



A Comparative Analysis of Male and Female Students' Academic Performance Using Andragogical Approach: A Case Study of National Open University of Nigeria

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Abstract

This study compared the academic performance of male and female students studying for a Postgraduate Diploma in Distance Education programme at the National Open University of Nigeria, taught through the andragogical approach. The study is part of a larger study on students' readiness to learn. The academic performance of students in the Measurement and Evaluation course was analysed. The survey research design was adopted. A 32 – item questionnaire was designed to gather information on the variables of the study from the respondents. The Cronbach's alpha for the measures is .84. The Spearman brown coefficient is .91 while the Guttman Split half correlation is .91. A convenience sample of 120 students out of the 169 students that sat for the Measurement and Evaluation examination at the NOUN headquarters in Lagos was used. The random sampling table was used to select the respondents. Collected data were analysed by computing frequencies and percentages. There is no significant difference in the scores of male and female students in the Measurement and Evaluation.

Keywords: Andragogical approach, Measurement and Evaluation course, academic performance

Introduction

Learning, formal or informal, is a continuous activity that ends only at death. There are no age barriers to learning, hence both children and adults have life- long opportunities to learn (Merriam, Baumgartner & Caffarella (2007). The multiplicity of factors that adults have to deal with in terms of declining memory retention, management of careers and home as well as other social-cultural demands influence how adults learn (Knowles, 1980; Lieb, 1991). Kolb (1984), notes that learning is human beings' primary mode of adaptation to the environment. The world is currently bombarded with rapid

changes in the political, economic, social, art and technological environments, hence, continuous learning and adaptation are required.

The Nigerian National Policy on Education (Federal Republic of Nigeria, 2004), emphasizes that:

- a. Life-long education shall be the basis of the nation's educational policy.
- b. Educational activities shall be centred on the learner for maximum self-development and self-fulfilment
- c. The education system shall be structured to develop the practice of self-learning.
- d. At any stage of the education process after junior secondary school education, an individual shall be able to choose between continuing full-time studies, combining work with study, or embarking on full time employment without excluding the prospect of resuming studies later on (Federal Republic of Nigeria, 2004). The Policy has by these statements laid down the foundation for adult learning.

The National Open University of Nigeria could be regarded as an avenue for adult learners and late learners, who were given the second chance to acquire education. The University created to provide access to education for all was established on 22nd July 1983 by the National Open University Act of 1983 No. 6. The objective of the University is to encourage the advancement of learning throughout Nigeria by means of tuition carried out mainly by distance learning mode that includes print materials closely supplemented by lectures through course facilitations, broadcasts by radio and television, as well as learning methods that are mediated by technological infrastructures.

In order to achieve this objective, National Open University of Nigeria runs many Diploma, Undergraduate, and Postgraduate programmes including a Postgraduate Diploma programme in Distance Education (PGDDE) for NOUN staff, both academic and non-academic, as well as other interested students from the public. The PGDDE is aimed at equipping NOUN staff and other interested students with requisite skills required for handling distance learning and distance education services. The PGDDE programme is run using the adult learning or andragogical approach. Students are given course materials and could have informal face to face discussions in terms of facilitation with the experts in respective courses of the programme. The students are also free to organize discussion groups among themselves. This approach provides opportunities to earn the PGDDE certificate while still carrying out full time jobs. The programme is made up of 11 courses.

Teaching and learning are premised on two approaches. These are the pedagogical and andragogical approaches. Pedagogy is a teacher centered approach which involves the act of teaching using basically face to face methods where the teaching is very much under the control of the teacher. Andragogy on the other hand, is an adult learning approach which is learner oriented. The learning that takes place under the andragogical approach is very much under the control of the learner.

The National Open University of Nigeria is designed to increase the access of all Nigerians to formal and non-formal education in a manner that is convenient to their circumstances. It is also expected to cater for the continuous educational development of professionals. The pedagogical approach and the adult learning approaches are basic to satisfying this objective. Cultural and religious biases tend to believe that men are better than women many professions such as engineering, piloting and even priesthood. The advent of women into these male dominated professions makes it necessary to find out whether such women got into these professions by chance or there are differences in male and female students' academic performance. A lot of studies have been carried out in many areas of educational disciplines bordering on comparison of male and female students. Examples of such include achievements in science subjects (Olasheinde & Olatoye, 2014; Kimura, 2005; Adesoji, 2008). Studies have also been conducted on gender differences in mathematics achievement (Muthkrishna & Kwela, 2010; Bridgeman & Wendler, 1991). There is therefore the need for corroboration and an update of these findings.

