

EFFECT OF COMMUNICATING FEEDBACK ON THE ACADEMIC PERFORMANCE OF SCIENCE EDUCATION STUDENTS IN NIGER DELTA UNIVERSITY, WILBERFORCE ISLAND, BAYELSA STATE, NIGERIA

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Abstract

Efficient teaching and acceptable feedback are powerful methods of enhancing learning and academic performance. Teachers as well as students seek and learn from feedback. When timely and properly used, it normally adds value to the teaching and learning process. Teachers' feedback is most often viewed as a fundamental component in education and crucial to students' learning, development, and academic performance. This study was conducted to examine how what students perceived as feedback enhances their academic performance. This study adopted a descriptive survey design in collecting data involving 330 students in the Department of Science Education in Niger Delta University, Wilberforce Island, Bayelsa State, using a questionnaire titled: "Effects of Feedback on Science Education Students Questionnaire (EFSESQ)" with $r = 2.50$ which was administered on the respondents. The data retrieved from the questionnaire were analysed using Mean. Results from this study revealed that what learners perceived as feedback enhances their academic performance. The results indicated that actively seeking of feedback by learners and frequent feedback from teachers enhances students' academic performance. The results from this study also offered support for teachers' feedback as a formative exercise and several suggestions provided for the implementation of teachers' feedback into the classroom.

Key words: *feedback; academic performance; Niger Delta University; learners*

Introduction

An assessment as done in education, which encompasses teacher's observation, homework and tests, and analysis of student work, including classroom discussion, is to monitor students'

progress. This is very vital in every teaching and learning process. Assessment such as formative on the one hand, is used while the learning is going on in order to evaluate whether that the content which

has been taught was understood or the skills demonstrated was grasped by the learner. While summative assessment on the other hand, happens at the end of all the learning process. This is the final assessment to evaluate the whole learning process. Summative assessment takes the form of project work at the end of semester examinations.

Consequently, positive and encouraging feedback by instructors enhances the joy for learning and creation of inner motivation of learners. Individually, students have the craving to feel that they have talent to complete a given task and know how to go about doing it. Hence, good feedback, despite motivating students, also supports students to progress as learners and find their individual strengths. A simple illustration is when a student gets a positive feedback on his/her assessment answer sheet, such a student has a tendency to be highly motivated and tends to do better than a student who never did have a positive feedback. This exploit would affect the students' performance in the slightest positive way. However, during the teaching and learning process, students need several opportunities to practice at the same time to receive specific and timely feedback with regards to what they are doing well and not doing well without fear of being graded or penalty.

Merriam-Webster (1828) defines feedback as the transmission of evaluative or corrective information about an action, event, or process to the original controlling source; it can also be referred to as the information that individuals get concerning their actions. In academics,

Vardi (2012) sees feedback as the information learners receive during or after an activity, evaluation or assessment when answering a question or communicating a view. Thus, feedback when incorporated into both physical and online learning experiences should be done timely as well as effectively so as to enhance students' academic performance (Poulos & Mahony 2008; Getzlaf, B, Perry, B, Toffner, G, Lamarche, K & Edwards, M 2009). As embedded into higher education curricula, feedback is recognized as a crucial academic activity which enables students to learn and improve their academic performance. Similarly, academics expect that students can use feedback constructively to attain learning outcomes, even though its impact can be both negative and positive (Hattie & Timperley 2007).

Studies have shown that tutors often provide feedback to their students during their units and courses, but learners most times report a lack of feedback relating their studies, and are underwhelmed by the kind of feedbacks they do receive (Strong, J, Hughes, C, Wilson, W, Arnott, W, Isles, R & Bennison, A 2012). This may be caused by either a misalignment between tutors' and students' views about feedback and/or can as well depend on the entry level and degree programme of the learners (Hyland 2000; Orsmond & Merry 2011; Robinson, Pope & Holyoak, 2013; Strong et al. 2012). Within higher education, these feedbacks given to students are transmission processes from lecturers to students with the intention of providing positive outcomes in terms of students'

academic performance (Nicol and Macfarlane-Dick's 2007).

Feedback as an important part of learners' assessment process has a significant effect on students' learning which is described as the most powerful single moderator that enhances students' academic achievement. Hence, there is a need for teachers to imbibe the culture of giving feedback in every teaching-learning in order for students to have the requisite and proper foundation on which to develop their academic performance.

