

A Comparative Study of Academic and Professional Performance of Science Education Graduates Obtained In a Distance Teaching and In the Conventional University System in Nigeria

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Abstract

The study examined the difference between the performance of distance learning and full-time science education students in academic and professional courses in the Institute of Education, Obafemi Awolowo University, Ile-Ife; and investigated the difference between the proportion of distance learning and full-time science education students by their degree classifications. These were with a view to ascertaining the quality of the programmes. The study adopted descriptive survey (ex-post facto type) research design. The population for this study consisted of full-time and distance learning science education students 2021 and 2022 respectively. The number of full-time and distance learning students were respectively 92 and 12 in 2021; and; 62 and 38 in 2022. Actual scores of full-time and distance learning students in content and professional courses were collected. Mean performances of students in the different courses were computed. The proportions of students that graduated were also worked out according to the class of their degree certificate. The t-test for difference between mean performances was utilised in testing the first hypothesis. Two hypotheses were tested @ <P.05 confidence level. The t-test for differences between mean performances was used in testing the first hypothesis while the degree classification was used in testing the second hypothesis. The two hypotheses tested were accepted. Distance Learning students exhibited comparable academic and professional performance with full-time students. This strengthens the view that DL as a Distance teaching system provides over whelming evidence for this model of tackling personnel problem in Science Education in Nigeria.

Keywords: *Comparative study, academic, professional, performance, science education, distance learning, conventional university.*

I. Introduction

The problem of producing the right scientific manpower in terms of quality and number, for effective teaching of science at the secondary level in line with the prevailing educational policies of the nation has continued to defy solutions. One realistic attempt at solving this problem has been the introduction of a science education programme through the use of distance teaching strategies. This was designed as an experiment in new ways of teaching and learning in a conventional university system in order to increase the output of well trained and dedicated personnel resources for science teaching at the secondary level, at cheaper annual cost per student.

The student trainees are practising teachers but with limited academic and professional expertise in their respective subjects. They are provided with this method of study while working, so that by immediately practicalising their new skills, they can help raise the "tone" of science in the secondary schools.

The Obafemi Awolowo University, Ile-Ife adopted distance teaching method following the pandemic that ravage the whole world in December, 2019 (COVID-19). The Institute of Education unit of the Faculty of Education is not an exception in this regard as the unit mounts distance learning programme in all areas of education. In the context of this study, science education programme is the focus and it assumes that the quality of science education assumes that the quality of science teachers produced through this programme will be similar to that obtained through the full-time conventional mode of training hence, an identical certificate is awarded to graduands of both modes of training.

Many studies have been undertaken in several countries with a view to examining the relative academic performance of part-time and full-time students. Meddleton (2022) found that full-time students gained thrice as many distinctions in their university courses as their part-time students are not necessarily of lower ability, they produce a lower university success rate. In a relevant study on part-time studies at the University of Lagos, Ojo (2019), had reported that full-time students performed better academically than their part-time counterparts. What has often been ignored in these studies is an appraisal of the teaching methods utilised. Now, if one of the modes has abler or more motivated students, the performance of students trained in the two modes after different learning experiences may not accurately reflect the relative effectiveness of the two teaching methods because other variables are creating differences in performance.

By adopting a distance teaching and learning system within a conventional university in which the structure is to a large extent completely integrated in both the academic and administrative functions with what obtains in the full-time conventional mode especially in the use of the same staff in teaching in the two modes of training, it was reasonable to expect comparability in academic and professional standards expected of graduates irrespective of their mode of study. To date, no field study has been carried out to ascertain the validity of this assumption.

Reported here therefore, is a study of academic and professional performance of two groups of science education students that graduated from the Obafemi Awolowo University, Institute of Education in 2021 and 2022 respectively in the two modes of training. It was reasoned that if the academic and professional standards obtained in the two modes are comparable, then, students in the distance teaching mode are comparable, then, students in the distance teaching mode stood a better chance of achieving the goals of science education in Nigeria because of their immediate and continuous practical exposure in teaching science during their training.

The problem to be investigated in this study in the comparability in performance of Distance learning and full-time science education students in academic and professional courses.

II. Objectives of the Study

The main objective of the study was to investigate in this study in the comparability in performance of distance teaching and full-time science education students in academic and professional courses. The specific of the study are to:

- a) examine the difference between the performance of distance learning and full-time science education students in academic and professional courses in the Institute of Education, Obafemi Awolowo University, Ile-Ife; and
- b) investigate the difference between the proportion of distance learning and full-time science education students by their degree classifications, hence their quality.

