

Investigating the Relationship Between the Internal Dynamics of Collaborative Learning and Academic Performance Among Students of E. P. College of Education, Bimbilla

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Abstract

The major thrust of the study was to find out the relationship between students' perception of the internal dynamics of their collaborative learning context, effort made and their academic performance in E.P. College of Education, Bimbilla. One hundred and fifty students from the college were selected for the study through the purposive sampling technique. Questionnaire was used to obtain brief demographic information such as gender and age necessary for the study and the research questions. SPSS computer software was used for the data analysis. The Pearson Product Moment Correlation was used to analyze data for the correlations because all the data were measured on six point likert-scale. Although most respondents had high positive perception (90%) about the internal dynamics of their collaborative learning context, who also perceived their learning contexts in positive terms, there was hardly any relationship between perceptions of the internal dynamics of their collaborative learning groups and their academic performance. There was no correlation between academic performance and the internal dynamics variables except in the case of equal participation versus performance in science which has a correlation of 0.231, significant at 0.05. It was also found that students' academic effort and grades in Mathematics, English and Science were hardly related.

Keywords: Perception, effective learning, entry behavior, progress report

1.0 Introduction

The generally low academic performance of teacher-trainees in the colleges of education in the country is a cause for concern for all stakeholders of education. The perceived low performance could be attributed to a number of factors. Perhaps majority of the trainees actually do not intend to be professional teachers but only use the college of education as a mere means to an end or as stepping-stones to more adventurous fields of education and personal development. It is also possible that most trainees see the college of education as a last resort since they have no option left to fix themselves anywhere else. Mostly these categories of students do not have the best of results (senior high school level) and for that matter are generally low achieving students.

E. P. College of Education, Bimbilla has students with similar characteristics such as mentioned above if not worse. Most of the students of this college come from the eastern corridor of the Northern Region. This college is isolated and lacks many social amenities such as access to good roads, potable water and credible and reliable telecommunication system. It also lacks other social services such as good medical care, good transportation network linking this rural area to other important towns in the region and the country at large. The whole of the eastern corridor of the Northern Region does not attract the best of teachers at the basic school and senior high school levels because of the deprived nature of the area. This type of environment does not attract good students to the college. In fact, the college seems to have one of the worst records of students with very bad entry behaviour in the past as available records in the college indicate. The Evangelical Presbyterian (E.P.) College of Education, Bimbilla was established in 1962 as a single sex (male) institution with an initial intake of 24 to train teachers to acquire Certificate 'A' 4-year post middle. The first batch of females was admitted in 1983 and that marked the beginning of increased enrollment and it becoming a co-educational institution. The college shifted from the award of certificate 'A' 4-year post middle to certificate 'A' 3-year Post Secondary in 1992. It remained at that status until 2005 when the college, with other 37 public colleges in Ghana, was mandated by government to award diploma in basic education in line with policy and under the tutelage of the University of Cape Coast.

The last few years before colleges were raised to tertiary status, precisely 2000-2005, the college suffered one of the worst failures in the country. In the academic progress records of the college, so many students were being sacked each year for failing part one. The generation of poor academic performance did not end with the Three Year Certificate 'A' programme. It persisted through the Diploma in Basic Education programme when the colleges were raised to the tertiary level. Since 2005, the College is still in the list of colleges that register poor performance in every semester examinations. The summary of results analysis released by Institute of Education, University of Cape Coast every semester, shows that the E.P. College of Education had consistently registered one of the highest total number of students who were referred in two or more subjects. The summary and analysis of the results as well as academic progress records of the college show that from 2005/2006

academic year to 2007/2008 about 70% of the students were referred in about six subjects of the nine courses of each semester. The performance began to improve in 2008/2009 with 120 first year students and 70 second year students being referred in the first semester courses whilst the second semester recorded 74 first year and 72 second year referred students. The final grade of these students for the last three years has been very poor. The best grade the college has produced so far is one second class upper and four second class lower. The rest are weak pass or no grade (see appendix A). This poor academic performance is largely perceived to be resulting from very bad entry behaviour compounded by fake results as have always revealed by confirmation of students results by West African Examination Council. The bad entry behaviour of the students has been a serious problem for some time now due to the deprived nature of the area. Most of the candidates come with very weak passes such as 'D' and 'E' in the core subjects. In fact about 90% of the students come to the college with 'E' in English, Mathematics and Science as indicated by the 2007-2009 admission records (see appendix B). But could it be the only factor contributing to the poor performance of the students?

