Chapter Four

Data Analysis, Results and Discussions

This chapter presents the analysis of data obtained from experiment, teachers' questionnaire, pupils' questionnaire, and classroom observations.

4.1 Analysis of the Experiment.

The analysis of the experiment shall have as its focal point the answering of the pivotal question: To what extent can action research be considered a constructive tool that helps teachers grow and develop both academically and professionally?

In order to analyze the data, both descriptive and analytic statistics were used. The descriptive statistics such as mean, median, mode, standard deviation were used on the scores obtained in the test of both experimental group and control group for understanding the nature of the distribution of the scores. Analytic statistical technique Analysis was used to find out the effect of the test on students different vocabulary memorization, knowledge of grammar, punctuation, cohesive devices etc. The focal point of the present study is writing and how action research can help improve it. Statistical Package for Social Sciences **(SPSS)** was used for analysis of the data. The analysis and the result of analysis were discussed with the help of tabular displays in the following sections.

To study the modes of data distribution before applying analytic statistics , descriptive analyses were carried out to compute mean, median, standard deviation, for all the variables under study and the data was used to ensure that it satisfies the underlying assumptions for employing analytic statistics. The result of analysis is presented in the following table.

4.1 Analysis of the Questions Relating to Vocabulary Acquisition

It goes without saying that good knowledge of vocabulary reconciles with good writing. The students were subjected to instantaneous test right away after experiencing the presentation of vocabulary, grammar, punctuation and other components for good writing. In order to find out, whether the effect of teaching these components over a period of time (long term-memory), a delayed test was carried out after a gap of three days after the immediate tests. The researcher as regards vocabulary used the method of semantic mapping to activate short-term and long term memories.

Students' performance in the tests is presented in Table 4.1. In the vocabulary tests, students scored one mark for each correct response and the total scores of each question particularly vocabulary test was 25. The result of the tests is analyzed below:

Table (4-1) Components of the test (grammar, vocabulary, punctuation and tenses)

Group	**Test**	**N**	**Mean**	**Median**	**SD**
Experimental Group (A)	Immediate Test	80	11.32	12.0	5.35
Control Group (B)	Immediate Test	80	8.03	8.75	1.75
Experimental Group (A)	Delayed Test	80	10.38	11.0	4.54
Control Group (B)	Delayed Test	80	7.80	7.5	1.44

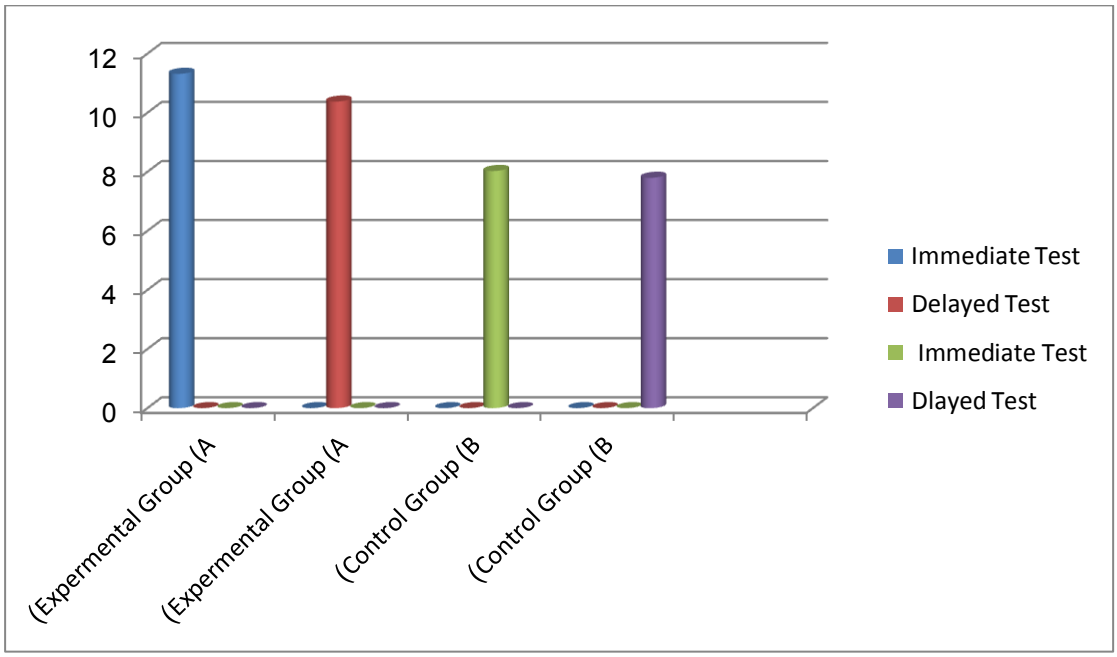


Figure (4-1) Grammar, tenses, punctuation….components for good writing.

The above table and graph show a comparison between immediate and delayed tests of the different variables (grammar-----vocabulary) learned by the students. As shown in the table, students did better in the immediate tests (mean 11.2 and 10.03) than in the delayed ones (mean 10.38 and 9.80) with respect to each group. The result indicate a significant difference between each group in both tests, hence we find that there is a high deviation between the groups in the immediate test (SD = 5.35) for group (A) and (SD = 1.75) for group (B), this imply that teaching of these variables has a great effect in activating students **short term-memory** than the traditional method of for example vocabulary presentation (List of vocabularies). Similarly in the delayed test, the result

reveal that there is high deviation between group (A) (SD = 4.54) and group (B) (SD = 1.44) to indicate that, still semantic mapping has strong effect in activating students **long term-memory** than the traditional method.

Table (4-2) Analysis of Group (A) Sample test

Group	Test	N	Mean	SD	SD error
Experimental Group (A)	Immediate Test	80	4.9538	2.1145	0.2623
Experimental Group (A)	Delayed Test	80	4.7846	5.4464	0.6755