Theoretical Framework

Learning, be it directed or intentional is aimed at attaining some set targets. Hence, feedback is a means whereby learners and any agent directing the learning process, establishes whether or not progress is being achieved toward the intended goal at the same time whether or not the set goals have been achieved.

Thorndike's Theory of Learning (Thorndike, 1931)

Central to Thorndike's theory of learning is feedback, which can be cast in terms of his law of effect. Based on his own experimental evidence, Thorndike believed that repetition without feedback adds no improvement in performance. In his experiment where subjects were blindfolded and asked repeatedly to draw a four-inch line with one quick movement, Thorndike was able to discover that doing so 3,000 times "caused no learning" for the reason that the lines drawn in the eleventh or twelfth sittings were "not demonstrably better than or different from those drawn in the first or second" (Thorndike, 1931). Also, he explored the comparative effectiveness of negative and

positive feedback using a variety of experiments and concluded that punishment and reward are not equal in their power to strengthen or weaken a connection. In conducting one of such experiments, students learned Spanish vocabulary by selecting five possible English meanings for each Spanish word followed by the rewarding feedback of being told "Right" or the punishing feedback of being told "Wrong". Results from the experiment led Thorndike to draw up a conclusion that punishment does not weaken response as originally stated in the law of effect. His words:

Indeed, the announcement of "Wrong" in our experiments does not weaken the connection at all, so far as we can see. Rather, there is more gain in strength from the occurrence of the response than there is weakening by the attachment of "Wrong" to it. Whereas two occurrences of a right response followed by "Right" strengthen the connection much more than one does, two occurrences of a wrong response followed by "Wrong" weaken that connection less than one does. (Thorndike, 1931, p. 45)

Likewise, Thorndike observed a "spreading of effect," which means that "a satisfying after-effect" not only strengthens "the connection which it follows directly and to which it belongs" (p. 174), but likewise strengthens "by a smaller amount the connections preceding and following that, and by a still smaller amount the preceding and succeeding connections two steps removed" (p. 174).

- **B.F Skinner Operant Conditioning (Skinner, 1989)**

The behavioral psychologist B. F. Skinner is well known in connection with behavioral psychology via his method of operant conditioning, depend completely on reinforcement, which may be administered according to different schedules. Not intending to make light of his programme of method of operating conditioning, it is reasonable to state that Skinner's method is simply rather controlling consequences to the organism's emitted behaviour is by directing learning or behaviour by providing feedback to the organism. In his words, "Behaviour is shaped and maintained by its consequences" (Skinner, 1989: 14). By the use of this method, controlling the timing, type, amount, and schedule of reinforcement, the experimenter directly controls the feedback received by the subject thereby indirectly controlling its behaviour:

"The Law of Effect has been taken seriously; we have made sure that effects do occur and that they occur under conditions which are optimal for producing the changes called learning. Once we have arranged the particular type of consequence called reinforcement, our techniques permit us to shape up the behavior of an organism almost at will." (Skinner, 1961: 145)

An imperative factor in giving effective reinforcement is that it must be given "almost concurrently with the desired behavior" (Skinner, 1961e, p. 413).

The Problem

Timely and effective feedback is very important in improving students' learning experience and academic performance which also have a significant effect in professionalizing teaching in the higher education level. Nevertheless, feedback is a difficult issue in Niger Delta University, Wilberforce Island, Bayelsa State, Nigeria, as most of the lecturers are still currently engaged with the tradition form of feedback. These methods of feedbacks continually are incapable of enhancing students' learning experience. Therefore, it is the right time for the lecturers to have a second thought about their feedback process.

Purpose of the Study

The aim of this study is to examine whether students in Science Education Department of Niger Delta University, Wilberforce Island, Bayelsa State, are given the appropriate feedback needed in enhancing their academic performance.

Objectives of the Study

- To find out what learners, perceive as feedback in enhancing their academic performance.
- To explore why learners actively seek feedback in enhancing their academic performance.
- To determine how timely teachers need to give feedback in enhancing students' academic performance.

Research Questions

This study addressed the following research questions:

- What do learners perceive as feedback in enhancing their academic performance?
- Why do learners actively seek feedback in enhancing their academic performance?
- How timely do teachers need to give feedback in enhancing the learners’ academic performance?