Statement of the Problem

Adult learning approach is a major way of conducting distance learning. An important characteristic of adult learning is the assumption of self-responsibility for learning by the student otherwise known as self-directed learning. Students studying for the post-graduate diploma degree in distance education are adults who are also engaged in full time employment. With limited time to study, and lack of total face to face interaction with course facilitators, the academic performance of the students depends entirely on their motivation to learn. The adult learning approach puts a lot of pressure and stress on an already full stretched working learner which may have negative effect on the learner's academic performance. It is these views and understanding that informed this study on the effects of adult learning on the academic performance of male and female students.

Test of Hypothesis

From the background of andragogical view of teaching and learning, this study is aimed at determining if there is any significant difference in the academic performance of male and female students in *Measurement and Evaluation*.

Conceptual Clarifications

Adult learning is an approach to adult education which involves the exposure of adults to new knowledge, skills and attitudes in a systematic formal manner. Such learning can take place in schools, colleges, universities, community learning centres, on-line and lifelong learning centres. Knowles (1984), introduced the term andragogy as being synonymous with adult learning. Andragogy is an approach to teaching adults, who are expected to have some level of experience when compared to children. Andragogy is conceived as the science of understanding and supporting adult to learn at any time they choose to. Knowles (1984), defines it as a theoretical and practical approach, based on the concept of self-directed learning with teachers as facilitators of learning.

The term self-directed learning is also considered as synonymous to adult learning. Self-directed learners decide what to learn and how to carry out the learning. Knowles (1975), defines self-directed learning as a process through which individuals take the initiative with or without the assistance of others in diagnosing their learning needs, how to meet the needs and evaluate the learning outcomes. As the name implies, the learner is the major player in the learning process. The motivation to learn having come from the learner, serves as a major factor in the completion of the learning process and outcomes.

Adult Learning, self-directed learning and andragogy are all within the framework of adult education. Merriam & Cafferella (1999), explain adult education as a systematic and sustained learning activity for the acquisition of knowledge, skills, attitudes and values by adults. The goal of adult education is to help adult learners to satisfy their personal needs and achieve their professional goals (Bohonos, 2014). Some adults could not attain their educational desire due to a number of reasons, such as early marriage, lack of fund and inability to meet admission requirement to formal educational institutions. Adult education bridges this gap by various programmes offered through, continuous education mode, distance learning mode or, on-line degree mode, among others.

Adult education is beneficial both to the individual and the society at large. Merriam et al (2007), state that a larger scale goal of adult education is growth of society through the developed ability of the educated adults to keep up with social change and social order. Education opens the eyes of the learner to necessary changes in the society and many serve as catalyst for challenges to the social structure.

Many studies have been conducted on the differences in academic performance of male and female students (Orabi, 2007; Olasehinde & Olatoye, 2014; Acker & Oatley, 1993). Kimura (2005), on the issue of performance by male and female, reported that studies on the biological explanation of gaps in performance between male and female learners suggest that differences in brain structure, hormone production, and / or maturity are factors influencing performance of male and female students. Viaclero (2006), also states that girls demonstrate earlier development of their brain regions responsible for impulse control than boys. In general, girls mature earlier than boys. Although further studies are however still required in these areas, the study was aimed at bridging the gap in the study of academic performance of male and female students.

Kimura (2005) and Vialro (2006), report that there are differences in the biological make up of men and women which might have implications for learning. Kimura (2006), reports that the parts of the brain responsible for processing verbal information and exchange of information are more developed in girls than boys. Girls have also been observed to mature earlier than boys and have earlier development of the impulse control region of the brain other than boys (Viadero, 2006). In the same vein, Olasehinde and Olatoye (2014), confirm that some other research findings did not corroborate the findings of Kimura (2005) and Viadero (2006). In their research, they found mixed results. They found that at National Assessment of Educational Progress (NAEP) tests in reading, boys at every age tested—9, 13, and 17—have trailed behind girls since at least 1971. The congressionally mandated NAEP tests for samples of students in mathematics revealed that boys have had a razor-thin lead over girls at all three age levels since 1992. They also reported that in a 2003 reading test given to 15-year-olds around the world, female students outscored males in all but one of the 41 countries tested. Aremu (1999), found that boys are better than girls in mathematics and sciences subjects, while Toh (1993), found that girls outperform boys in some other school subjects. Mutai (2011), found that boys perform better than girls in statistics and probability in Bureti Sun County. These studies are

inconclusive hence the outcomes of this study will add to the effects of gender on academic performance at the tertiary level.

In a study of gender differences in student academic performance and attitudes in an introductory engineering course, Orabi (2007), reports that there were no significant differences in the mean scores of 52 male students and 49 female students. The results however indicate that academic performance in the course was affected by factors such as student ability, motivation, and quality of secondary education. He also found that female students had a slightly higher overall course grade average than male and outperformed the male students on class assignments excluding final design project.