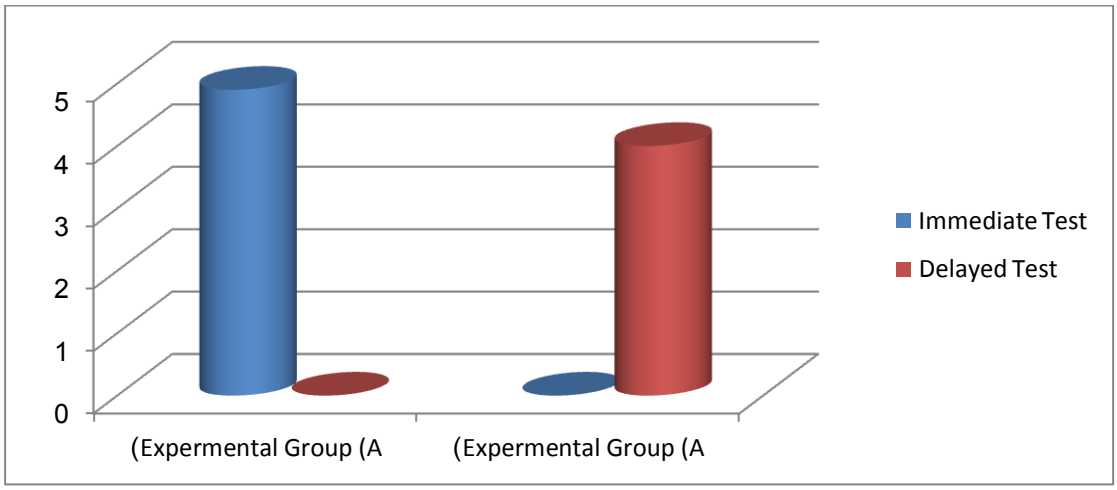


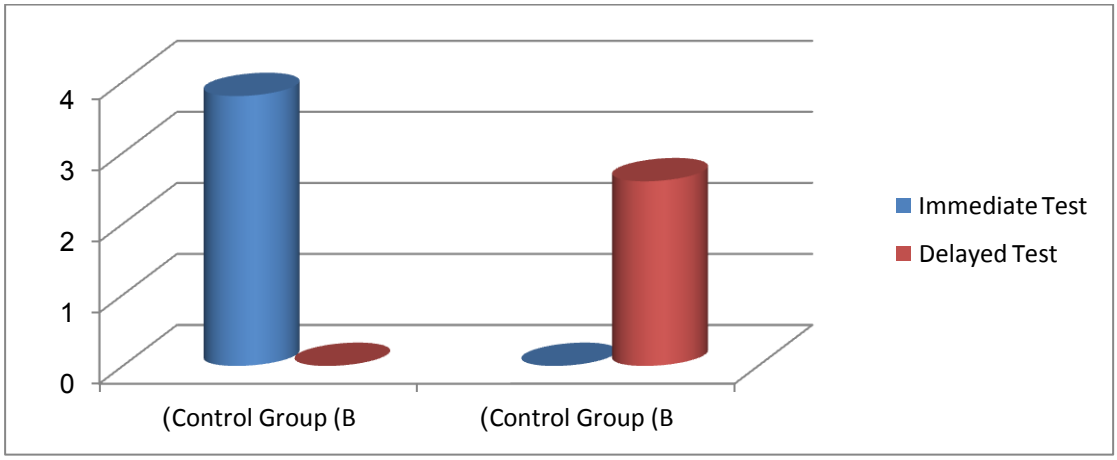
Figure (4-2) Analysis of group (A) sample

As shown in Table 4.2, regardless of the test time, students slightly higher in the immediate test (mean = 4. 9538) than in the delayed one (mean = 4.7846). To investigate whether the differences between the immediate test and the delayed test were statistically significant , paired samples tests were run, the results indicate that, the difference between the immediate test and the delayed test were not significant, However there is slight difference between the immediate test (SD = 2.1145) and the delayed test (SD = 5.4464), to show that students performed slightly

better in the immediate than the delayed test. The conclusion of this analysis shows that semantic mapping strategies has a great impact in students short term memory as well as long term memory that allow them to acquire English vocabulary easily.

Table 4.3 Group B Samples test

Group	Test	N	Mean	SD	SD error Mean
Control Group (B)	Immediate Test	80	3.8462	3.0716	0.3291
Control Group (B)	Delayed Test	80	2.6462	2.7154	0.4329



In contrast of students first exam particularly vocabulary as per semantic mapping list check, students perform higher in the immediate test (mean = 3.8462) than in the delayed one (mean = 2.6462) in conventional vocabulary method. To investigate whether the differences between the immediate test and the delayed test were statistically significant , paired samples tests were run, the results indicate that, the difference between the immediate test and the delayed test were significant. Students performed significantly better in the immediate test (SD = 3.0716) than in the delayed test (SD = 2.7154).The conclusions of this analysis indicate

that conventional vocabulary method (list of vocabulary) is not effective method for vocabulary memorization if compared with semantic mapping strategy.

This **confirms** the first hypothesis which states *Action research can be a **useful tool that helps teacher grow and develop as classroom practitioners and hence raise his students' grasp of area of knowledge or discipline.***

4.4 Analysis of Students' acquisition of different parts of speech:

The posttest targeted the parts of speech as they are essential for learning in general and writing in particular. There were different part of speech, nouns, adjectives and verbs in the test and in each of the student's vocabulary presentation lists. Judge by their performance in the test their acquisition of the words of each part of speech will be analyzed in the following

4.4.1 Analysis of Nouns

Participants scored slightly higher in the items of nouns in the semantic tests .The students who were exposed to semantically related list performed better than those who were exposed to tradition vocabulary list. The differences between the mean scores of the tests for both groups were statistically significant as shown below:

Table (4-4) Scores in **nouns**

Group	Test	N	Mean	SD	SD Mean
Experimental Group (A)	Immediate Test	80	4.9538	1.2114	0.2623
Control Group (B)	Immediate Test	80	3.8462	0.3071	0.3291
Experimental Group (A)	Delayed Test	80	4.7846	1.5446	0.6755

