4th World Congress on Technical and Vocational Education and Training (WoCTVET), 5th–6th November 2014, Malaysia

Students’ psychosocial perception of automobile technology learning environment and attitudinal outcomes in north-eastern Nigeria tertiary institutions

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Abstract

Students’ perception of their learning environment is a crucial factor in improving quality of learning. Several researches revealed that students’ perception of the learning environment has a significant impact on the students’ academic performance and attitude. This study investigated relationships between students’ perception of automobile technology learning environments and their attitude towards automobile technology in north-eastern tertiary institutions of Nigeria. The research design of the study was a correlational survey design and the sample comprised 474 students offering automobile technology as a course in the institutions. The data were collected using ATLEI and ATAQ and these were analyzed using descriptive statistics, simple correlation, and multiple correlation analysis. The findings revealed that the automobile technology learning environments remain traditional and students anxiety-dominated the learning environment in the north-eastern tertiary institutions of Nigeria. It was recommended that lecturers in the institutions of learning should be sensitized on the importance of students’ perception of learning environment and enhanced student-student and student-lecturer relationships in their institutions.

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Peer-review under responsibility of Faculty of Technical and Vocational Education, University of Tun Hussein Onn Malaysia.

Keywords: perception; psychosocial; learning environment; attitude, automobile technology.

1. Introduction

The concern of governments and educational stakeholders in Nigeria and other developing countries is on improving the quality of education towards meaningful development of the economy (Aladejana and Aderibigbe, 2010).
There have been a lot of debates among researchers and educators and efforts by the past and the present
governments on factors affecting quality of education in Nigeria. A growing number of evidence suggested that a
host of factors that seriously influence the quality of education include the nature of the existing learning
environment in the tertiary institutions of Nigeria. According to Clayton (2007) good quality learning environment is
considered to be the heart of meaningful teaching and learning that should be provided in any institution of learning.
In addition Dorman and Fraser (2009) stated that the results of studies conducted for the past 30 years provided
strong evidence that the quality of classroom environment in schools is significant of student learning even when a
comprehensive set of other factors were held constant. Thus, the quality of learning environment and the way it is
being perceived by the students has a significant impact on the students’ performance and attitude. It is unfortunate
to observe that the quality of education being offered to many automobile technology education students in the
tertiary institutions of Nigeria is better imagined than said as most students are not learning the courses of any value
from personal or employment prospective.

There have been a number of studies (Allen and Fraser, 2007; Charik, 2006; Martin-Dunlop and Fraser, 2007;
Wolf and Fraser, 2008; Zandvliet and Buker, 2003) that investigated the association between learning environment
and student’s performance, attitude and changes on how to improve the qualities of the learning environment in
Australia, Asia, USA and many developed countries. Most of these investigations suggested that students’ psycho-
social perceptions of the classroom environments are among the important determinants or predictors of academic
performances and attitudes in schools. These studies involved mainly students in science, mathematics and computer
sciences. It can be observed that very little researches in the area of vocational and technical education and perhaps
almost none has been conducted in the area of automobile technology in the tertiary institutions in Nigeria (Ajuar,
2006; Aladejana and Aderibigbe, 2007; Henderson and Fisher, 2008; Koopman, Teune and Beijard, 2011). It is
against this backdrop that this study aimed to investigate students’ perception of the learning environment as it
affects their attitude in automobile technology in north-eastern Nigeria tertiary institutions.

1.1. Objectives of the Study

The main purpose of this study was to determine students’ psychosocial perceptions of their actual automobile
technology learning environments in tertiary institutions of Nigeria. Specifically, the study seeks to achieve the
following objectives:

a) To determine students’ perceptions of their actual automobile technology learning environments in north-
eastern Nigeria tertiary institutions.

b) To determine students’ attitude towards automobile technology course in north-eastern Nigeria tertiary
institutions.

c) To determine the association between students’ perceptions of their actual automobile technology learning
environments and their attitude towards automobile technology course in north-eastern Nigeria tertiary
institutions.

