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# Impediments to Acquisition of Building Drawing Skills by Undergraduate Technology Education Students in Nnamdi Azikiwe University

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**Abstract:** The study determined facility, teacher's and student's impediments to the acquisition of building drawing skills by undergraduate technology education students in Nnamdi Azikiwe University. Three research questions guided the study. The population of the study was 52 students. Census sampling technique was used for the study due to relatively small size of the population. The instrument used for data collection was 15 item structured questionnaire developed by the researchers. The instrument was validated by three experts. The reliability of the instrument was ascertained using Cronbach Alpha coefficient which gave 0.81. The researchers administered fifty-two copies of the questionnaire and retrieved the same number of copies after two weeks. Descriptive mean was used to analyze the data collected. The findings revealed among others that inadequate building drawing textbooks, lack of student-teacher interaction during building drawing lectures, and class sessions tend to be boring owing to non-use real building drawing plans while teaching. It was concluded that technology education learning facility should be kept in good order, teachers provided with all the teaching resources with incentives and students should spent quality time in learning the course. The study recommends among others that teachers should develop a means of arousing and sustaining students' interest in learning building drawing skills while the students should embrace self-motivation in their efforts to comprehend and assimilate what they learnt.

**Key words:** impediments, building drawing, skills, technology education students

## INTRODUCTION

Technology education is the study of purposeful application of knowledge, skills and experiences to add values to products and services to improve human needs. This form of education is geared at exploring the benefits of science and technology and as well using them to better the life of man. It was introduced at different levels of education (Junior secondary, senior secondary and tertiary levels) to inculcate in learners the skills, knowledge and technical knowhow needed to improve and optimize their critical thinking and problem-solving abilities.

Similarly, Florida Agricultural and Mechanical University, FAMU (2020), noted that technology education is education that provides students the knowledge about different technology and engineering concepts as they relate to human world. Technology education involves engineering, manufacturing, electrical-electronics, building, mechanical, and automobile technology among others. Furthermore, technology education is the in-depth study of science, mathematics and technology alongside their respective applications. The foregoing views connote that technology education encompasses the fundamental knowledge, requisite skills and technical knowhow in creating new products or improving an existing one to make life easier and comfortable. In the same vein, Yeung (2020) posited that technology education focuses on how to use the products of technology to better life and make society worth living. That is to say that technology education is aimed at developing



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foundational skills like critical thinking and problem-solving ability among others by students to enable them to perform optimally in their fields (John, 2020). Similarly, technology education aims at building skilled workforce who would engineer national development through industrialization. Hence, technology education as a programme of study was configured to produce trained manpower with the technical knowledge necessary for national development and self-reliance (Federal Government of Nigeria, FGN, 2014).

Technology education programme is a four-year programme which at its completion, one is awarded a Bachelor of technology in industrial and technology education (BTech). The programme is geared towards the fulfillment of the need for professionally qualified technical teachers who can impact technical knowledge and vocational skills on their students, thereby contributing to the economic development of the nation (UNN, 2020). Similarly, Schools of Science and Technology (2016) posited that technology education programme is aimed at producing graduate and postgraduate students that are employable, enterprising and self-reliant; and also, be able to deploy appropriate techniques to solve industrial related problems, champion technological innovations in the field.

Passnow (2019) opined that skill is a term that includes knowledge, competences and the ability to carry out tasks professionally. Hence, in order to carry out a specified task efficiently and accurately, one needs to possess the appropriate skills that will enable him to do so. The Business Dictionary (2021) defined skill as an ability and capacity acquired through systematic and purposeful efforts to accurately perform a given task or activity. Additionally, Skill acquisition is the act of being trained in a particular task, job or function and becoming expert in it as this will enable one to perform a task with a high level of accuracy and with little time waste (Development Education Center, (DEC), 2020). Skills could be acquired or gained through practice, work experience and also from studies. Skill acquisition is as important to man's survival as water is needed for life. This is because the individual who has acquired building drawing skills can be self-reliant and independent. Furthermore, Career Guide states that skills differ as some are easier to acquire than others, also, some require a little mental engagement to master while others require a lot more practice to perfect. Again, skills could be categorized into job skills, leadership skills, life skills and so on. Job skills are those that are used in workplace to ensure that the task at hand is carried out efficiently. Technical skills like building drawing, sketching, blueprint reading and manual dexterity are examples of job skills.

Drawing as defined by Wulf and Lewthwaite (2018), is the linear realization of visual objects, concepts and or emotions which is characterized by emphasis on form and shapes with the use of instruments like pencil, charcoal and so on. Similarly, building drawing is a type of drawing that visually communicates ideas on how a structure should function or is constructed. It provides the builder or contractor with accurate details about the structure to be built. Building drawing is simply the technical drawing of a house, a building or any kind of structure. It is a schematic representation of a building used by the architect in designing and documenting buildings (Anderson, 2018). Drawing can be represented in two-dimensional (2D) or three-dimensional (3D) drawings. In the representation of a structure, the drawings are made of a set of conventions which includes pictorial view (floor plan, elevation and sections), units of measurements and scales and so on. Several instruments are used to produce building drawing, some of which are pencils, a pair of compasses, protector, scale rule, drawing boards, papers and so on. Presently, computer-based programs like AutoCAD, ArchiCAD and so on can be used to produce such with more accuracy and in lesser time spent.