Perhaps some of the learning styles adopted by students are not helpful enough. May be it is because students do not know or understand or better still are not able to identify their learning styles in order to make good use of them for effective learning. A random survey during students' study time to observe students' learning habits revealed several learning styles students seem to be practicing. Some of these learning styles are solitary and social learning styles such as interpersonal, print-oriented learning and democratic education. A good number of students were engaged in solitary learning. These students were found in lonely corners privately and independently learning. Solitary learners are people who can best learn by teaching themselves how to do something, what something means, or how something works. What one might wish to know is how such students are helped out when they encounter problems. On the other hand, some students were found learning in groups. These groups shared views, ideas and corrected their notes. Social learners work best in groups, and are able to absorb more useful information if they are studying with someone else at the same time. Quizzing each other is also a great way to do things. Working in groups to practice behaviour may help one to avoid mistakes or errors made by others and also promote creativity and better organization of ideas. Several questions could be asked as to whether these learning styles are helpful to the students and if they do why are the students not performing to expectation.

Learning styles can encompass how you manage information so that you will remember it, how you prefer to study, and how you go about solving problems. The concept also deals with your environmental preferences for learning. Knowing these preferences will help you work more effectively. Do you like it quiet when you study, or must you have lots of background noise? Do you prefer bright lights or dim ones? How sensitive are you to temperature? Does a room that is too hot or too cold make you to lose focus? Does a formal setting such as a desk and chair work for you, or is studying in your bed effective? Do you like to move around? What motivates you to study? Do you prefer to study alone or do you need to study with others? At what time of the day do you most like to study? If an individual is able to identify the learning styles and environment that most suits him or her and use them effectively there is no doubt that academic performance would improve significantly (Hassen, 2010).

It is rarely difficult to find homogenous classes. Most typical classrooms are heterogeneous with different levels of abilities such as diverse cultural, economic, linguistics ethnic and social backgrounds. It is in this line that Jones and Jones (2001) suggested that the teacher must modify a classroom environment to help learners develop pro-socially cooperative behaviour and culture of learning. Jones and Jones seem to be proposing students learning collaboratively in groups. What then is collaborative learning? "Collaborative learning" is an umbrella term for a variety of educational approaches involving joint intellectual effort by students, or students and teachers together. Usually, students are working in groups of two or more, mutually searching for understanding, solutions, or meanings, or creating a product. Collaborative learning activities vary widely, but mostly centre on students' exploration or application of the course material, not simply the teacher's presentation or explication of it. Collaborative learning as a strategy of learning among peers originated from Lewin's (1948) group dynamics which postulates that a group has a large degree of differentiation.

Recent research suggests learning is fundamentally influenced by the context and activity in which it is embedded (Brown, Collins & Duguid, 1989). Collaborative learning activities immerse students in challenging tasks or questions rather than beginning with facts and ideas and then moving to applications, collaborative learning activities frequently begin with problems, for which students must marshal pertinent facts and ideas. Instead of being distant observers of questions and answers, or problems and solutions, students become immediate practitioners.

The present research was designed to study the relationship between students' perception of the internal dynamics of their collaborative learning groups, effort made and their academic performance in Ghanaian Colleges of Education with Bimbilla College of Education in focus.

1.1 Statement of Problem

The rather limited knowledge and experience of our young teachers today as claimed by many people and some educationists make them not only ineffective in class but contribute largely to the falling standards of education in the country. A cluster of factors may be contributing to producing teachers who are largely ineffective in class for the basic schools in Ghana.

It appears some people point accusing fingers at certain causal factors which include first inadequate time frame at college to prepare well as teachers. The blame is also placed on the student-teachers who may not have implored the best opportunities to train well during their school days. The possibility of tutors not using the appropriate method, techniques, strategies as well as good guidance cannot be overruled.