2. Review of relevant literature

A key to the advancement of learning environment studies could be rooted in the work of Lewin in 1936 and
Murray in 1938 and their followers (such as Pace and Stern) on the relationship of an individual and the
environment (Fraser, 1998: Koul, Fisher, Shaw, 2011). Lewin was of the belief that all behaviours and experience
are functions of the person and his/her environment. His formula B=f (P, E) indicates that a person's behaviour
reflects the environment and the person within the environment. The work of Lewin was followed by Murray in
1938, who proposed a need-press model which allows the analogous representation of person and environment in
common terms (Fraser, Aldridge and Adolphe, 2011). Personal needs refer to motivational personality
characteristics representing tendencies to move in the direction of certain goals, while environmental press provides
an external situational counterpart which supports or frustrates the expression of internalized personality needs.
Stern, Stein, Bloom and Pace and Stern and Genn in Dorman (2002) extended Lewin’s work to develop a need-press
theory in which persons are conceptualized in terms of their psychological needs and the environment in terms of its
press. Needs are considered to be the important determinants of behavior within the individual. According to
Murray, ‘the press of an object is what it can do to the subject - the power it has to affect the well-being of the
subject in one way or another’. Pace suggested that an environment’s crucial aspects are its overall atmosphere or characteristics, the kind of things that are rewarded, encouraged, emphasized, the style of life which is valued in the community and is most visibly expressed and felt. Within this theory, needs and press interact to produce and guide behaviour. In a school, an individual student or teacher has particular needs and the school’s press either satisfies or frustrates these needs. Stern extended need-press theory to develop a theory in which the degree of person-environment congruence is related to student outcomes. This theory has been the basis for person-environment fit studies in which the congruence between actual and preferred environments is assessed and related to student outcomes (Fraser, 1994). Automobile technology like many other disciplines experiences a very high level of technological development and challenges which demand that industries and training institutions must cope with the ongoing innovative and technological changes that require it to continually upgrade their existing skills and knowledge of its participants, (Kolo, 2006). As such the role of tertiary institutions in the development of human resources for research and maintenance of existing systems cannot be overemphasized. Particularly the understanding of principles of mechatronics and use of diagnostic equipment or computers can make them up-to-date in the global transport technology (Folayan, 2011).

3. Methodology

The research design of the study was a correlational survey design. The sample for data collection comprised 474 students offering Automobile Technology as a course obtained through simple random sampling technique. The instruments used for data collection were actual Automobile Technology Learning Environment Inventories (ATLEI) and Automobile Technology Attitude Questionnaire (ATAQ). The Cronbach’s alpha reliability of the instruments’ scales ranged from 0.60 to 0.92. Also the discriminant validity of the instruments ranged from 0.31 to 0.73. The data was collected through administration of the questionnaires. Data collected from the study was analyzed using descriptive statistics (mean and standard deviation), simple correlation, and multiple correlation and regression analysis.

4. Result

4.1. Students’ perceptions of actual automobile technology learning environments in north-eastern Nigeria tertiary institutions

Table 1 shows students’ perceptions of the actual automobile technology learning environment in north-eastern Nigeria tertiary institutions for all the eleven scales of the ATLEI. Two way unit of analysis of results were carried out; individual and class units, to show the students’ perceptions of the learning environments. An average item mean scores ranging from 2.86 to 3.49 and standard deviation ranging from 0.23 to 1.04 indicated that practices which include lecturer support, differentiation, material environment and computer usage scales usually take place from-time-to-time in the automobile technology learning environments. Mean rating scores ranging from 3.50 to 3.99 with standard deviation ranging from 0.21 to 0.85 as practices that often take place in the learning environment and these include students’ cohesiveness, task orientation, investigation, and cooperation scales.