Building drawing as a course is offered at Nnamdi Azikiwe University in the department of technology education. The course exposes students to the basic principles of drawing building layouts, graphical representation of building elements, the basic principles of dimensioning building layouts among others. Also, the students are taught the rudiments of the representation of details of working drawing of simple buildings, and the practices provided through practices to acquire the skills (Kehinde and Adewuyi, 2017).

Building drawing is one which when acquired allows the draughtsman or the student to graphically represent the idea in mind to enable the contractor or the builder to bring the idea to reality. It is taught as a course of study in which the lecturer provides the students with a sequential approach to the world of drawing. First, the students are introduced to the basics of technical drawing which includes; types of lines and their uses, pencil types and their uses, etc., after which they are given the

specifications of different aspects of building including standard wall sizes, doors and windows sizes inter alia. Amidst all issues highlighted in the preceding submissions, translating building drawings into reality apparently grapples with certain impediments.

An impediment is anything that impedes or interferes with the smooth or proper running of an activity. Macmillan dictionary (2020) defines impediment as something that makes it more difficult for someone to do something or more difficult for something to take place. Also, impediment could be defined as anything whether physical or intangible that slows or blocks progress. Therefore, it is imperative to determine impediments to the acquisition of building drawing skills by undergraduate technology education students in Nnamdi Azikiwe University.

**Statement of the Problem**

In our higher institutions today, it appears that a good number of students offering building drawing are not willing to practice beyond the lectures given by their lecturers. This seems to be a result of inadequate acquisition of building drawing skills. Some students on completion of their course of study, often, could not be able to produce a standard building drawing (Okoye & Auta, 2020). Most times, their designs are of poor quality with little or no improvement on contemporary structures in society, indicating that the students apparently lack creative capabilities to produce designs that are good enough to satisfy the needs of clients. Sequel to the foregoing, one may possibly assume that the students only possess more of theoretical knowledge of building drawing but are lacking in practical aspects of the skillset.

Unfortunately, it could be the reason most of the graduates in this field seem to lack not only the courage to venture into the labour market and compete favorably, but also, the expertise to transfer knowledge to others (Ogbu, 2019). Undoubtedly, this has generated a lot of concerns in the field, including dwindling enrolment rate, lack of interest among the prospective students and those already pursuing a degree among others. Although certain efforts have been made to mitigate this situation. Against this backdrop, the study aimed at dissecting the impediments to the performance of graduates of industrial technology education in building drawing, as well as bridges the existing gap in knowledge in this domain.

**Research Questions**

The following research questions guided the study:

RQ1: What are the facilities related impediments to students' acquisition of building drawing skills?

RQ2: What are students related impediments to students' acquisition of building drawing skills?

RQ3: What are teachers related impediments to students' acquisition of building drawing skills?

**METHODS**

The study adopted descriptive survey research design. According to Osuala (2015), descriptive survey research design includes the collection of detailed description of public opinion on an existing phenomenon with the intent to justify current conditions and practices to make better plans for improvement. Descriptive survey research design is suitable for this study because it uses questionnaire to elicit the opinions of respondents on the impediments to building drawing skills acquisition by undergraduate technology education students. The population of the study is 52 comprises of 400 level technical education students (Regular, CEP and Sandwich) in Nnamdi Azikiwe University. Census sampling technique was used for the study due to relatively small size of the population. The instrument used for data collection was a questionnaire structured on 4-point rating scale of Strongly Agree (SA), Agree (A), Disagree (D), Strongly Disagree (SD). The data generated from the questionnaire was analyzed using mean and standard deviation. The outcome was interpreted based on the statistical real limit of numbers as presented below:

| Response | Real Value | Lower Limit | Upper Limit |
|---|---|---|---|
| Strongly Agree (SA) | 4 | 3.50 | 4.00 |
| Agree (A) | 3 | 2.50 | 3.49 |
| Disagree (D) | 2 | 1.50 | 2.49 |
| Strongly Disagree (SD) | 1 | 1.00 | 1.49 |

## RESULTS

### Facilities related impediments to students' acquisition of building drawing skills

**Table 1: Mean rating on facilities related impediments to students' acquisition of building drawing skills**

| S/N | Items | Mean | Remarks |
|---|---|---|---|
| 1 | Inadequate building drawing textbooks to search for new ideas. | 3.25 | Agreed |
| 2 | Study existing buildings in your environment to appreciate their design | 1.70 | Disagreed |
| 3 | Practice regularly to perfect ones drawing skills | 3.00 | Agreed |
| 4 | Procure the necessary instruments required for practice | 3.52 | Agreed |
| 5 | Engage in peer group discussions about buildings | 1.90 | Disagreed |
| 6 | Feel reluctant to practice | 2.93 | Disagreed |

The data presented in Table 1 revealed that the items 1, 3 and 4 have mean ranges of 3.25, 3.00 and 3.52 which indicated that there are inadequate building drawing textbooks to search for new ideas. Also, that they practice regularly and procure the necessary instruments required for practice. On the other hand, items 2, 5 and 6 have mean rating of 1.70, 1.90 and 2.93 showing that the respondents do not; study existing buildings in their environment, engage in peer group discussions on building drawing and also they feel reluctant to practice.