Research Method

The adult learning approach is a major way of conducting distance learning. An important characteristic of adult learning is the assumption of self-responsibility for learning by the student otherwise known as self-directed learning. Students studying for the post-graduate diploma degree in distance education are adults who are also engaged in full time employment. With limited time to study, and lack of total face to face interaction with course facilitators, the academic performance of the students depends entirely on their motivation to learn. The adult learning approach puts a lot of pressure and stress on an already fully stretched working learner which may have negative effect on the learner's academic performance. It is these views and understanding that informed this study on the effects of adult learning on the academic performance of male and female students.

The study tested the hypothesis that there is no significant difference in the scores of male and female students in the *Measurement and Evaluation* examination. The research design used for this study was survey research design. It is a systematic approach that is aimed at answering the research questions and also explains corresponding objectives of a study. The research design is both descriptive and correlational. The survey research design can be used to study both large and small populations by selecting and studying samples chosen from the populations to discover relative incidence, distribution and interrelations among the variables (Osuala, 1993).

The sampling technique adopted is convenience sampling. The total population of students from the NOUN headquarters that took the first semester *Measurement and Evaluation* course examination in the 2013/2014

session was 169. To calculate the correct sample size, the Yamane (1967), formula was used to calculate the sample sizes at 95% confidence level where $p=0.5$. From the calculation a sample size of 118 is sufficient for the study. However to make for possible non-respondents, 126 copies of the questionnaire were distributed and one hundred and twenty copies were retrieved. Students on the course that were available completed the questionnaire.

The primary source of data is from the self-reported questionnaire designed to elicit information on students' readiness to learn. Secondary data are the students' performance records on the subject chosen. The self-reported paper-based questionnaire was designed containing closed and open ended questions to capture data on students' readiness to learn. The measuring instrument in this study is a 5- point Likert scale having options ranging from strongly agree to strongly disagree; where strongly agree has a weight of 5 and strongly disagree has a weight of 1. However this paper is based on the scores of students on the *Measurement and Evaluation* course and open ended questions which were included to solicit unrestricted responses on the effects of andragogical approach on students' performance. The open ended questions were content analysed for input into the discussion of findings.

The content of the questionnaire for this study was validated by experts from the School of Management Sciences and the School of Education of the National Open University of Nigeria (NOUN). To determine reliability, data from the pilot study were subjected to the Split half test in order to measure consistency. The Cronbach's alpha coefficient was used to calculate to measure the coefficient of internal consistency. The Cronbach's alpha for the measures is .84. The Spearman brown coefficient is .91 while the Guttman Split half correlation is .91.

Data Analysis

Statistical techniques were used to analyse the differences in means of the male and female scores in the *Measurement and Evaluation* course. Frequencies and percentages as well as cumulative percentage frequencies were calculated. The t-tests were carried out to establish the differences in the male and female students' examination scores. All tests were carried out at 95% confidence interval.

Limitations of the Study

This study suffers from the limitation of the sample size to students at the NOUN headquarters. This is due to time and monetary constraints which did not permit the inclusion of students scattered across 68 study centres. This therefore limits the degree of generalizations that could be made from the findings of the study.

Analysis of Data

The bio- data that were considered relevant to the study are: sex, marital status, age, educational qualifications and length of service in the current organization. The sex of the respondents is shown in Table 1.

Table 1

Distribution of Respondents by Sex

Option	Frequency	Percent (%)	Valid Percent	Cumulative Percent
Valid Male	66	55	55	55
Female	54	45	45	100
Total	120	100	100	

Source: Field Survey, 2015

This paper is on the possible differences in male and female students' scores in *Measurement and Evaluation* using the adult learning approach. Only one hypothesis was tested as follows:

H_{01} – There is no significant difference in the scores of male and female students in the *Measurement and Evaluation* examination

There is no significant difference in the scores of male and female students. A test for unequal means was performed using the data. The test was carried out using the statistical calculation (www.socstatistics.com) two tailed tests. The test results are shown in Table 2

Table 2

T- Test on male and female Scores

S/N	Sex	Mean	S.D
1	Male	60.685	12.916
2	Female	55.507	11.06

Note. t- statistic = 1.06, Degree of freedom = 53, The P value is 0.29, $P < .05$

Since the P. value is less than the t score of 1.06, the null hypothesis is accepted. The conclusion is that there is a positive but not significant difference in the scores of male and female students taught through the andragogical approach, in the *Measurement and Evaluation* course.