Therefore, this implies that the automobile technology students perceived their classroom environment as more social and traditional in nature in the north-eastern Nigeria tertiary institutions.
Table 1: Students’ perception of actual automobile technology learning environments in tertiary institutions of Nigeria

| ATLE Scales                  | No. of Items | Unit of Analysis | Average  | Item | Average Item SD |
|------------------------------|--------------|------------------|----------|------|-----------------|
| Students cohesiveness (SC)   | 5            | Individual       | 3.76     | 3.81 | 0.78            |
| Lecturer Support (LS)        | 4            | Individual       | 3.49     | 3.43 | 0.80            |
| Involvement (INVT)           | 7            | Individual       | 3.50     | 3.47 | 0.73            |
| Task Orientation (TO)        | 8            | Individual       | 3.88     | 3.99 | 0.73            |
| Investigation (INVGTN)       | 8            | Individual       | 3.54     | 3.50 | 0.70            |
| Cooperation (COOP)           | 7            | Individual       | 3.71     | 3.73 | 0.77            |
| Equity (EQT)                 | 8            | Individual       | 3.71     | 3.80 | 0.78            |
| Differentiation (DIFF)       | 6            | Individual       | 3.21     | 3.05 | 0.91            |
| Material Environment (ME)    | 7            | Individual       | 3.33     | 3.17 | 0.88            |
| Integration (INTEGN)         | 5            | Individual       | 3.61     | 3.69 | 0.90            |
| Computer Usage (CU)          | 13           | Individual       | 3.01     | 2.86 | 1.04            |

N= 474 automobile technology students in 17 classes of tertiary institutions in Nigeria

4.2. Students’ attitude towards automobile technology course in north-eastern Nigeria tertiary institutions

Table 2 shows students’ attitude towards automobile technology in tertiary institutions of Nigeria. As shown in the table, the average mean ratings ranged from 3.46 to 4.03 and standard deviations ranged from 0.22 to 0.96. The result indicated that the students are in agreement with the scales enjoyment, usefulness of automobile as a career and usefulness of automobile as a course but uncertain with the scale of anxiety. Therefore, these results revealed that despite their being anxious the students have a positive attitude towards automobile technology course in north-eastern Nigeria tertiary institutions.

Table 2: Students’ attitude towards automobile technology course in automobile technology learning environments

| Scale                           | No. of Items | Unit of Analysis | Average Item Mean | Average Deviation | Std |
|---------------------------------|--------------|------------------|-------------------|-------------------|-----|
| Anxiety                         | 5            | Individual       | 3.46              | 0.75              |     |
| Enjoyment                       | 5            | Individual       | 3.71              | 0.75              |     |
| Usefulness of Automobile as a Career | 3            | Individual       | 3.91              | 0.96              |     |
| Usefulness of Automobile as a Course | 9            | Individual       | 3.78              | 0.76              |     |

N= 474 automobile technology students in 17 classes of tertiary institutions in Nigeria

3.3. Association between students’ perceptions of actual automobile technology learning environments and their attitude towards automobile technology course in north-eastern Nigeria tertiary institutions

Tables 3 showed the simple correlation (r) and multiple correlations revealed that at both the two unit of analysis an association existed between the scale of anxiety of the ATAQ and the scales of student cohesiveness, lecturer support, involvement, cooperation, differentiation, material environment and computer usage of the ATLEI. Also a significant association existed between the scale of enjoyment of the ATAQ and the scales of involvement, investigation and equity. But, there is no significant association between the scale of usefulness of automobile technology as a career/prospect and as a course of the ATAQ and the scales of the ATLEI.

Also the result as shown in Table 3 revealed that students’ cohesiveness, lecturer support, task orientation,
investigation, cooperation and differentiation contributed in predicting the extent of anxiety, enjoyment and automobile technology as a career/prospect. In individual unit of analysis, a multiple regression of 3%, 3%, 5%, and 4%, and in class unit of analysis a multiple regression of 97%, 59%, 65% and 49% respectively of the variance in students’ attitude towards automobile technology scales were attributable to the students’ perception of the actual automobile technology learning environment.

These suggest that with an exception of anxiety scale, there is no significant relationship between students’ perceptions of their actual automobile technology learning environments and their attitudes towards automobile technology in north-eastern Nigeria tertiary institutions.

