Perception of Students' and Course Tutors on Distance Education Students' Performances in Mathematics in the Central Region of Ghana

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Abstract
The study examines the perception of students and course tutors about the performances of distance education students in mathematics in the central region of Ghana. It is essentially diagnostic in its quest to discover the problems distance education students encounter in their study of mathematics. The population for the study was made up all level 200 and 300 distance education students at the Cape Coast study centre. A simple random sampling was used for the selection of 196 students and the 10 course tutors were selected using purposive sampling. The data collection instrument was questionnaire and the design used was descriptive survey. Percentages of students and tutors responses were used to analyse the data. The study revealed that students as well as course tutors have more than one perception which has influence on the students' performances in mathematics. It is recommended that the G.E.S should ensure that distance education students are given some allowance to facilitate their education.
Keywords: Performance, Distance Education Students, Perceptions, Mathematics

Introduction

For the past ten years or so, the universities in Ghana have had the unpleasant duty of turning away a large number of qualified applicants every year as a result of their inability to admit not even half of these applicants. This situation has been attributed to limited and deteriorating facilities (Ghansah, et-al. ,2010).

Coupled with this limited facilities is the rising cost of providing quality education at the secondary and tertiary levels. The government of Ghana is finding it increasingly difficult to fund tertiary education all alone.

As a result of the above reasons and many others the government of Ghana has adopted distance education as a viable complement to the conventional face-to-face education. This step is inspired by the vision that all Ghanaians should have access to all forms of education and training regardless of where they live. Distance Education (DE) has emerged as a tool for widening access to higher education for all manners of people in the country. Recognizing the need to make tertiary education highly accessible to the Ghanaian population, the Government of Ghana proposed over a decade ago to promote DE in the country. The DE programmes in Ghana has given opportunity to mainly teacher and other public and private workers to engage in work and study. This no doubt is contributing to manpower development of the workforce in the country.

The idea of distance education (DE) is not new in Ghana. It was more vibrant two or three decades ago than it is now. It used to be known as correspondence education, an avenue through which a number of workers and professionals upgraded themselves .The economy of Ghana started deteriorating after independence thus making it difficult for student-workers to afford the cost of upgrading themselves by this means of education. The income levels of workers were so low that they could not simply afford to pay their fees.

However, after some time the idea of using DE for manpower development resurfaced strongly and this led to the introduction of a number of DE initiatives including the Modular Teacher Training Programme (MTTP), which was introduced in 1982. This programme was meant to upgrade untrained teachers academically and professionally through some form of DE. Through this programme 7,537 untrained teachers received professional training and obtained Teachers' Certificate A. However this programme was abandoned because of certain difficulties it faced. In its most recent educational reforms, the Government of Ghana set up a committee to review the educational policy of the country to response to current trends of development. The report has made several recommendations for tertiary education in Ghana which include the promotion of DE. The report notes that tertiary education is key for human resource development in Ghana and recommends massive promotion of DE at the tertiary level. The report proposes the establishment of an Open University and open colleges in the country.

The Open University is to provide work- study programme through distance learning using both print and electronic delivery systems for students and workers to acquire higher education. The Open community colleges are to provide avenues for further studies/ training for those who may end their education at JHS/SHS levels, and meet the multiplicity of needs of different learners as well as encourage life-long learning. This is endorsed in the Government White Paper on the report of Education Reform Committee (Ghana, 2000).

The White Paper indicates that the concept of Open University will create further opportunities for education for all. When properly established, the Open University will satisfy the need for further education opportunities for the large numbers of people who require further education. DE is no doubt emerging as the mode that meets the

educational needs, interest and aspirations of the country. Obviously, DE could help tertiary institutions to achieve the national norm of 50 males to 50 females in enrolment.