Significance of the study

Feedback has prevailing influences on students’ learning for the reason that it serves as a basis for self-evaluation of ability and self-regulation of learning behaviour, thereby affecting achievement. The outcome of this study will help inform tutors and school administrators on the role of feedback on students’ academic performance. It will also inform Stakeholders in drawing up policies which

will help promote effective feedback delivery system in the education sector.

Methodology

The research design for this study was a descriptive survey which attempted to investigate the effect of communicating feedback on the academic performance of Science Education students in Niger Delta University, Wilberforce Island, Bayelsa State.

Population of Study

The population of study was undergraduate students of Science Education Department in Niger Delta University. Four hundred questionnaires were distributed and 330 were retrieved, giving a retrieval rate of 82.5% which a true representation of the target population.

Table 1

Distribution of sample size into four levels

Department Levels	Population of Students
100 Level	34
200 Level	52
300 Level	94
400 Level	150
Total	330

Instrumentation

The instrument used to collect data for the study was self-designed instrument titled “Effect of Feedback on Science Education Students Questionnaire (EFSESQ)”. The instrument was made up of two sections; section A was designed to elicit data on respondents’ socio-demographic information, while section B consists of 15 items on the effect of feedback on the

academic performance of Science Education students in Niger Delta University, Wilberforce Island, Bayelsa State. A four-point Likert scale rating was used – Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD).

Reliability of the Instrument

The reliability of the instrument was established using a pilot test of the

instrument on 20 students similar to the main study group in the same university and the method of test-re-test reliability was adopted for the pilot testing within two weeks interval between the first and second administration. The Pearson Product Moment Correlation, and Cronbach alpha reliability test were employed and a reliability coefficient of 0.86 was attained making the instrument statistically reliable for the study.

Administration of the Instrument

The researcher administered the instrument for the data collection. The distributed copies of the questionnaire

were retrieved from the population within one week.

Method of Data Analysis

Descriptive statistical parameters such as, tables and percentage were employed to analyse the data collected from the respondents. A criterion Mean of 2.50 was set as the items on the questionnaire which were placed on four-point rating scale of Strongly Agree (SA), Agree (A), Disagree (D), Strongly Disagree (SD) and weighted 4, 3, 2, and 1 point respectively. Consequently, any item with mean value of 2.50 and above was “Agreed” while an item with mean values less than 2.50 was “Disagreed”.

Results

Research Question One: What do learners perceived as feedback in enhancing academic performance?

Table 2: Mean analysis on what learners perceived as feedback in enhancing academic performance.

S/n	Items	Responses				Total Samp	Mean \bar{X}	Decision Rule
		SA	A	SD	D			
1	Learners perceive feedback as a tool that inspires them to perform better	113	85	52	80	330	2.9	Accepted
		452	255	164	80	951		
2	Feedback can terminate teachers/learners’ relationship when they feel they were not awarded appropriately	174	93	28	35	330	3.8	Accepted
		870	279	56	35	1240		
3	Learners perceive feedback as a vital approach that helps them rate their level of understanding	108	117	38	67	330	2.8	Accepted
		540	234	76	67	917		
4	Feedback given to learners’ questions gives them a stable knowledge of the lesson	108	68	75	79	330	2.6	Accepted
		432	204	150	79	865		
5	Poor feedback can make learners develop a low self esteem	97	97	104	32	330	2.9	Accepted
		388	291	208	32	919		
Aggregate mean						2.9	Accepted	

Criterion Mean = 2.50; N = 330

Table 2 showed the Mean analysis on what learners perceived as feedback in enhancing academic performance. From the table, the results signpost that item one scored 2.9; item two scored 3.8; item three scored 2.8; item four scored 2.6; while item five scored 2.9. All Items were

accepted because they scored above the criterion Mean of 2.50. Therefore, the cumulative Mean value of 2.9 indicates an acceptance which makes known that what learners perceive as feedback enhances their academic performance.

Research Question Two: Why do learners actively seek feedback in enhancing their academic performance?