Table 3: Association between students’ perceptions of their actual automobile technology learning environments and attitude towards automobile technology course

| ATLEI Scales | Unit of Analysis | Anxiety | Enjoyment | Career/Prospect | Auto as a Course |
|-------------|-----------------|---------|-----------|----------------|-----------------|
| SC          | Individual      | -0.00   | 0.04      | 0.06           | 0.12*           | 0.03            | 0.12*           | 0.03            | 0.10            |
|             | Class           | 0.65**  | 0.67**    | 0.42           | 0.32            | 0.22            | 0.40            | -0.17           | -0.39           |
| LS          | Individual      | -0.02   | -0.05     | -0.03          | -0.07           | -0.07           | -0.08           | -0.03           | -0.05           |
|             | Class           | 0.52*   | -0.49*    | 0.20           | 0.14            | 0.03            | -0.35           | 0.01            | 0.58            |
| INVT        | Individual      | -0.04   | -0.15     | -0.01          | -0.09           | -0.07           | -0.10           | -0.01           | -0.04           |
|             | Class           | 0.77*   | -0.34     | 0.52*          | 0.81            | 0.10            | -0.47           | 0.13            | 0.61            |
| TO          | Individual      | -0.04   | -0.06     | -0.04          | -0.12           | -0.05           | -0.03           | -0.06           | -0.11           |
|             | Class           | 0.03    | 0.80*     | 0.38           | -0.32           | 0.18            | 0.14            | -0.07           | -0.45           |
| INVGTN      | Individual      | -0.01   | 0.02      | 0.00           | 0.01            | -0.08           | -0.06           | -0.02           | -0.01           |
|             | Class           | 0.39    | 0.69**    | 0.57*          | 0.39            | 0.10            | 0.28            | 0.03            | -0.40           |
| COOP        | Individual      | -0.04   | 0.13      | 0.07           | 0.19*           | -0.04           | 0.13            | 0.02            | 0.09            |
|             | Class           | 0.54*   | 0.66**    | 0.40           | -0.46           | 0.27            | 0.34            | 0.04            | -0.46           |
| EQT         | Individual      | -0.04   | -0.05     | -0.03          | -0.07           | -0.08           | -0.07           | -0.06           | -0.10           |
|             | Class           | 0.16    | -0.29     | 0.48*          | -0.03           | 0.27            | 0.50            | 0.01            | 0.35            |
| DIFF        | Individual      | 0.06    | 0.08      | 0.05           | 0.06            | 0.04            | 0.11            | 0.03            | 0.05            |
|             | Class           | 0.60*   | 0.31*     | -0.30          | -0.17           | -0.30           | -0.95           | 0.26            | -0.33           |
| ME          | Individual      | 0.07    | 0.08      | 0.03           | 0.02            | 0.07            | -0.10           | 0.04            | 0.04            |
|             | Class           | 0.62**  | 0.39      | -0.14          | -0.31           | -0.14           | -0.12           | 0.06            | -0.48           |
| INTEGRN     | Individual      | -0.00   | -0.03     | 0.00           | -0.01           | -0.04           | -0.04           | 0.01            | 0.06            |
|             | Class           | 0.44    | 0.07      | 0.28           | 0.40            | 0.28            | -0.11           | 0.32            | 1.03            |
| CU          | Individual      | 0.07    | 0.04      | 0.03           | 0.01            | 0.07            | 0.10            | 0.04            | 0.00            |
|             | Class           | 0.55    | 0.09      | 0.04           | -0.19*          | 0.04            | 1.13            | 0.14            | -0.37           |
| Multiple    | Individual      | 0.18    | 0.03      | 0.18           | 0.03            | 0.21            | 0.05            | 0.16            | 0.04            |
| Correl. (R) | Class           | 0.99*   | 0.97*     | 0.77           | 0.59            | 0.81            | 0.65            | 0.70            | 0.49            |

*R<0.05  **P<0.01 N= 474 automobile technology students in 17 classes of tertiary institutions in Nigeria