Control Group (B)	Delayed Test	80	2.6462	2.7154	0.4329

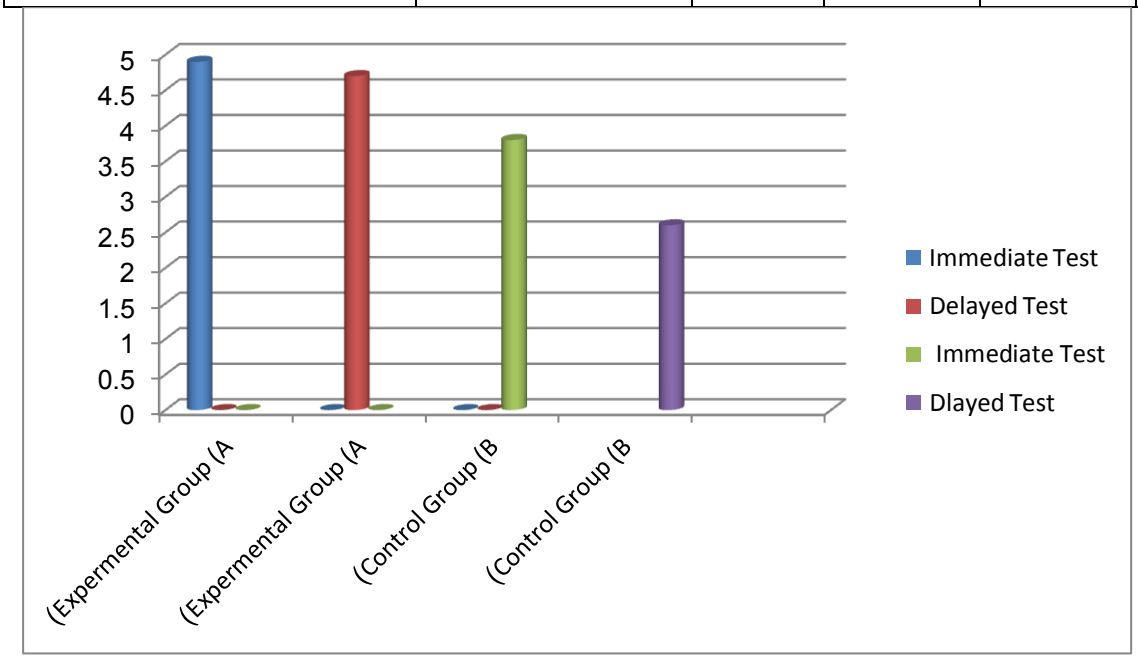


Figure (4-4) scores in nouns

Judging by the table above which reflects a comparison between immediate and delayed tests of (noun). It is apparent that almost all students performance in the immediate test is better (mean 4.9538 and 3.8462) than in the delayed ones (mean 4.7846 and 2.6462).The result indicates a significant disparity between each group. Consequently, in both tests, a high deviation is observed between the groups in the immediate test (SD = 1.2114) for group (A) and (SD = 3.0716) for group (B), this readily shows that those whore exposed to a dose of teaching where semantic mapping was taught have outdone their peers with the traditional method in learning vocabulary. Similarly in the delayed test, the result reveal that there is high deviation between group (A) (SD = 1.5446) and group (B) (SD = 2.7154) to indicate that, semantic mapping strategies are beneficial for sustaining nouns in students long term memory compared to the traditional method. This confirms the second

hypothesis: ***Action research can be thought of as a powerful systematic reflective process.***

Table (4-5) Analysis of students' scores in adjectives

Group	**Test**	**N**	**Mean**	**SD**	**SD error Mean**
Experimental Group (A)	Immediate Test	80	4.5538	1.00048	1.2409
Control Group (B)	Immediate Test	80	3.5231	0.03341	1.4058
Experimental Group (A)	Delayed Test	80	4.0769	1.25384	1.5552
Control Group (B)	Delayed Test	80	2.8769	0.23437	1.8411

As indicated by the table above students' scores vary. However, their overall attainment in adjectives is fairly better. This is because adjectives and nouns during the experimentation period were explicitly handled and excessively tested. Moreover, adjectives are some of the areas students have a relatively good grasp over as early as secondary school levels.

The mean scores of the items of adjectives were slightly higher in the immediate tests than in delayed test for each group. With paired samples tests run, it is again found that the differences between both groups were significant as indicated in the below table (5)

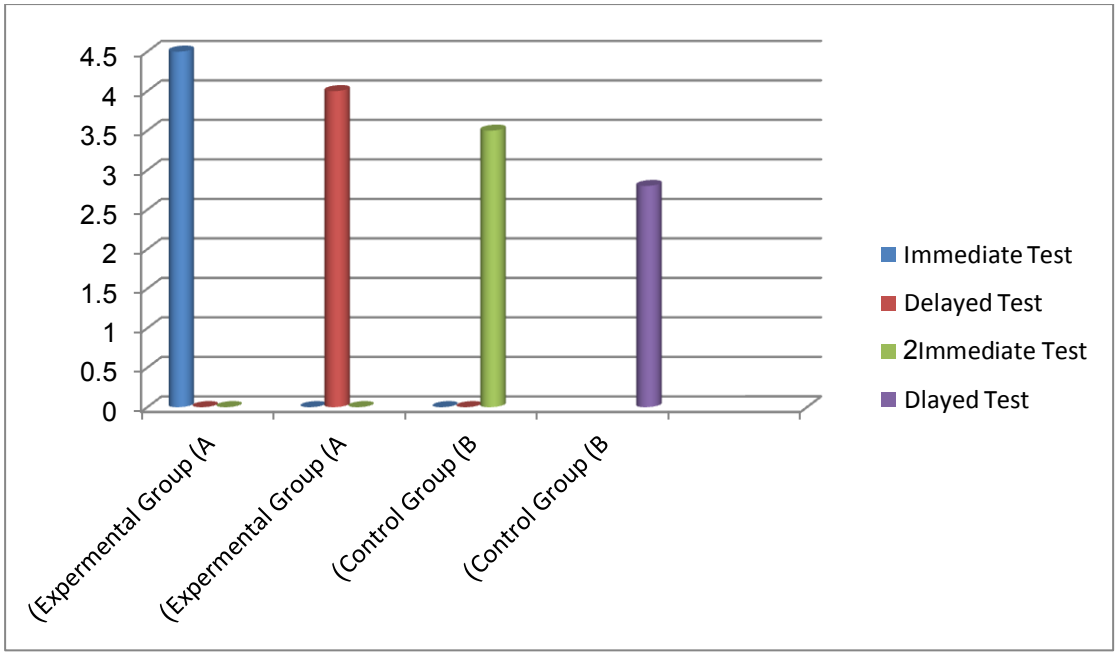


Figure (4-5) scores in adjectives

Table (4-6) students' scores in relation to verbs

Group	Test	N	Mean	SD	SD error Mean
Experimental Group (A)	Immediate Test	80	5.6462	1.9751	1.2096
Control Group (B)	Immediate Test	80	3.7077	8.2392	1.0219
Experimental Group (A)	Delayed Test	80	4.8308	1.4314	1.7755
Control Group (B)	Delayed Test	80	3.3692	0.2192	1.5123

Judging by the above table (4-6) students have shown good grasp in this area compared with the other areas. The mean scores of the items of verbs were slightly higher in the immediate tests than in delayed test for each group. With paired samples tests run, it is again found that the differences between both groups were significant as indicated in the below table above.