Perceptions of Teachers and Students on the performance in Mathematics

The conceptions, attitudes and expectations of the students regarding mathematics and mathematics teaching have been considered to be very significant factor underlying their school experience and achievement (Shoenfeld,1985).The general conceptions determine the way students approach mathematics tasks ,in many cases leading them into non-productive paths. Students have found to hold a strong procedural and rule- oriented view of mathematics and to assume that mathematics questions should be quickly solvable in just a few steps, the goal just being to get ''right answers''. For them, the role of the student is to receive mathematical knowledge and to be able to demonstrate so; the role of the teacher is to transmit this knowledge and ascertain that students acquired it (Frank,1988). For most adolescents and adults, the emotional baggage of mathematics is an overwhelming burden with no redeeming value, only mind-numbing thoughts of boredom and embarrassing frustration remarked. Eehai (2007) also reported that mathematics anxiety causes a person to dislike mathematics, because the guilt of failing to solve a mathematics question causes one to lose self-esteem . In today's world, students are perplexed at the idea of doing mathematics and why it can't be fun. Learning basic mathematics need not be boring and uninteresting. Students become very anxious and get confused because of their inability to comprehend basic mathematics concepts (Jacob, 2004). Ashcraft (2002) found that mathematics anxiety tends to have the most dramatic impact on students when they are working on certain types of mathematical problems, especially those with large numbers or those that require several steps . Puteh (2002) describes mathematics anxiety as repetitive process that is based on information gathered by individuals from their surroundings. This information is accumulated and becomes the personal experience of individuals, which finally informs their beliefs toward mathematics. These beliefs produce behavioral situations to escape mathematics because of an overriding fear of being unable to master mathematics. According to Puteh, teachers, peers and parents are responsible for triggering anxiety among students of mathematics. If students perceive that, "mathematics is difficult" during their formative years, mathematics anxiety will be triggered. Due to the presence of mathematics anxiety, such students will strive to escape from any situation that involves mathematics. This will strengthen their belief that they are not capable and lack the knowledge to engage in mathematics and they will continue to lose confidence in their mathematics skills as a result. Although these students will continue their course of study in mathematics, most likely failure will again occur because of their prescribed belief system. According to Arem (2009), mathematics anxiety is an emotional, mental and physical act related to the mathematical thinking and problem-solving process and resulting from uncomfortable past experiences related to mathematics. Feelings and experiences like this will further affect a student's ability to learn mathematics. Based on the study, students who have experienced disappointment in their mathematical abilities will have difficulty believing in their abilities in the future. Goodykoontz (2012) found from study on factors that affect college students' attitude toward mathematics that, students spoke of the influence a teacher's demeanor had on their attitude toward the class. They described memories of nice teachers, funny teachers, unapproachable teachers and devoted teachers which impacted either positively or negatively on their performance. He also said students felt that the clarity of their teacher's explanation influenced their understanding of mathematics and hence, their positive perception of the subject (mathematics). To him the presence of collaborative learning also had a positive effect on some students' attitude along with the use of time and pacing during instruction. According to him students had the perception that the amount and type of assessment were also affecting their attitude toward mathematics. Finally, most students truly felt their attitude toward mathematics was often in direct relation to their level of understanding.According to Ghansah et-al (2010) Course tutors words of encouragement, clear presentation, his subject matter knowledge , effectiveness are among many of the perceptions students have that could one way or the other affect their performances.

Statement of the Problem

The enrolment process of the DE students for the Diploma in Basic Education (DBE) is in two folds, that is by direct and the Special Entrance Examination (SEE). The SEE is conducted by the centre for prospective students who do not qualify for direct admission. Basically it is meant for students who had 'F' (fail) in Mathematics and English language at the Senior High School (SHS) results .It is known that most of the students who gain admission to offer the DBE course majority are from SEE .During the three year study they undertake these Mathematics courses, Mathematics for Basic School Teachers 1,2 and 3. The result for past 7 years has not been impressive. According the records from the centre, during 2011/12 academic year 5825 level 100 students wrote the Mathematics for Basic schools teachers of which 54.91% of them failed.