5. Discussion

The finding of the study revealed that the students were not satisfied with the level of their lecturer support, differentiation, material environment and computer usage in their automobile technology classroom environment. Among the factors affecting students’ attitudinal outcomes in schools include teacher-student relationship, lecturers’ attitude and their competencies and the nature of the learning environment. This study agrees with that of Adojuyigbe and Bolaji, (2011); Uwaifo, (2010) and Umunadi (2011) that the dearth of facilities and equipment as well as their inadequacy are among several factors that militate against the effectiveness of technological courses in Nigerian educational institutions. A possible explanation for this finding could be that many teachers are still unable to integrate computer usage into their teaching and learning processes, the methods of instructions remain paper-based (Oguzor, 2011). Most of these institutions are not adequately equipped with computers in their classrooms regardless of using it for teaching purposes.

Moreover, the findings revealed that despite their anxiousness, the students have a positive attitude towards automobile technology course in tertiary institutions of Nigeria. This supported the findings of Charik (2006) who stated that students experience a feeling of anxiety, their attitude towards the course they were offering is positive. The result implies that the students valued and appreciated automobile technology as important course in tertiary
institutions of Nigeria.

The bivariate associations between each scales of the ATAQ (anxiety, enjoyment, career/prospect and attitudes towards automobile as a course) and each of the ATLEI scales revealed that a significant association existed between the scale of anxiety and the scales of student cohesiveness, lecturer support, involvement, cooperation, differentiation, material environment, and computer usage. However, there was a significant association between the scale of enjoyment and the scales of involvement, investigation and equity. As such with an exception of task orientation and integration the students’ anxiety in learning automobile technology course is influenced by their perception of the learning environment Anxiety as a feeling of tension can cause one to forget and lose self-confidence, incapable of doing activities and classes that have to do with various courses which may result in intellectual problems, (Ajayi, Lawani and Adeyanju, 2011; Olatoye 2010).

6. Conclusion

This study revealed that, traditional nature of the learning environment is among the factors affecting quality of education in Nigerian tertiary institutions. Similarly, the learning environment is characterised to be more social and the major factor affecting students’ attitude towards automobile technology was anxiety. Students’ perception of the actual automobile technology learning environment has not contributed in improving students’ attitude towards course in Nigeria tertiary institutions. These, in turn affect students’ academic performance and their attitude in Nigerian tertiary institutions.

6.1. Recommendations

a) The lecturers should be sensitized on the importance of enhanced students’ perceptions in the tertiary institutions of Nigeria. Adequate time needs to be provided for interaction and discussion of ideas among the students.

b) Computers and other ICT facilities should be provided into the automobile technology classrooms of the tertiary institutions.

c) The existing actual automobile technology workshops should be made to capture some of the operations and activities needed by the immediate labor-market within the location of the tertiary institutions in Nigeria.

7. References

Adejuyigbe, S.B. and Bolaji, B.O. (2011). Problems militating against the effectiveness of technological courses in Nigeria. Journal of science and Management 1(1).

Ajayi, K.O., Lawani, A.O., and Adeyanju, H.I. (2011). Effect of students’ attitude and self-concept on achievement in Senior Secondary school Mathematics in Ogun State, Nigeria: Journal of Research in National Development (JORIND) 9(2).

Ajuar, H.N. (2006). Meta-analysis of research findings on environment and students’ achievement in science. University of Nigeria, Nsukka.

Aladejana, F. and Aderibigbe, O. (2007). Science Laboratory Environment and Academic Performance. Journal of Science Education Technology 16:500–506 DOI 10.1007/s10956-007-9072-4.

Allen, D. & Fraser, B. J. (2007). Parent and student perceptions of classroom learning environment and its association with student outcomes. Learning Environment Researches. 10, 67-82.

Charik, K. (2006). Computer classroom learning environment and students’ attitudes towards computer courses in tertiary institutions in Thailand. Unpublished Degree of Doctor of Science Education Thesis Curtin University of Technology.