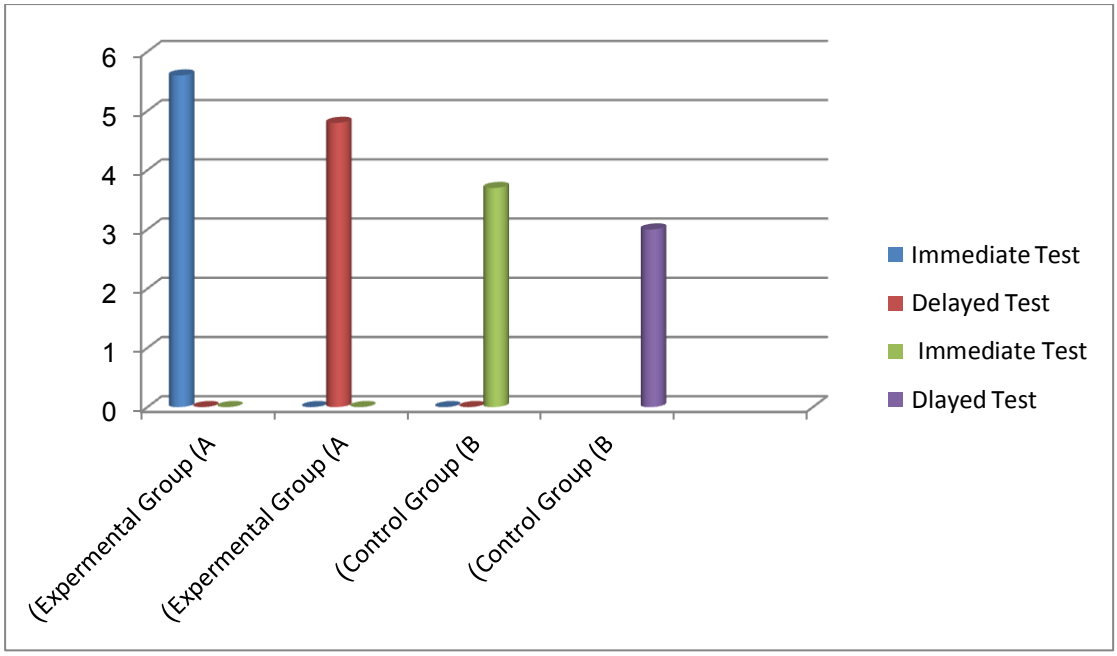


Figure (4-6) verb scores are significantly higher

The above table 4.6 shows a comparison between immediate and delayed tests of (verb) acquisition. As can be seen from the table, students did better in the immediate tests (mean 5.6462 and 3.7077) than in the delayed ones (mean 4.8308 and 3.3692). The result indicate a significant difference between each group in both tests, hence we find that there is a high deviation between the groups in the immediate test in verb acquisition (SD = 1.9751) for group (A) and (SD = 8.2392) for group (B), this imply that the acquisition of verb through semantic mapping strategies is better than the traditional method of vocabulary presentation. Similarly in the delayed test, the result reveal that there is high deviation between group (A) (SD = 1.4314) and group (B) (SD = 0.2192) to indicate that, semantic mapping has strong effect to sustain verbs in students long term memory than the traditional method.

Table (4-7) analysis of all the scores across the two exams

Dependent variable	Group	Test	N	Mean	SD	SD error Mean
Acquisition of Nouns	Experimental Group (A)	**IT**	80	4.9538	1.2114	0.2623
	Control Group (B)	**IT**	80	3.8462	0.3071	0.3291
	Experimental Group (A)	**DT**	80	4.7846	1.5446	0.6755
	Control Group (B)	**DT**	80	2.6462	2.7154	0.4329
Acquisition of Adjectives	Experimental Group (A)	**IT**	80	4.5538	1.00048	1.2409
	Control Group (B)	**IT**	80	3.5231	0.03341	1.4058
	Experimental Group (A)	**DT**	80	4.0769	1.25384	1.5552
	Control Group (B)	**DT**	80	2.8769	0.23437	1.8411
Acquisition of Verbs	Experimental Group (A)	**IT**	80	5.6462	1.9751	1.2096
	Control Group (B)	**IT**	80	3.7077	.82392	1.0219
	Experimental Group (A)	**DT**	80	4.8308	1.4314	1.7755
	Control Group (B)	**DT**	80	3.3692	0.2192	1.5123

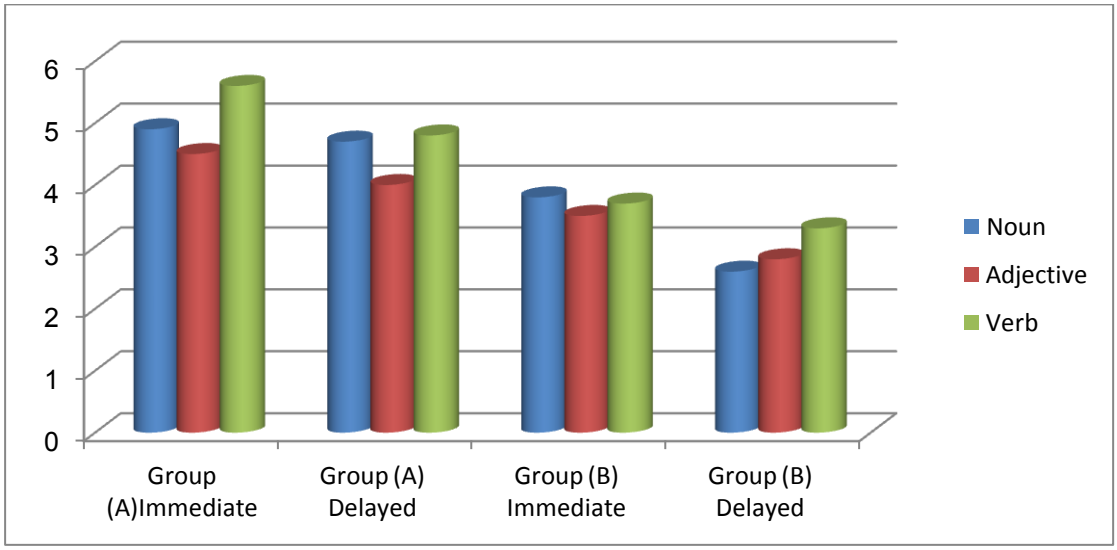


Figure (4-7) all scores across the two papers

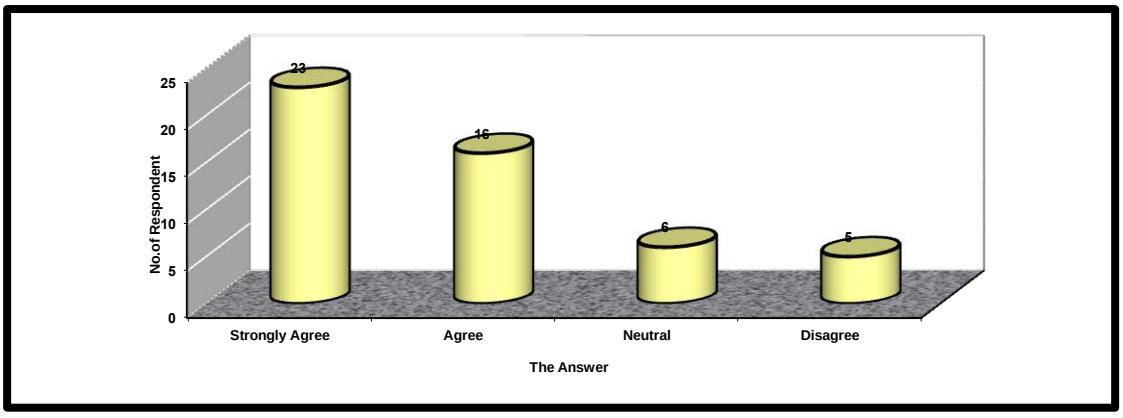
4.2 Analysis of the Teachers' Questionnaire