It is of this abysmal performance that has motivated the researcher to investigate into the probable perceptions students and course tutors have on the Mathematics course.

Purpose of the Study

The purpose of the study was to examine the perceptions course tutors and students have on the low performances of Distance Education DBE students in Mathematics.

RESEARCH QUESTIONS

1. Do the course tutors increase students' interest and knowledge of the subject matter?
2. Do course tutors make clear presentations during the course of their delivery?
3. What difficulties do students experience during their studies?
4. What do students and course tutors say about the mathematics modules being used by the students?

METHODOLOGY

Research Design

By the nature of the research, the researcher used the descriptive survey as the research design to gather information for effective analysis. The descriptive survey as a research design has the advantage of detailing highly accurate picture about the phenomenon under study. It appropriate for this study since the study requires knowing what is at stake

Research Participants

The research participants were level 200 and 300 Diploma in Basic Education students from the University of Cape Coast Distance Education Programme.

Population and Sample

The population of the study was made up all teachers and students from the 2 levels of the DBE students. The total population was 700. It comprised of 400 and 300 students from level 200 and 300 respectively. The teachers were 10 and all were used for the study. The sample size was one hundred and ninety six (196). This comprised of one hundred and sixteen (116) level 200 students and 80 level 300 students

Instrument

Two forms of questionnaires were developed by the researcher and administered to students and course tutors .It captured the demographic data of students and course tutors. Students' questionnaire consisted of 22 items which were grouped using the four (4) main research questions. The course tutors questionnaire consisted of Eleven (11) items and one open ended question. For each questionnaire participants were to respond to using a five point Likert scale of Strongly Agree (SA) ,Agree (A), Undecided (U), Strongly Disagree (SD) and Disagree.(Refer to Appendix). In order to remove any form of ambiguity in the items and to enhance reliability of the research instrument, a pilot-test was conducted at the Takoradi study centre. The selection of Takoradi study centre was due to the fact that it shared similar characteristics with most DE students in the University of Cape Coast study centre of Ghana. The instrument had a reliability coefficient of 0.72 which according to Field (2005) noted that a cut-off point of 0.7 is appropriate. I therefore found our instrument good enough for the collection of the main data.

Procedure for Data Collection

Approval was sought from the Director of the Centre for Continuing Education to allow me to collect the data from the selected students. I used two (2) weekends in collecting data from the students. In each level I explained to the course tutors about my intention and the fact that permission has been given me by the Director. With the assistance from the course tutors the questionnaires were administered to the students.

Procedure for Data Analysis

Close ended items were assigned weights of 5,4,3,2 and 1 for strongly agree, agree undecided, disagree and strongly disagree for the items respectively. The test statistics used in the analysis of all the research questions was percentages.

RESULTS AND DISCUSSION

The data for answering the research questions stated are presented as results and each of them is discussed in this section. There were 196 students and 10 course tutors as indicated in table 1. The students were made up of 116 males and 80 females representing 59.2% and 40.8% respectively. All the course tutors were males.

The ages of the students range between 20 and 51 above as shown in table 1.Majority of the students were in the age bracket of 20- 30 (76.5 %). A good number 41 (20.9%) were in the range of 31-40, again 4(2%) represents the range of 41-50 and only 1 (0.5%) was above the age of 51. This is indicative of the fact that, most students enrolled are not mature students. On their level of education, majority 136 (69.4%) had certificates at the senior high school level, while 54(27.6%) had either HND or Diploma certificates. The 27.6% of the HND/Diploma students who are pursuing this programme might have come in because they wanted this certificate to enable them become professional teachers. Only 2(1%) and 4(2%) had Junior high school certificate and teacher certificate 'A' respectively. This indicates that most of the distance education students admitted for the programme are mostly senior high school leavers. It could also be seen from table 1 that, 113 (57.7%) are pupil teachers, this is possibly so because most of the students might not have had higher grades to qualify them to the universities. The few 38(19.4%) are unemployed and this programme could be a way for these people to have gainful employment after successfully completing it.