Personal teaching experience in Bimbilla E.P.College of Education revealed that the college caught up in this web has more serious conditions that are peculiar to only the college which further reduce the quality of teacher training in that college. Some of the disturbing factors are one the generally low academic achievers which results from the fact that majority of the students come in with very weak passes. Other perceived factors are the environment being seriously unfriendly for productive academic work; and the generally poor attitude of students towards learning. This is shown clearly in their lack of commitment and zeal in learning. It seems therefore that, students do not cherish knowledge and competence but cheating in order to pass examinations.

Though things are beginning to change for the better in the last three years, it appears few obstacles still persist. Some of the efforts made by the college to improve learning conditions in the school include, employing young and energetic qualified teachers who are working zealously to turn things round for good. During the last four years about 75% of the tutors of the college have made efforts to obtain their second degrees in order to improve upon their competence in teaching. One of the effective strategies teachers of the college are adopting to improve students performance is encouraging learners to engage in collaborative group work. The college has also embarked on remedial classes especially in English, Mathematics and Science to step up students' academic performance.

In spite of these efforts made by the college, some pertinent questions still agitate the minds of many people as to whether the use of collaborative group work in class during lessons as well as seminars and assignments can help in producing the desired results. Some of the questions that remained unanswered are whether students actually engage in collaborative learning, whether there is any relationship between collaborative learning and student academic performance, and whether students benefit from collaborative learning. It is these questions that have informed the researcher's quest to find out if there is any relationship between student's perception of the internal dynamics of their collaborative learning groups, effort made and academic performance. The objectives of the study were therefore to assess students' perceptions of the internal dynamics of their collaborative learning groups and how these dynamics (social) are related to their academic performance.

1.2 Significance of the Study

Available literature indicates that research on collaborative learning has been done in various subjects and at the various levels of education ranging from basic levels through second cycle to tertiary levels. Most of these studies were done outside Ghana (Opere & Eshun 2009). The few studies done in Ghana was at the senior high school and teacher training college levels. Although all these studies are similar to the relationship between students' perception of the internal dynamics of collaborative learning and academic performance, none of them was done in the eastern corridor of northern Ghana or has direct relation with schools in northern Ghana. Besides, this is not replication of what others have done but an extension by relating it to effort. This research is therefore important since it will not only be one of the first studies at the college of education level in northern Ghana, but will also reveal whether collaborative learning at that level is beneficial. It will also contribute to enrich the knowledge base of the topic and further close up the gap created by available research works. This study will be source of information for teachers, especially teachers of E. P. College of Education, Bimbilla and encouragement to use the technique in teaching.

This research will contribute significantly to the world of research since the findings may be used as source of information for literature review for some other studies. Weak points or gaps found in this work may also be used as research topics for further studies.

1.3 Delimitation of the study

This study is limited to E. P. College of education Bimbilla. It specifically aims at the relation between students' perception of the internal dynamics of collaborative learning, effort made and academic performance of students and whether slow learners can use it to overcome learning difficulties. It does not extend to other forms of collaboration such as team work. The study is also restricted to only level two hundred (200) students of E. P. College of education Bimbilla.

1.4 Limitation of the study

Some respondents might be reluctant to provide true and sincere information about their learning weaknesses or problems and performance (results). Some could also be ignorant about their best strategies that work for them in their learning process.

2.0 Methodology

The research design was a correlation research and specifically a case study since the study is based on only E.P College of Education, Bimbilla. The target population was students of E. P. College of Education, Bimbilla, numbering 460. The composition of this number included 240 level 100 students of which 44 were females and 196 were males. The level 200 students were 220. Out of this were 54 females and 166 males. One hundred and forty (140) of the level 200 students offered General Arts programme while eighty (80) of them offered Science and Mathematics programme

The sample size for the study was 140. This was purposively selected from the entire student population of the college. All 140 level 200 General Arts students were the respondents of the study. Since they were more than their counterparts in the Science and Mathematics programme, their number (140) can be representative of the student population. Besides, the General Arts students were actively engaged in collaborative learning. The sample size was also proportionally selected to correspond with the number of females and males in the 140 students of the General Arts Programme.