Table 3: Mean analysis on why learners actively seek feedback in enhancing their academic performance

S/N	Items	Responses				Total	Mean \bar{X}	Decision Rule
		SA	A	SD	D	Sample		
6	Learners identify their mistakes when they receive feedback	126	11	31	61	330	2.9	Accepted
		504	2	62	61	963		
7	Learners identify their area of difficulties in a subject matter when they receive feedback from previous task	242	64	14	10	330	3.6	Accepted
		968	19	28	10	1198		
8	A feedback on previous task inculcate the habit of research in a learner	100	13	45	55	330	2.8	Accepted
		400	0	90	55	935		
9	Learners perform better in their next task when they receive negative feedback	29	79	10	11	330	1.9	Rejected
		116	15	3	9	599		
10	Feedback helps learners to know their level of performance	116	13	43	40	330	3.0	Accepted
		464	1	86	40	983		
Aggregate mean						2.8	Accepted	

Criterion Mean = 2.50; N = 330

Table 3 showed the Mean analysis on why learners actively seek feedback in enhancing their academic performance. Results from the table indicates that item 6 scored 2.9; item 7 scored 3.6; item 8 scored 2.8; item 9 scored 1.9; while item 10 scored 3.0. Items 6,7, 8and 10 were

accepted because they pass the criterion Mean of 2.50 while item 9 was rejected because it scored below the criterion Mean score. Subsequently, the aggregate Mean value of 2.8 was accepted. This shows that actively seeking of feedback by students enhance their academic performance.

Research Question Three: How timely do teachers need to give feedback in enhancing the learners’ academic performance?

Table 4: Mean analysis on how timely teachers need to give feedback in enhancing their academic performance.

S / N	Items	Responses				Total	Mean \bar{X}	Decision Rule
		SA	A	SD	D	Sample		
111	Feedback on class work helps learners to perform better in other tasks	105420	104312	65130	5656	330918	2.9	Accepted
112	Home-work feedback enhance good academic performance of learners	111444	149447	2652	4444	330987	3.0	Accepted
113	Frequent feedback on learners’ previous task results to good academic performance	85340	170510	3468	4141	330959	2.9	Accepted
114	Feedback on learners’ questions contribute to their understanding which help them perform excellently	146584	117351	2142	4646	3301023	3.1	Accepted
115	Feedback of learners’ test help them to prepare better for their examinations	104416	103309	88176	3737	3307938	2.8	Accepted
Aggregate mean							2.9	Accepted

Criterion Mean = 2.50; N = 330

Table 4 shows the Mean analysis on how timely teachers need to give feedback in enhancing their academic performance. Results from the table indicates that item 11 scored 2.9; item 12 scored 3.0; item 13 scored 2.9; item 14 scored 3.1; while item 15 scored 2.8. All items were accepted because they scored above the criterion Mean of 2.50. Thus, the aggregate Mean value of 2.9 was also accepted, indicating that frequent feedback from teachers enhance good academic performance from learners.

Discussion of Findings

The results of this research, as shown in Table 2, demonstrate that students of Niger Delta University Wilberforce Island Bayelsa State, Nigeria, have positive perceptions towards feedback in enhancing their academic performance. This was shown on their response to questionnaire items relating to research question one; what learners perceive as feedback in enhancing their academic performance. The results indicated that learners perceive feedback as an important approach that helps them in grading their level of understanding and perceive feedback as a tool that inspires them to perform better. The findings showed that students felt that feedback can terminate teachers-learners relationship when they feel they are not appropriately rewarded. Also, the results indicate that poor feedback can make learners develop a low self-esteem.

With regards to why learners actively seek feedback in enhancing their academic performance, results from Table 3 indicated that learners identify their mistakes when they receive feedbacks and

also identify their area of difficulties when they receive feedback. Similarly, the results indicate that a feedback on previous task can inculcate in the learners, a habit of research as well as helping learners to know their level of performance.

Finally, on how timely teachers needs to give feedback, it was discovered from results from Table 4 that frequent feedback from various task such as class work, home work, tests, and also feedback from learners' questions helps learners to achieve a better standard of understanding, helps learners to perform better in other tasks and prepare better for their examinations.

Summary

This study indicated that Science Education Students in Niger Delta University have a positive perception towards what learners perceive as feedback in enhancing their academic performance. This study equally revealed that the students subscribed to why learners need to actively seek feedback in enhancing their academic performance and that teachers needed to timely give feedback to students in order to enhance students' academic performance.

Conclusion

This study evaluated the effect of lecturers communicating feedback to students on the academic performance of Science Education students in Niger Delta University, Wilberforce Island, Bayelsa State.

Recommendations

The following recommendations highlighted how feedback could better

enhance students' academic performance if teachers give them timely feedback:

1. always give answers to each task that was given so as to help learners correct their mistakes;
2. create a good relationship with learners and always encourage those with poor performance in order to avoid them from thinking low of themselves; and
3. give feedback on a test or examination is beneficial and would help learners perform better academically.

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