture and enlarge the intellectual and academic horizon of our students in the 21st century.

RECOMMENDATIONS

The recommendations address two issues: the development of the architect-teacher and the points to note in developing a new approach to the teaching of architecture.

The architect-teacher can develop himself in the following ways:

- Having an understanding that instructional strategies are most effective when employed specifically to meet particular learning goals and objectives. This means that the tendency to apply the same method in different situations should be discontinued. This should result in varying teaching methods. Variety reawakens students' involvement in any course. Lecturers should break the routine by incorporating a variety of teaching activities and methods in their course. For instance, the use of audiovisuals, projector

and video for could be used to teach courses like history of architecture, construction technology and latest development in modern architecture.

- Effective course design can begin with asking and answering the key question: what are the major learning goals and objectives for this course? Once these goals and objectives have been identified and clearly articulated, the question of which learning strategies, activities, and experiences to employ can be addressed.
- Actively engaging in cross-disciplinary exchanges to facilitate the exchange of ideas and methods with other disciplines.
- Encouraging students to express their creativeness in a way that can be logically articulated and linked to an understanding of the theories of design, use of materials, construction techniques and building structure.

Taking into account the varied learning styles and instructional strategies, architectural educators can facilitate and adopt effective teaching methods geared towards achieving the aim and specific objectives of architectural education. While doing this the following points should be considered:

- i. Proper dissemination of knowledge: Teaching should contain up-to-date information and ideas that can foster the creativity of architectural students.
- ii. Students should be taught with varying teaching methods in a way that they will develop the capability to use ideas and information appropriately.
- iii. Students should be taught to develop critical and creative faculties. Teaching students to use their critical faculties means that they will be less likely to be taken in by assumptions assertions and unsupported statements.
- iv. Teaching methods should facilitate the personal development of students. Teaching methods should be varied to facilitate students' personal development which imparts in a major way on the effectiveness of people in their professional roles.

- v. Teaching methods should encourage students to be responsible for, and in control of, their own learning and to make the conceptual change from learning a subject or discipline to becoming a problem solver, independent of their teacher's attitudes, beliefs and methodologies.

CONCLUSION

The challenge for architectural education in Nigeria of the 21st century will be to endeavour that all students develop their full intellectual and creative potential in a world of changing media. Alternative methods of lecture delivery, as well as innovation and experimentation in various teaching methods, should be considered and encouraged because of their potential benefits. This is largely because the greater the focus on the quality of teaching in architectural education, the greater will be room for improvement. As information technologies (the internet, multimedia, video conferencing and local networks) offer incredible potential to transform architecture and its educational systems, the application of emerging tools (e.g. computers) and teaching modes (e.g. distance learning) should be encouraged; especially now that many of the early weaknesses with these technologies have been overcome and a growing number of educators in other disciplines have incorporated technological methods into their teaching.

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