The main research instrument used in this research is questionnaire. The instrument was designed by the researcher to collect data from the sampled students. Questionnaire, according to Amedahe (2002), consists of a list of questions or statements relating to the aims of the study, the hypotheses and research questions to be verified and answered of which the respondent is required to answer by writing. According to Kerlinger (1973), the questionnaire is widely used for collecting data in educational research because it is effective for securing information about practices and condition for inquiring into the opinion and attitudes of respondents. Koul (1997) noted that questionnaire is a popular means of collecting all kinds of data in research. He explained that it is usually used in educational research to obtain information about certain conditions and practices and inquire into opinions and attitudes of individual or a group.

The questionnaire contained close-ended and open-ended items in two sections. Open-ended and close-ended items were used to enable the researcher obtain as much detail information as possible from the respondents. The use of these items was to reduce tension and fatigue during the data analysis as well as make it relatively easy for respondents to respond to the items.

Though Fraenkel and Wallen (2000) critique that questionnaire may be unclear or seemingly ambiguous and may be responded wrongly, or may not give respondents chance to react verbally to the items of particular interest or importance, the researcher used it because he could give it to large number of students at the same time. Nwana (1981) on the other hand outlined some merits of questionnaire over other instruments. He stated among other things that questionnaire is useful if the respondents cannot give information in the project unless complete anonymity is guaranteed. He also explained that questionnaires are useful if the population is widely distributed geographically and not enough time and personnel and other resources are available for data collection.

Structured questionnaire was used in the data collection. The questionnaire was pre-tested to determine the validity and reliability of the items before using them for the actual study. This was done to solve some of the problems of questionnaire as indicated by Fraenkel and Wallen (2000) is that a pre-test of the questionnaire “can reveal ambiguities, poorly worded questions that are not understood, and unclear choices, and can also indicate whether the instructions to the respondents are clear” (p. 441). This well advised the researcher to try the questionnaire out with 10 students from Science and Mathematics programme of E. P. College of Education, Bimbilla who were not part of the study. The pilot test enabled the researcher to assess the appropriateness of the questionnaire items and to verify whether the items could easily be read and understood.

Both face and content validity of the items were determined and established following a rigorous assessment of the items to assess their appropriateness. In addition, most of the items were designed such that respondents were only required to tick although a few others gave the respondents the opportunity to express their views beyond the close-ended options. This helped to determine the clarity of the instrument, the problems to be encountered in the main administration and the reliability of the instrument. It also helped to test the planned statistical methods for the data analyses.

The completed questionnaire were collected and edited for consistency. Both descriptive and inferential statistics were used to analyze obtained data. Percentages and mean values were calculated. The Pearson's product moment correlation was the main inferential statistics used to determine the relationship between students' perception of the internal dynamics of their collaborative learning groups and academic performance as well as effort made.

3.0 Results and Discussion

The results reported on and discussed here are based on the answers for the research questions. The data analysis was first done to determine the distribution of respondents by gender and age. The distribution of the respondents by gender is presented in Table 1.

Table 1: Distribution of respondents by gender

Valid	No.	%	Valid Percent	Cumulative Percent
Male	88	62.9	62.9	62.9
Female	52	37.1	37.1	100.0
Total	140	100.0	100.0	

As shown in Table 1, males outnumber females in the sample by a wide margin of (36)25.8% of male over females. This is not strange, since in the student population of E.P. College of Education, Bimbilla, there are more males than females, and also because the sample was selected on a proportional basis. The next item under discussion is age. The distribution of the respondents by age group is presented in Table 2.

Table 2: Distribution of respondents by age group

Age Range	No.	%	Valid Percent	Cumulative Percent
Valid less than 21	14	10.0	10.1	10.1
21-25	87	62.14	62.6	72.7
26-30	36	25.7	25.9	98.6
31+	3	2.1	2.14	100.0
Total	140	100.0		

As the data indicate in table 2, the modal group is 21-25 year-old group (62.6%). This is an indication that the respondents are quite matured in terms of age. The need to know the statistics of students' engagement in collaborative learning was considered. Respondents were asked if they belonged to a collaborative learning group. This was necessary to obtain information about the number involved for accurate analysis. The responses are indicated in Table 3.