Table 1: Demographic characteristics of students

Demographic characteristics	Frequency	Percentage (%)
Gender		
Male	116	59.2
Female	80	40.8
Age Range		
20 – 30	150	76.5
31 – 40	41	20.9
41 -50	4	2
51 –above	1	0.5
Educational level		
HND/Diploma	54	27.6
Teacher certificate 'A'	4	2
Senior high school certificate	136	69.4
Junior high school certificate	2	1
Occupation		
Pupil Teacher	113	57.7
Professional Teacher	14	7.1
Self Employed	31	15.8
Unemployed	38	19.4
Total	**196**	**100.0**

Table 2: Demographic characteristics of course tutors.

Demographic characteristics	Frequency	Percentages (%)
Educational Level		
B.Ed Mathematics	2	20
B.Sc Mathematics	1	10
M.Phil. Mathematics	6	60
M.Sc. Mathematics	1	10
Occupation		
Teacher	10	100
Years of teaching experience		
0 -4	2	20
5- 8	6	60
9 -12	2	20
Total	**10**	**100**

Research Question 1.

Do the course tutors increase students' interest and knowledge of the subject matter?

In order to answer this, percentages of the students' and course tutors responses were sought on this matter. The summary of table 3 below depicts their responses.

From table 3, students were asked whether course tutors ensure that there is class discussion which involved students in the teaching and learning process so that it does not become only teacher centred. Fifty eight point seven (58.7%) said that their course tutors ensure that class discussions were done while 21% answer in the negative. It was also clear that tutor style of teaching raises and sustain students interest in the subject as 70.4% agreed and only 20.4% did not agree. About 50.2% of the students said course tutors made the course challenging and stimulating. Also 52.0% of the students said course tutors gave them immediate feedback. On

the course tutors part, 70% of them said that their students contributed immensely during face-to-face and 60% said that, students' commitment to learning and class attendance was recommendable. Base on these findings it is clear that students had good perception about course tutors ability to increase their interest and the knowledge of the subject matter. This finding is in line with Goodykoontz (2012) who found out the influence teacher demeanor had on students' attitude toward learning and spoke of the memories of nice, funny and devoted teachers which impacted positively on their performance.

Table 3: Students and Course Tutors Response on Interest and Knowledge on Subject Matter.

Items	Percentage (%) of Responses				
	SA	A	U	D	SD
Students Responses					
1.Course tutors ensure that there is class discussion	14.8	43.9	20.4	7.7	13.3
2. Course tutors style of teaching is able to raise and sustain our interest	17.3	53.1	9.2	11.2	9.2
3. Course tutors make the course challenging and stimulating	13.8	46.4	9.7	17.3	12.8
4. Course tutors give us immediate feedback	16.8	35.2	10.7	20.9	16.3
Course Tutors Responses					
5. My students contribute immensely during face-to-face	20.0	50.0	0.0	20.0	10.0
6. Students commitment to learning and attendance to face-to- face is recommendable	40.0	40.0	0.0	0.0	20.0

Research Question 2.
Do course tutors make clear presentations during the course of their delivery?
The analyses took into account the connotation of each statement. The summary of Table 4 depicts the responses of students.

Table 4: Responses of students on the clarity of course tutors presentation during teaching.