It consists of four interrelated parts related to surveying teachers in relation to the topic in question which is action research. It is intended to find out the teachers and tutors attitude as regards action research and whether no they draw upon as useful classroom technique to serve certain ends. Analyzing the questionnaire will shed light on the confirmation of the research hypotheses:

1. **Action research can be a useful tool that helps teacher grow and develop as classroom practitioners and hence raise his students' grasp of area of knowledge or discipline.**
2. **Action research can be thought of as a powerful systematic reflective process.**
3. **Action research can provide the teacher with the power to meet all the challenges posed by the teaching profession.**

Table (4-8) *Action research is undertaken in a school setting. It is a reflective process that allows for inquiry and discussion as components of the research*

Always	Often	Sometimes	Rarely	Never	Total
60%	20%	10%	7%	3%	100%



Judging by the table and figure above that quite a big number of respondents (80%) do agree that *action research is undertaken in a school setting. It is a reflective process that allows for inquiry and*

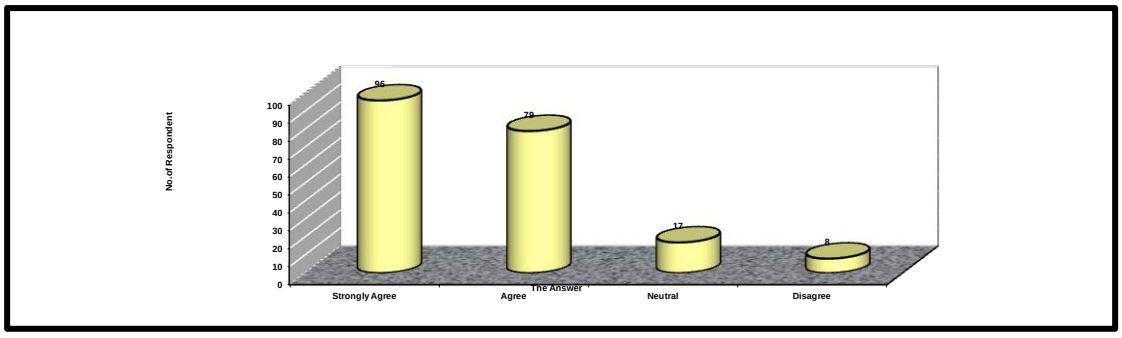
discussion as components of the research. Often, action research is a collaborative activity among colleagues searching for solutions to everyday, real problems experienced in schools, or looking for ways to improve instruction and increase student achievement. Rather than dealing with the theoretical, action research allows practitioners to address those concerns that are closest to them, ones over which they can exhibit some influence and make change.

Consequently, this indicates that Practitioners who engage in action research inevitably find it to be an empowering experience. Action research has this positive effect for many reasons. Obviously, the most important is that action research is always relevant to the participants. Relevance is guaranteed because the focus of each research project is determined by the researchers, who are also the primary consumers of the findings.

Perhaps even more important is the fact that action research helps educators be more effective at what they care most about—their teaching and the development of their students. Seeing students grow is probably the greatest joy educators can experience. When teachers have convincing evidence that their work has made a real difference in their students' lives, the countless hours and endless efforts of teaching seem worthwhile. This in itself confirms and verifies the hypothesis 1: that **action research can be a useful tool that helps teacher grow and develop as classroom practitioners.**

Table (4-9) *Action research is, often, a collaborative activity among colleagues searching for solutions to everyday, real problems experienced in schools,*

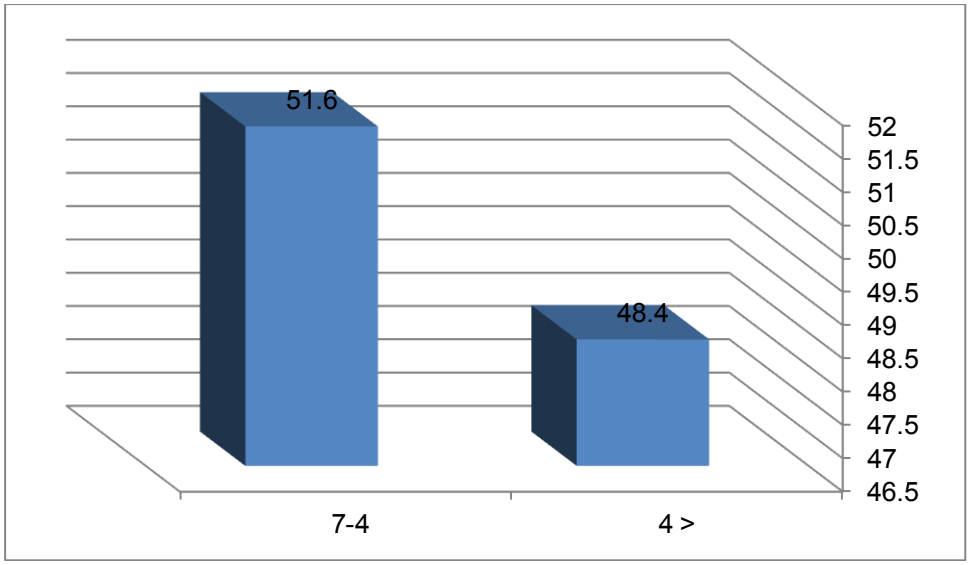
Always	Often	Sometimes	Rarely	Never	Total
70%	15%	10%	3%	2%	100%



As evident from table 4-2 and the figure underneath, that 90% of the respondents were in favor of *action research as, often, a collaborative activity among colleagues searching for solutions to everyday, real problems experienced in schools.* Educational action research can be engaged in by a single teacher, by a group of colleagues who share an interest in a common problem, or by the entire faculty of a school. However, a collaborative effort, action research can much more successful in solving today's life complicated issues. The action research process begins with serious reflection directed toward identifying a topic or topics worthy of a busy teacher's time. Considering the incredible demands on today's classroom teachers, no activity is worth doing unless it promises to make the central part of a teacher's work more successful and satisfying. Thus, selecting a focus, the first step in the process, is vitally important. Selecting a focus begins with the teacher researcher or the team of action researchers.