### Students related impediments to students' acquisition of building drawing skills

**Table 2: Respondents' mean rating on the students related impediments to students' acquisition of building drawing skills**

| S/N | Items | Mean | Remark |
|---|---|---|---|
| 7 | You spend more time on social media chatting | 4.47 | Disagreed |
| 8 | You feel discouraged to continue drawing after several poor attempts | 3.71 | Agreed |
| 9 | Students do not make out time to practice | 1.68 | Disagreed |
| 10 | Students have all necessary building drawing instruments to practice | 2.34 | Agreed |

The data presented in Table 2 revealed that the items; 8 and 10 have mean ranges of 3.71 and 2.34. This indicates that the respondents feel discouraged to continue drawing after several poor attempts and that students have all necessary building drawing instruments to practice. Whereas items 7 and 9 have a mean range of 4.47 and 1.68. It could thus be deduced that the respondents disagreed with this item, hence, the students do not spend more time on social media chatting and students do not make out time to practice.

### Teachers related impediments to acquisition of building drawing skills

**Table 3: Respondents' mean rating on the teachers related impediments to acquisition of building drawing skills**

| S/N | Items | Mean | Remark |
|---|---|---|---|
| 11 | No room for student -teacher interaction during lectures | 3.25 | Disagreed |
| 12 | Building drawing teachers make the class boring | 3.71 | Agreed |
| 13 | Building drawing teachers do not use real building plans while teaching | 3.89 | Disagreed |
| 14 | The teacher simplify the course content to the students level of under | 3.00 | Agreed |
| 15 | The teacher gives assignments on what he has not taught | 2.49 | Disagreed |

The data presented in Table 3 revealed that the items; 12 and 14 have mean ranges of 3.71 and 3.00 indicating that the respondents agreed with these items, on the other hand, items 11, 13 and 15

had mean scores of 3.25, 3.00 and 2.49. This shows that the respondents disagreed that the students did not make out time to practice and also that they did not have all the necessary drawing instruments.

**DISCUSSION**

The findings from Table 1 revealed that there were adequate Internet facilities at the students' disposal. There were also inadequate textbooks and other sources of literature to refer to, in order to acquire more knowledge on building drawings. The students also engage in regular practice to improve their skills and procure the necessary instruments to do so. However, they did not engage in peer group discussions on building drawings, neither did they observe or study existing buildings to understand their designs. Building drawing is a tedious activity which requires a high degree of concentration to yield the necessary outcome; the students after spending much time and effort to practice, tends to be demoralized when the outcome of their effort yields little or no progress after several attempts. This findings concurred with Auta and Onwusuru (2022) who stressed on the role of facilities in skills acquisition programmes.

It was discovered from the findings in table 2 show that teachers in the course of presenting building drawing course content to the students breaks them down to the students' level of understanding which will enable them to grasp what have been taught. They also provide no room for student-teacher interaction to compensate for their questions on issues not clearly understood. The assignments given to them at end of each lesson was always based on what is being taught to them. On the other hand, the teacher made building drawing classes to be boring. The teachers did not make use of real building plans while teaching; this did not bridge the gap between classroom learning and real-life situations. The students in the end will find it difficult to interpret a building drawing plan when the need arises.

From Table 3, the findings show that the students spend much time on social media chatting up friends instead of spending quality time on their drawing board practice. Similarly, the frequent occurrence of power outages impairs the consistent practice of the students; thus, without power at night, student often find it difficult to draw or practice drawing, hence they end up engaging in other activities. It is also unfortunate that an appreciable number of students do not possess the necessary tools with which to practice drawing, and thereby, preventing them from mastering of the requisite skills.

**CONCLUSION**

Several factors were identified to hamper students' acquisition of the building drawing skills, which include students lack of motivation to continue practicing after several poor attempts. Conclusively, channeling appropriate policy action could foster positive ways in learning to enable students acquire requisite skills in building drawing to ensure sustainability and accomplishment in the profession.

**RECOMMENDATIONS**

From the findings of this study, the following recommendations were made:

1. Teachers should endeavour to make use of real building drawing plans while teaching. This will enable the students to practice building drawings to attain mastery.
2. Teachers should embrace effective strategies to arouse and sustain the interest of the students as this would enable them to remain committed to developing interest in drawing.
3. Students should develop ways of self-motivating themselves to overcome the barriers occasioned by loss of interest due to several poor performances.
4. The government should provide schools with state-of-the-art drawing studios and steady power supply as this will significantly reduce the frustration faced by students after school hours especially at nights.

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