Items	Percentage(%) of Responses				
	SA	A	U	D	SD
1. Course tutors prepare and explain their course materials well	14.8	37.8	23.5	10.2	13.8
2. Course tutors state and pursue their course objective in the Course of delivery	19.4	36.7	20.4	11.7	11.7
3. Course tutors facilitate the taking of note by students	19.9	44.9	8.7	15..3	11.2
4. Course tutors are accessible to individuals students	14.3	44.9	14.3	13.3	13.3

From Table 4 four items were asked to find out what perception students have on their course tutors in terms of their clarity of presentation. Fifty two point six percent (52.6%) of the students said their course tutors did prepare and explain the course materials very well while 24% said otherwise. Again 56.1% said their teachers stated and persuaded their course objective in the course of delivery and 23.4% disagreed. On the question of whether course tutors facilitate the taking of note by students 26.5% disagreed while 64.8% agreed. Finally 59.1% of the students said that their course tutors are accessible to them for further consultations in areas they did not understand, but 29.6% disagreed. The finding seems to suggest that students had good perception about the course tutors on the clarity of their presentation. This finding supports that of Goodykoontz (2012).To Goodykooontz, he found out that students felt that the clarity of their teacher's explanation influenced their understanding and hence, their positive perception of the mathematics subject. To him the presence of collaborative learning also had positive effect on some students' attitude along with the use of time and pacing during instruction. This is also supported by Ghansah et-al (2010) that, clear presentation by course tutors influence students' perception and consequently affect their performance positively.

Research Question 3
What difficulties do students experience during their studies?

Table 5: Course tutors and students response on the difficulties students face in their studies

Items	Percentage(%) of Response				
	SA	A	U	D	SD
Students Response					
1. I am not able to attend lectures always	12.2	19.4	2.6	28.1	37.8
2. I do not understand my course tutors when he is facilitating	13.3	20.4	10.2	33.2	23.0
3. I have problem of finance	30.1	38.8	5.6	16.8	8.7
4. My background in Mathematics is weak	17.9	36.7	9.2	22.4	13.8
5. I dislike mathematics as a subject	16.6	20.9	6.6	25.5	30.1
6. Our exams questions are usually difficult to answer	25.0	30.6	7.7	23.5	13.3
7. Sometimes questions are set outside the unit for particular exams	25.8	27.6	13.3	11.9	21.4
Course Tutors Response					
1. Most of the students are weak in mathematics	40.0	10.0	10.0	10.0	30.0
2. Sometimes questions are set outside the unit for particular exams	40.0	30.0	0.0	10.0	20.0
3.There is no co-ordination between course tutors and chief Examiners in the setting of exams questions	30.0	10.0	10.0	30.0	20.0

From table 5 it was realised that students had good perception about their teachers on their class attendance since 65.9% of the students agreed and 31.6% disagreed. This indicates that teacher attendance to lectures is not a contributing factor to students' performance in mathematics. Again 56.2% of the students disagreed that they do not understand their lecturers when teaching them and 33.7% agreed. Moreover, about 68.9% of the students agreed that they have problem with finance but 25.5% disagreed. This is an indication that students' performance in mathematics is affected by their weak financial background. Majority of the students,54.6% admitted that they had weak mathematics background and also 50% of the course tutors also confirmed this issue of weak mathematics background of students. This finding is supported by Puteh (2002) that, if students perceive that, mathematics is difficult during their formative years, mathematics anxiety will be triggered and as a result such students will strive to escape from any situation that involves mathematics. Students were asked their preference for mathematics 55.6% indicated that they like the subjects while 37.7% said they do not like the subject. Their perception about the like of the subject was good. Probably the 37.7% of the students who indicated their dislike of the subject may be due to some disappointment in their mathematical abilities in their past experienced and that had made them not to believe in their abilities in the future as indicated by Arem (2009).

The students, about 55.6% also indicated that, their examination questions were usually of high difficulty level, indicative of the fact that, their perception about the difficult nature of their questions is not good. This goes to buttress the point made by Shoenfeld, 1985 that, students are found to hold a strong procedural and rule-oriented view of mathematics and assume that mathematics questions should be quickly solvable in just a few steps, to them the goal is just to get 'right answer.' Therefore, the guilt of falling to solve a mathematics questions causes one to lose self-esteem. On the question of whether some questions are set outside unit area for a particular examination 33.3% disagreed and 53.4% agreed indicating that where the questions come from do affect their performance. Again the course tutors about 70% indicated that sometimes the questions were set outside a particular unit for a particular examination.