Table (4-10) *Practitioners are responsible for making more and more decisions in the operations of schools, and they are being held publicly accountable for student achievement results.*

Always	Often	Sometimes	Rarely	Never	Total
40%	20%	10%	15%	15%	100%

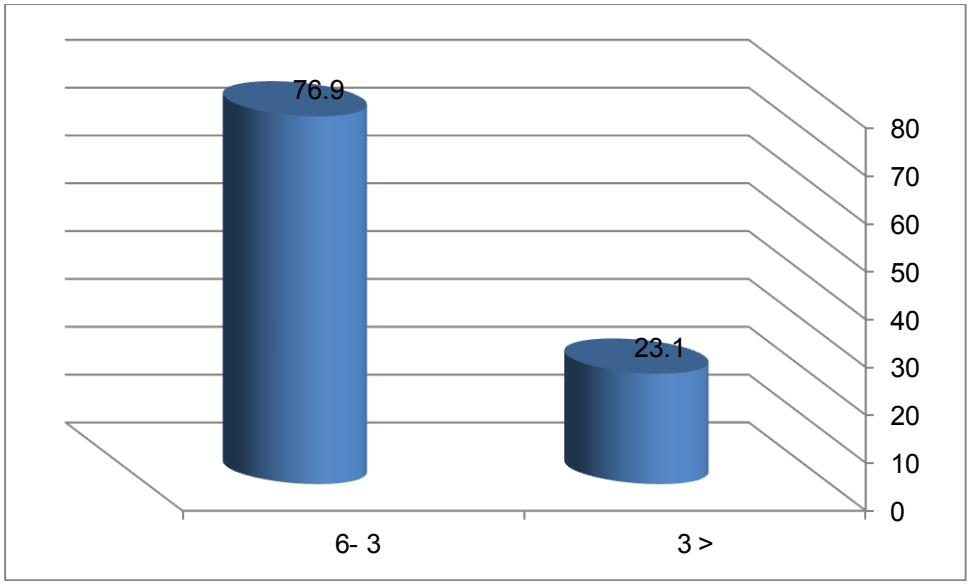


It is clear from the table and the figure that almost all the respondents (75%) believe that *practitioners are responsible for making more and more decisions in the operations of schools, and they are being held publicly accountable for student achievement results.* It is indeed that it is a positive step involves identifying the values, beliefs, and theoretical perspectives the researchers hold relating to their focus. For example, if teachers are concerned about increasing responsible classroom behavior, it will be helpful for them to begin by clarifying which approaches—using punishments and rewards, allowing students to experience the natural consequences of their behaviors, or some other strategy—they feel will work best in helping students acquire responsible classroom behavior habits.

Table (4-11) *Action research is not about learning why we do certain things, but rather how we can do things better. It is about how we can change our instruction to impact students action research can be thought of as a powerful systematic reflective process.*

Always	Often	Sometimes	Rarely	Never	Total
70%	20%	5%	5%	0%	100%

As far as table (4-4) is concerned coupled with the figure below that 90% do agree that *action research is not about learning why we do certain things, but rather how we can do things better. It is about how we can change our instruction to impact students' action research can be thought*

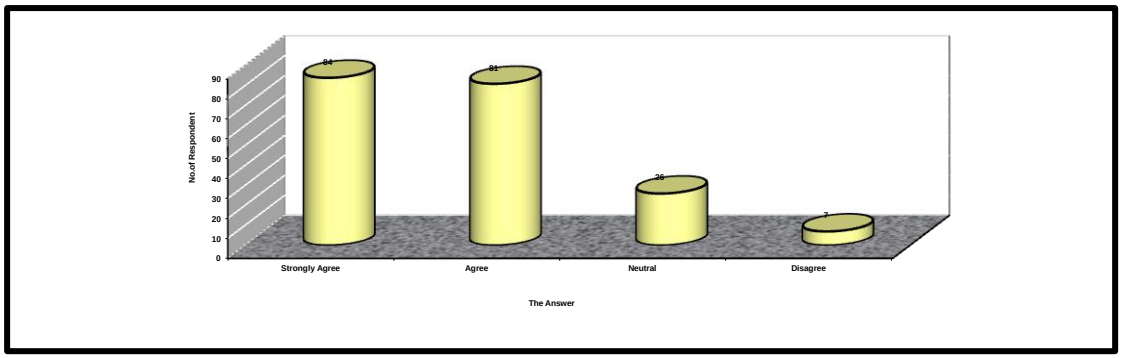


of as a powerful systematic reflective process. This high percentage verifies and confirms the second hypothesis which state quite clearly that **action research can be thought of as a powerful systematic reflective process**. Rather than dealing with the theoretical, action research allows practitioners to address those concerns that are closest to them, ones over which they can exhibit some influence and make change. Teachers and principals become more effective when encouraged to examine and assess their own work and then consider ways of working differently.

Table (4-12) *Part of the confusion we find when we hear the term "action research" is that there are different types of action research depending upon the participants involved.*

Always	Often	Sometimes	Rarely	Never	Total
30%	30%	15%	20%	5%	100%

Though this was very clear, almost all respondents produced varied answers. There are indeed different types of action research. I t is not all restricted to improving the behavior of students. A great part of it deals with school subjects problems or academic problems. Although there are many types of research that may be undertaken, action research



Specifically refers to a disciplined inquiry done by a teacher with the intent that the research will inform and change his or her practices in the future. This research is carried out within the context of the teacher's environment—that is, with the students and at the school in which the teacher works—on questions that deal with educational matters at hand. While people who call for greater professionalization say that teachers should be constantly researching and educating themselves about their area of expertise, this is different from the study of more educational questions that arise from the practice of teaching.

Implicit in the term action research is the idea that teachers will begin a cycle of posing questions, gathering data, reflection, and deciding on a course of action. When these decisions begin to change the school environment, a different set of circumstances appears with different problems posed, which require a new look. Indeed, many action research projects are started with a particular problem to solve, whose solution leads into other areas of study.

Table (4-13) *Teaching writing mechanics is totally ignored at our Sudanese* ***schools***

Answers	**Frequency**	**Percentage %**
Strongly agree	17	44.7

Agree	12	31.6
Neutral	6	18.4
Disagree	3	7.9
Total	**38**	**100**

It is evident from the table (4-13) above that (76.3%) are in favor of the variable that teaching of mechanics of writing is not adequately considered and that students are left to infer or learn such sub-skills on their own. Therefore their performance as far as this area is concerned is moderately poor. On the other hand (7.9%) disagree as there are few tutors who actually pay little attention to the area in question. Tutors may explain some of these mechanics as they come across without giving enough examples to consolidate their understanding.

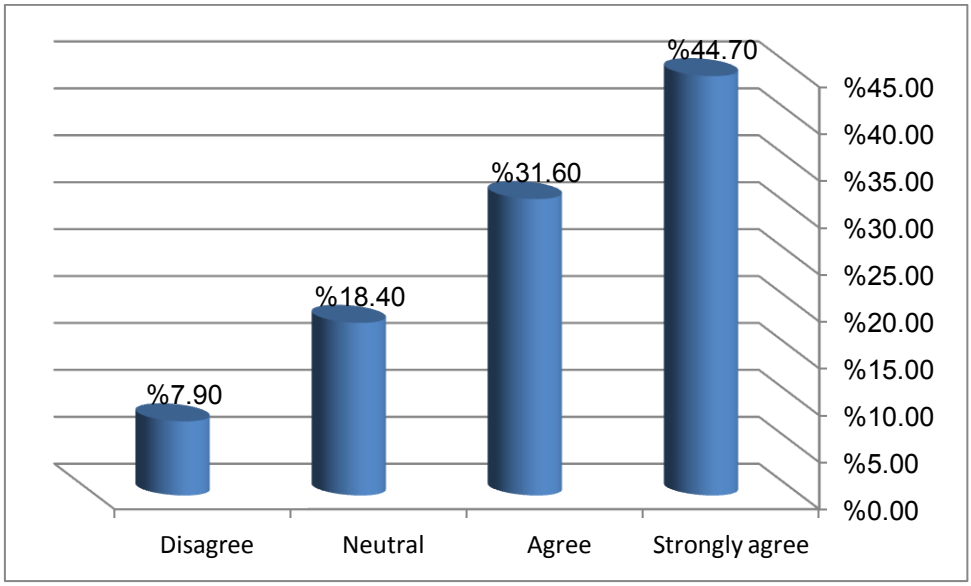


Figure (4-13) poor teaching of mechanics of writing

Table (4-14) *the idea of academic writing is not clear for most of our* ***secondary school*** *students.*