Table 3: Distribution of respondents in collaborative learning groups

Item	No.	%	Valid Percent	Cumulative Percent
Yes	137	97.9	98.6	98.6
No	3	2.1	1.4	100.0
Total	140	100.0		

From Table 3, it is clear that 98.6% (137) of the respondents indicated that they were engaged in group learning whilst 2.1% (3) were not. This indicates that almost all the respondents learn collaboratively.

3.1 Research Question 1: What are students' perceptions of the internal dynamics of their collaborative learning groups?

The study assessed the students' perception of the internal dynamics of their collaborative learning groups. Their responses are presented in Table 4

Table 4: Respondents' perception of their collaborative learning contexts

Conditions	Positive Perception		Negative Perception	
	No.	%	No	%
Mutual interdependence	117	83.7	23	16.3
Promotive interaction	123	87.8	17	12.2
Group processing	119	85.0	21	15.0
Social skills	86	61.3	54	38.7
Equal participation	121	86.4	19	13.6
Individual accountability	91	64.9	49	35.2
Shared leadership	114	81.4	26	18.6

From Table 4, the majority of the student (117 representing 83.7%) perceived that positive interdependence exists in their learning groups. On the other hand only 23 respondents representing 16.3% did not see any interdependence working in their groups. This answers the question whether members of the group perceive that the success of individuals depended on the success of the group. This confirms the assertion of Opare (2007) that the heart of collaborative learning is interdependence which means members of the group depend on each other so much such that they either swim or sink together depending on the total effect of individual efforts.

With regard to promotive interaction, the respondents were asked to indicate whether or not this condition characterized their group learning context. From Table 4, we can see that majority of the respondents (123 or 87.8%) indicated, that they used questioning and discussion to help solve their learning problems and to promote interaction whilst 17 respondents representing 12.2% gave negative responses.

Group processing is one of the characteristics of good collaborative learning contexts. Respondents were

asked to indicate on a six point likert scale extent to which their learning group contexts were characterized by this condition. The responses to this question as indicated in item 6 show clearly that majority of the respondents (119 or 85.0%) gave positive responses that the success of their groups and their members were constantly monitored. The views of the majority seem to confirm the idea of Opere (2007) that self evaluation and monitoring of individuals and group members is necessary for effective collaborative learning.

The question on social skills was intended to find out from students whether they had any mechanism put in place in their peer learning group to motivate, criticize or reward members. Respondents were asked to indicate on a six point likert scale whether or not they had a way of rebuking lazy members and for rewarding hard working members. The responses of the students as presented in Table 4 has 86 (61%) majority positive responses to the question as against 54 (38.7%) negative responses. The high percentage of 61.3% positive responses confirms the findings of Johnson and Johnson (1991) that peer interaction promotes the development of social skills such as leadership, decision making, trust building, communication and conflict management.

Students were asked in this question to describe the condition of participation. Respondents were asked to indicate whether in their groups members were tasked equally from time to time to search for information to share with group members. The responses in Table 4 (item 5) indicated that majority 121(86.4%) said that task was equally distributed to group members. This positive majority response confirmed the findings of Opere (2007) that in a group activity every member must feel that everybody is important and for that matter equal participation in the group activity is necessary for the success of the group.

One of the things that characterizes group dynamics that students were asked to measure is individual accountability. Respondents were to indicate whether each member of their groups was accountable to the group for task assigned to them. The 64.9% positive responses presented in Table 4 show that most of the learning groups had high individual accountability. However, some groups did not perceive any individual accountability.

Group activities are best carried out through shared leadership or roles (Doyel *et al*, 2001). Shared leadership was one of the criteria used to measure or evaluate the quality of the collaborative learning of the students. Students were to describe on a six point Likert scale whether leadership in their groups was fairly distributed. The results in the table (item 7) present the answer. The positive responses of 114 representing 81.4% shows that most of the groups had their leadership roles fairly distributed. On the other hand 26 representing 18.6% of the respondents did not view leadership in their groups as shared responsibilities but rather rested in only a few individuals.