The course tutors 50% believe that there should be co-ordination between them and chief examiners while 40% disagreed. The perception of the course tutor is that there is no co-ordination and this affect students' performance.

Research Question 4.

What do students and course tutors say about the mathematics modules being used by the students?

Table 6: Students and Course Tutors Response to Perception about the Mathematics Module

Items	Percentage (%) of Response				
	SA	A	U	D	SD
Students Response					
1.The modules are too loaded	24.0	36.7	9.7	18.9	10.7
2. The modules contain technical and typographical errors that sometimes inhibit my understanding	23.0	35.2	15.2	15.3	10.7
3.I am not able to read and understand the mathematics modules on my own	26.0	41.3	8.7	12.8	11.2
4. The modules require periodic review	29.1	41.3	10.2	9.2	10.2
5. The modules serve as basis for acquiring basic knowledge in mathematics	28.6	44.9	5.1	13.3	8.22
6. The duration available for course tutors in Facilitating is not enough	30.1	41.8	8.7	9.2	10.2
7. The contents of the modules are relevant to the course	16.3	46.9	10.2	11.7	14.8
Course Tutors Response					
1. The mathematics modules are too loaded	20.0	40.0	0.0	10.0	30.0

From table 6, 60.7% of the students as well as 60% of course tutors agreed that the mathematics modules are too loaded and this probably do not make the course tutors to complete the units in the books thereby affecting students performance. Again 58.2% of the students said that the modules contain technical and typographical errors and that sometimes inhibit their understanding and therefore 70.4% of the students had the perception that the modules require a periodic review in order to improve their understanding. The students believed that the correction of technical and typographical errors couple with the periodic review could enhance their performance. About 66.3% of the students had the notion that they are unable to read and understand the modules on their own. But 73.5% of them actually agreed that the module serves as basis for acquiring a basic knowledge in mathematics. On duration available for course tutors in facilitating, 71.9% agreed that it was not enough. Sixty three point two (63.2%) agreed that the contents of the modules are relevant to the course. Finally, one opened ended question was given to course tutors to solicit their view about the mathematics module. Below are some of the excepts from the course tutors

" Is very good but some of the books (ie units) are too loaded considering the time frame for the face-to- face, so the books need a second look at".

"The year two mathematics module is over loaded to the extent that it is difficult to complete before quizzes are written".

"The book should be revised to suit their level".

CONCLUSIONS

The current study has revealed that:

1. Students had good perception about course tutors ability to increase their interest and in the knowledge of subject matter
2. They had also good perception about the course tutors clarity of their presentations
3. Students were confronted with a lot of perceptions which affect their performances and these include: weak financial background, weak mathematics background, having to attempt very difficult questions during examinations and lack of co-ordination between course tutors and chief examiners during setting and moderation of questions.
4. The students as well as course tutors agreed that the mathematics modules are too loaded, contain technical and typographical errors and the duration for facilitating is not enough.

RECOMMEDATIONS

On the basis of the findings, the following recommendations are made to improve distance education students' performances in mathematics:

1. The management of the centre should ensure that there is a sort of co-ordination between course tutors and chief examiners during setting and moderation of examination questions.
2. The G.ES should ensure that distance education students are given some allowances to facilitate their

education.

3. The management of the centre should ensure that the mode of selection to the distance education programme especially mathematics as a criteria must be strengthen.

4. The mathematics modules should be periodically reviewed by experts to correct technical and typographical errors as well as reducing the content area where necessary to enhance completion by tutors and subsequently improve students' performance.

5. The management of the centre should ensure that refresher courses are organized for course tutors periodically to enhance their teaching.

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