Answers	**Frequency**	**Percentage %**
Strongly agree	27	71.1
Agree	9	23.7
Neutral	1	2.6
Disagree	1	2.6
Total	**38**	**100**

The table (4-14) above demonstrates that the variable has been backed up by as high as (94.8%) of the respondents. Only 2.6% disagree believing that the idea of academic writing is clear for the secondary school students. In fact even if it was carefully handled at the secondary school level, academic writing would still be very difficult for the students to have a good grasp of. Upon coming to university, students demonstrate very poor level of writing which reflect the sad fact that they have had poor training, too.

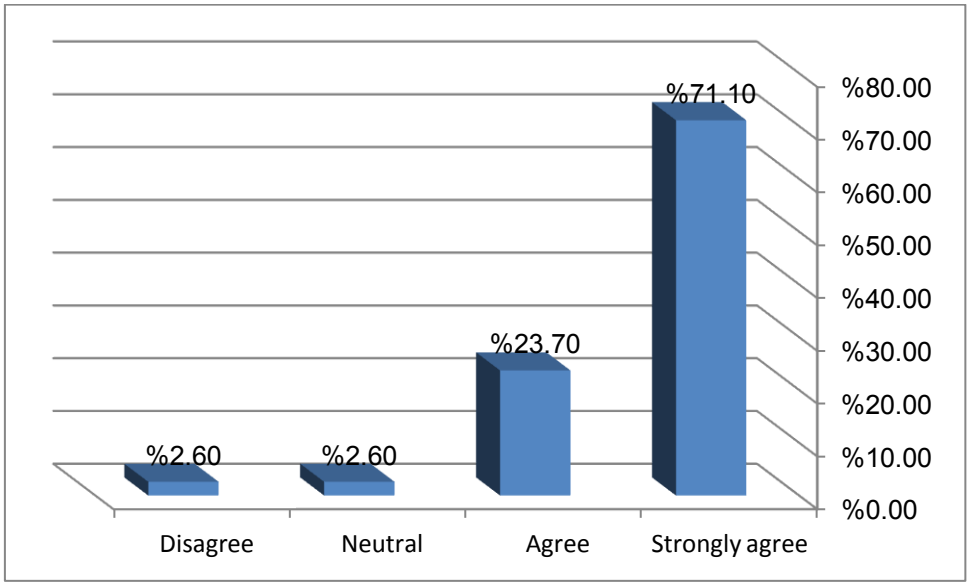


Figure (4-14) poor writing reflecting poor training

Table (4-15) *Action research can provide the teacher with the power to meet all the challenges posed by the teaching profession.*

Answers	**Frequency**	**Percentage %**
Strongly agree	24	63.2
Agree	12	31.6
Neutral	2	5.3
Total	**38**	**100**

Table (4-15) clearly shows that action research is an essential tool for the teacher. This was reflected in the ratio made by the respondents that (94.8%) do agree that action research is necessary for the teacher to develop professionally. There are certain types of problems which actually call for collaborative efforts to be solved. This entail many minds should take part to render well thought solution. This can only be achieved through action research.

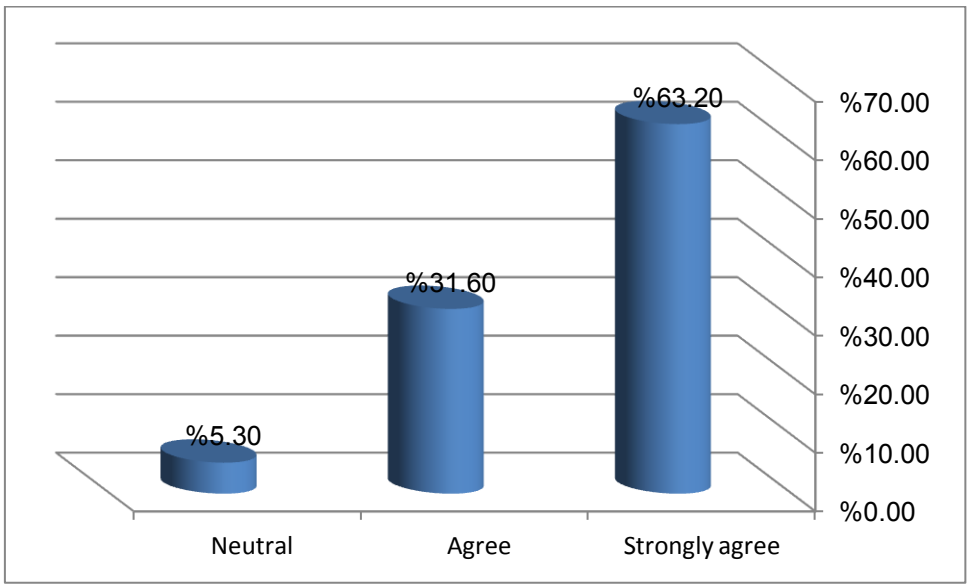


Figure (4-15) action research is a useful tool for the teacher to develop

Table (4-16) *Collocations properly taught save the students the trouble of making grammatical and structural mistakes*

Answers	**Frequency**	**Percentage %**
Strongly agree	30	78.9
Agree	7	18.4
Neutral	1	2.6
Total	**38**	**100**

Table (4-16) demonstrates quite evidently that (97.3%) believe the variable to be true and that collocations are needed for improving the quality of writing. This is simply if a student recalls collocation well and uses them properly they are bound to make no structural mistakes.