Other Variables of the Andragogical Approach

In order to fill the gaps for other variables that might influence the use of andragogical approach in learning, respondents were asked four open ended questions. Table 3 is on the use of andragogical approach for the Postgraduate Diploma in Distance Education programme.

Table 3

Responses to the use of Andragogical Approach

S/N	Variable	Frequency	%
1.	Adequate /Appropriate OK	21	58.3
2.	Creates a comfortable environment for learning	3	8.3
3.	Makes student to learn out of classroom setting	3	8.3
4.	Encourages self-dependence	3	8.3
5.	Easy comprehension of course material	3	8.3
6.	Need to incorporate some pedagogical approach	3	8.3
Total		36	100

Table 3 shows that 58.3 % of those that responded to the question felt that the andragogical approach is adequate for the programme. 8.3% felt that there should be some form of pedagogical approach integrated into the programme other comments were on the advantages such as comfortable environment for learning, self-dependence, learning to learn out of classroom setting and easy comprehension of course material.

Respondents were also asked to enumerate the problems they encountered on the programme. Table 4 shows their responses.

Table 4*Problems encountered by students on the PGDDE*

S/N	Problems Encountered	Frequency of Responses	%
1	Time constraint	21	45.7
2	Inconsistency in programme time management	10	21.8
3	Long break between semesters 1 and 2	6	13
4	Too many courses per semester	3	6.5
5	Inadequate information on commencement of course	3	6.5
6	Delays in posting TMAs	3	6.5
Total		46	100

Source: Field Survey 2015

Table 4 shows that 45.7% of the responses were on time constraint. The combination of office work, home duties and studies put a lot of limitation on the time. There was also the inconsistency in programme time management as well as long break between semesters which together accounted for 44.8% of the responses. Other problems were too many courses per semester, inadequate information on commencement of course, and delays in posting TMAs (6.5% of responses each).

Respondents were also asked to make recommendations for the improvement of the PGDE programme. Table 5 shows their responses.

Table 5*Improvement of the PGDDE programme.*

S/N	Recommendation	Frequency of Response	%
1.	One paper per day for examination time table	13	58.3
2.	Time should be married with the Programme	9	22.5

3. Facilitation/tutorials are required	9	22.5
4. Make the course compulsory for all NOUN Academic staff	6	15.0
5. Having proper planning before take off	3	7.5
Total	40	100

Source: Field Survey 2015

Table 5 shows that 32.5% of the responses were on the need to have one paper per day for the examination. 22.5% each of the responses underscored the need to have uninterrupted time for the program. Another important recommendation that is relevant to this study is the combination of facilitation with the andragogical approach depicted by 22.5% of the responses. 15 % of the responses were on making the course compulsory for all NOUN academic staff. 7.5% of the responses affirmed the need to have proper planning before the take-off of the programme.

Discussion of Findings

The objective of this study is to determine the difference between the academic performance of male and female adult learners and identify the problems encountered by adult learners. The test revealed that there is no significant difference in the scores of male and female students in the *Measurement and Evaluation course*, taught through the andragogical approach ($t=1.06$, p value of 0.29). This result is in tandem with the expectation of the Nigerian education policy which gives equal opportunities to both male and female children to have access to education. This is also supported by Olasehinde and Olaoye (2014), who observed that there have been mixed results in male and female academic performance, they found that at the National Assessment of Education progress tests in reading, boys at every age tested, trailed behind girls since 1971. The mandatory NEAP tests also revealed that boys have had a razor – thin lead over girls at all three age levels since 1992. Orabi (2007), reports that there were no significant differences in the mean scores of 52 male students and 49 female students.

Conclusion

This is an exploratory and expository study which is limited by the small number of population and restriction to one organization as well as the study

of only one course out of the twelve courses for the programmes. Nevertheless it has shown basically that while the andragogical approach is suited to workers and adults, a mixture of andragogical and pedagogical approach is required. This is to balance the need for face to face interaction with facilitators in order to clarify difficult areas in the course of study. Subjects that require calculation like *Measurement and Evaluation* require some facilitation. While there are disadvantages in the andragogical approach, it is still recommended for adults in view of the recognition of adult learning characteristics built into the approach.

While some studies on male and female students' academic performance are inconclusive, this study supports the fact that there are no significant differences in male and female students' academic performance.

Recommendations

In the light of the findings from this study, the andragogical approach should be combined with some pedagogical approach as was the original conception in the establishment of the National Open University of Nigeria. There should be some facilitation even if it is for two weeks. Students should be encouraged to take the self –assessment exercises seriously as they enhance understanding and retention of learning. Furthermore, the programme should be made mandatory for all academic staff of NOUN to enhance their teaching skills as well as appreciate the problems of learners without access to facilitation by lecturers.

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