Clayton, J.F. (2007). Development and validation of an instrument for assessing online learning environments in tertiary education: the online learning environment survey (OLLES). Unpublished Degree of Doctor of Science Education Thesis Curtin University of Technology.
Dorman, J. (2002). Classroom environment research: Progress and possibilities. *Queensland Journal of Educational Research, 18*(2), 112-140. http://education.curtin.edu.au/iier/qjer/qjer18/dorman.html

Dorman, J.P. and Fraser, B.J. (2009). Psychosocial environment and affective outcomes in technology-rich classrooms: testing a causal model. Social Psychology of Education, 12:77-99.

Folayan, C. O. (2011). *The role of the automotive industry in a developing economy*. A paper presented at the 1st Annual General Meeting and National Conference of Automotive Engineers Institute, a Division of the Nigerian Society of Engineers.

Fraser, B. J. (1994). Research on classroom and school climate, in D. Gabel (ed.), *Handbook of Research on Science Teaching and Learning*, Macmillan, New York, 493-541.

Fraser, B. J. (1998), Science learning environments: Assessments, effects and determinants, in BJ Fraser & KG Tobin (Eds), *International Handbook of Science Education* (pp. 527-564), Kluwer, Dordrecht

Fraser, B. J., Aldridge, J. M. and Adolphe, F.S.G. (2010). A cross-national study of of secondary science classroom environment in Australia and Indonesia. Research Science Education, 40:551 – 571 DOI 10.1007/s1165 – 009 – 9133 – 1 retrieved 4/6/2012.

Henderson, D. G. and Fisher, D. L. (2008). Interpersonal behavior and student outcomes in vocational education classes. *Learning Environment Research*. 11, 19-29.

Kolo, E. (2006). *Does Automotive Service Excellence (ASE) Certification Enhance Job Performance of Automotive Service Technicians*. Unpublished PhD thesis, Virginia Polytechnic Institute and State University.

Koopman, M., Teune, P. & Beijaard, D. (2011). Development of student knowledge in competence-based pre-vocational secondary education. *Learning Environment Researches* 14, 205–227.

Koul, R.B., D.L. Fisher and T. Shaw (2011). An application of the TROFLEI in secondary-school science classes in New Zealand, Research in Science & Technological Education, 29:2,147-167. http://dx.doi.org/10.1080/02635143.2011.573475 retrieved 29/4/2012.

Martin-Dunlop, C. & Fraser, B. J. (2007). Learning environment and attitudes associated with an innovative science course designed for prospective elementary teachers. *International Journal of Science and Mathematics*. 6, 163-190.

Oguzor, N.S. (2011) computer usage as instructional resources for vocational training in Nigeria: Educational Research and Reviews 6(5), 395.

Olatoye, R.A. (2010) level of participation in ICT training programmes, computer anxiety and ICT utilization among selected professionals. Application of Information Communication Technologies to Teaching, Research and Administration (AICTTRA 2010). Proceedings of International Conference on ICT Applications held at Jos Nigeria.

Umunadi, E.K. (2011). Provision of equipment and facilities in vocational and technical education for improving carrying capacity of Nigeria’s tertiary institution. Proceedings of the 1st International Technology, Education and Environment Conference African society for Scientific Research (ASSR).

Uwaifo, V.O. (2010) Technical education and its challenges in Nigeria in the 21st Century. *International NGO Journal* Vol. 5(2), pp. 040-044, February, 2010 Available online at http://www.academicjournals.org/ingoj ISSN 1993–8225 © 2010 Academic Journals.

Wolf, S. J. and Fraser, B. J. (2008). Learning environment, attitudes and achievement among middle-school science student using inquiry-based laboratory activities. *Research in Science Education* 38, 321-341.

Zandvliet, D.B. and Buker, L. (2003). The internet in British Columbia, Canada classrooms, learning environments in new contexts: *International Electronic Journal for Leadership in Learning, University of Calgary*. Retrieved 23/3/2004 from http://www.ucalgary.ca/~iejll.