The answer to research question one is that the respondents of the sample generally had positive perception of the internal dynamics of their collaborative learning contexts since almost 80% gave positive responses.

3.2 Research question 2: To what extent are students' perception of the internal dynamics of their collaborative learning groups and their academic performance related?

To arrive at an answer for this question, zero-order correlations between academic performance and the variables indicating the internal dynamics were computed. These are presented in Table 5.

Table 5: Correlations between academic performance and internal dynamic variables

Items	Correlation Co-efficient (R)		
	Mathematics	English	Science
Positive interdependence	-.121	-.013	-.013
Promotive interaction	-.117	.041	-.116
Social skills	-.097	-.154	-.127
Group processing	.007	-.077	-.123
Equal participation	-.040	-.157	-.231 (**)
Individual accountability	-.111	.066	.152
Shared leadership	.013	.144	-.080

* Correlation is significant at the 0.05 level (2-tailed).

The answer to research question two lies in the responses given by the respondents regarding the extent to which they felt their membership with a collaborative learning group boosted their academic performance. In other words they were required to assess themselves and point out whether their learning with peers has enabled them to improve on their academic performance or not.

The data in Table 5 show clearly that there is virtually no correlation or relationship between academic performance and those variables representing the internal dynamics. The exception is that equal participation correlated with academic performance. This correlation, however, is negative, which suggests that even though the perception is positive, academic performance is low. The lack of correlation between these variables and academic performance is not strange. First from Table 5, one can see clearly that an overwhelming number of the respondents positively perceived the internal dynamics of their peer learning groups.

Therefore there is very little variation in the distribution of the respondents by the way the internal dynamics were perceived. That is when most of the respondents appear to be making almost the same responses,

the correlations cannot be significant. Neither can they be strong. The conclusion in response to research question two is that there is no significant relationship between one's perception of the internal dynamics of one's group learning and one's academic performance. Thus there is no direct relationship between the way one perceives the internal dynamics on the one hand and one's academic performance on another.

4.0 Conclusions

The objectives of the study were to assess students' perceptions of the internal dynamics of their collaborative learning groups and how these dynamics are related to their academic performance. Based on the answers to the research questions, it is obvious that even though most of the students belonged to collaborative learning groups, who also perceived their learning contexts in positive terms, there was hardly any relationship between perceptions of the internal dynamics of their collaborative learning groups and their academic performance. It is therefore suggested that since this study delved into the link between group learning and academic performance, it will be appropriate to research into the relationship between individual learning effort and academic performance.

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APPENDIX A

Final results at grading point in classes for 2007-2009

Year	CGPA	1 st Class	2 nd Upper	2 nd Lower	3 rd Class	Pass	Referrers
2007	3.6-4.0						
	3.0-3.5						
	2.5-2.9						
	2.0-2.4				20		
	1.0-1.9					123	
2008	3.6-4.0						
	3.0-3.5		1				
	2.5-2.9			4			
	2.0-2.4				78		
	1.0-1.9					60	6
2009	3.6-4.0						
	3.0-3.5						
	2.5-2.9			6			
	2.0-2.4				52		
	1.0-1.9					32	

Appendix B
E. P. College of Education-Bimbilla
Entry Behaviour of Students with Grade in Core Subjects
Admission records of 2008 and 2009

Year	Subject	G	R	A	D	E
		'A'	'B'	'C'	'D'	'E'
2008	English	-	-	13	30	197
2008	Maths	1	28	53	61	93
2008	Science	-	11	44	80	105
2009	English	-	2	85	79	143
2009	Maths	3	35	103	64	106
2009	Science	-	29	74	78	122

Appendix D
E. P. College of Education, Bimbilla Staff Development and Progress Report 2007-2010

Year	No of staff on roll	No left for graduate studies	Percentage
2007	30	4	13.3
2008	32	7	21.9
2009	32	7	21.9
2010	32	6	18.8
Total	32	24	75.9