Hypotheses:

The following null hypotheses were formulated and tested in the study at $P < .05$ level of significance.

1. There will be no significant difference between the performance of distance learning and full-time science education students in academic and professional courses in the Institute of Education, Obafemi Awolowo University, Ile-Ife.
2. There will be no significant difference between the proportion of distance learning and full-time science education students by their degree classifications, hence their quality.

III. Methodology

The study adopted descriptive survey (ex-post facto type) research design. The population for this study consisted of full-time and distance learning science education students 2021 and 2022 respectively. The number of full-time and distance learning students were respectively 92 and 12 in 2021; and; 62 and 38 in 2022. Actual scores of full-time and distance learning students in content and professional courses were collected. Mean performances of students in the different courses were computed. The proportions of students that graduated were also worked out according to the class of their degree certificate. The t-test for difference between mean performances was utilised in testing the first hypothesis. Significance was ascertained beyond $<P.05$ confidence level.

IV. Results and Discussion

Table 1: Measures of comparable performance between DL and full-time (FT) science education students that graduated in 2021 and 2022

Year		Mean		Standard deviation		T-value
		DL	FT	DL	FT	
2021	Education II	58.0	58.5	6.0	6.8	0.23
	Content II	52.8	56.4	16.4	7.2	1.66
	Education III	54.6	57.7	6.6	5.8	1.69
	Content III	52.6	59.9	7.3	13.3	1.85
	Practice teaching	62.8	61.8	4.9	4.9	1.66
	Average performance	55.7	58.9	3.6	6.5	1.66
2022	Education II	57.6	57.5	25.6	13.3	0.03
	Content II	56.4	56.8	9.6	18.6	0.12
	Education III	55.8	55.2	5.4	4.9	0.57
	Content III	54.1	54.4	7.9	6.5	0.20
	Practice teaching	54.3	56.4	31.1	3.9	0.52
	Average performance	56.7	56.1	6.5	12.7	0.27

Table 2: Degree Classification of Science Education Students by their mode of training

Year	Mode of study	First class		Upper class	
		No.	%	No.	%
2021	DL	-	-	1	8.3
	Full-Time	7	7.8	31	34.4
	Total	7	6.9	32	31.4
2022	DL	-	2.6	33	28.9
	Full-Time	-	1.6	20	32.3
	Total	-	-	30	32.0

V. Discussion

The results of this investigation are assembled in Tables 1 and 2. Six different measures of academic and professional performances were used in the comparative analysis.

For the 2021 set, the performance in the part III content courses by distance learning and full-time students showed significant difference ($t = 1.85$) while all other measures indicated no significant difference (Table 1). This might indicate that the performance of full-time students in the content area is better than that of distance learning students but the true picture is revealed in the performance of the 2022 set where all measures indicated no significant difference in performance between distance learning and of distance learning graduates being a pioneer set, were handicapped in their content areas because of inadequate provision of their course-text materials. They had to cope with incomplete course texts arising from writing, printing and distribution delays. Despite these constraints the average performance in academic and professional courses in both sets of graduates showed no significant difference hence, sustains the first hypothesis.

Judging by the degree classification of the students in the two modes of training as indicated by Table 2, and with a proviso that lower second class honours and above can be regarded as a good quality degree, then about 92% of distance learning and 98% of full-time students had lower second class honours or above in the 2021 graduating set. In 2022, the proportion was 89% for distance learning and 90% for full-time students. This again clearly indicates that their average performance in 2021 ($t = 1.66$) and in 1984 ($t = 0.27$) were not significant.

The result of this study seems to contradict similar findings on part-time studies but supports the assertion by Adams (2019) that part-time students are not necessarily of lower academic ability. His conclusion that part-time students seem to produce lower university success rate seems to be purely a structural defect inherent in the design of the teaching methods in conventional part-time studies which has been eliminated in Distance teaching systems.

Implications and Conclusion:

This study is a follow-up to earlier ones in the series on Distance Education, which looked at optimum utilisation of limited personnel resources and materials for effective science teaching in Nigeria (Ezeani, 1984); and " Access to University education and the implications of combining work with higher level training in conventional University system in Nigeria (Ezeani, 1985). It compared the academic and professional performance of science education graduates obtained in a distance teaching conventional University system in Nigeria and the results indicated no significant difference in the quality of the graduates. It provides further evidence for a mode of producing the right scientific manpower in terms of quality, number and utilisation for effective teaching of science at the secondary level in line with the aspirations of our national education policies. It strengthens the view that properly designed distance teaching systems within some of our conventional Universities will provide further realistic approach for tackling personnel problem in science education in Nigeria.

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