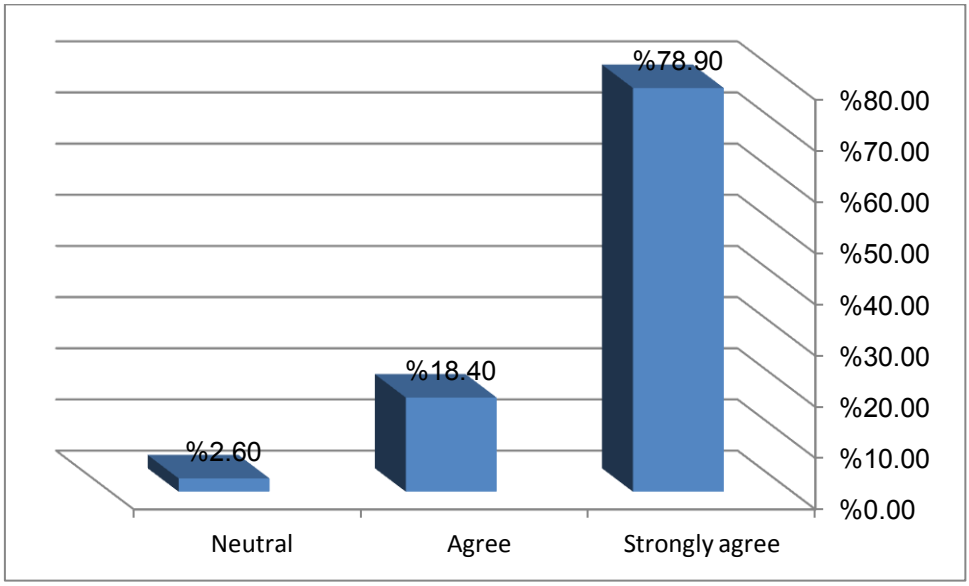


Figure (4-16) demonstrates that collocation taught properly can help students avoid making structural mistakes.

Table (4-17*) some **undergraduate** students are not well aware of the importance of academic writing*

Answer s	**Frequency**	**Percentage %**
Strongly agree	12	31.6
Agree	14	36.8
Neutral	3	7.9
Disagree	7	18.4
Strongly disagree	2	3.5
Total	**38**	**100**

Table (4-17) reflects a kind of reservation amongst respondents that only (68%) agree that undergraduate are adequately informed of the importance of academic writing. (18.4%) do agree that undergraduates are not well aware of the importance of academic writing. In fact even if they do know the importance of academic writing, undergraduates still far behind from approaching their academic writing tasks properly. They need excessive training to improve their written performance.

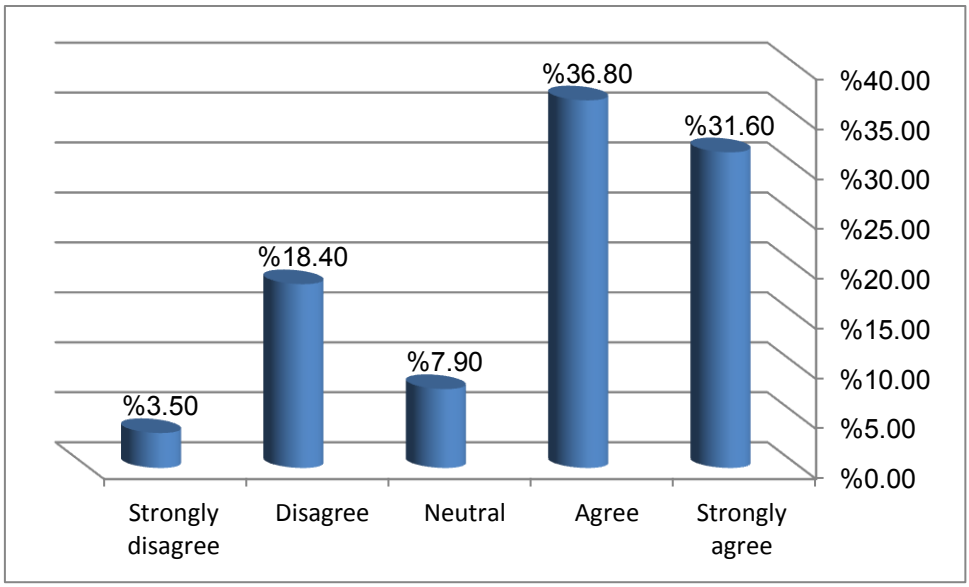


Figure (4-17) undergraduates and academic writing

Table (4-18) *Tutors are not properly trained to handle such issues as mechanics of writing appropriately*

Answers	**Frequency**	**Percentage %**
Strongly agree	22	57.9
Agree	15	39.5
Neutral	1	2.6
Total	**38**	**100**

As evident from the table above (97.3%) understand that tutors at university need to be trained in issues as academic writing as to how it can be handled and demonstrated. It is a key issue associated with the students' academic development and has to be given due time and efforts it deserves. Students need to practice writing across the disciplines they study which so strongly connected with their advancement in learning.

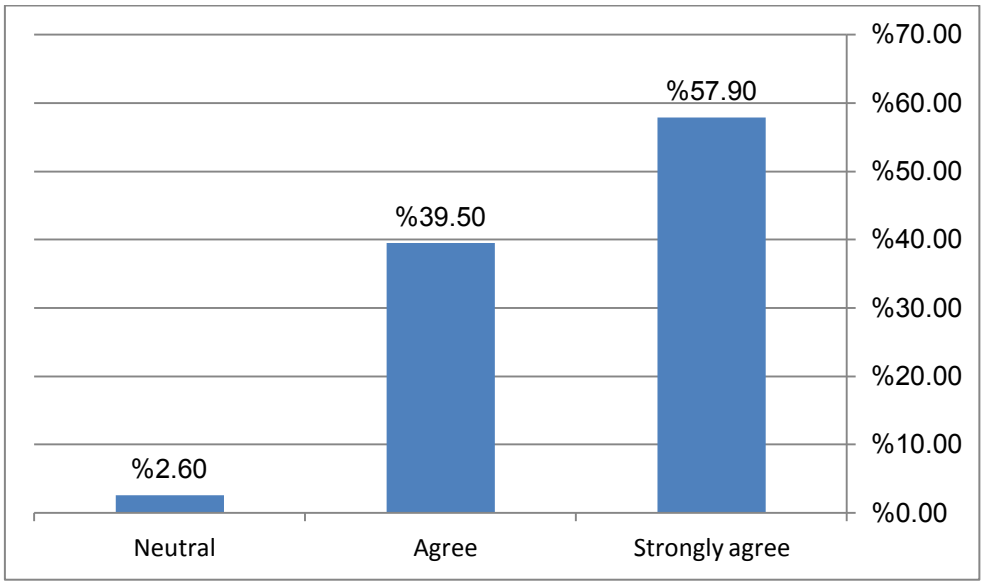


Figure (4-18) academic writing should be given enough attention

Table (4-19) *some tutors think that academic writing is not important enough to be given extra time in handling at the expense of other elements in the syllabus*

Answers	**Frequency**	**Percentage %**
Strongly agree	21	55.3
Agree	12	31.6
Neutral	3	7.9
Disagree	1	2.6
Strongly disagree	1	2.6
Total	**38**	**100**

Table (4-19) shows clearly that tutors do agree that it is important but not to be given extra time or space in the time-table at the expense of other subjects. They are important and should be well balanced.

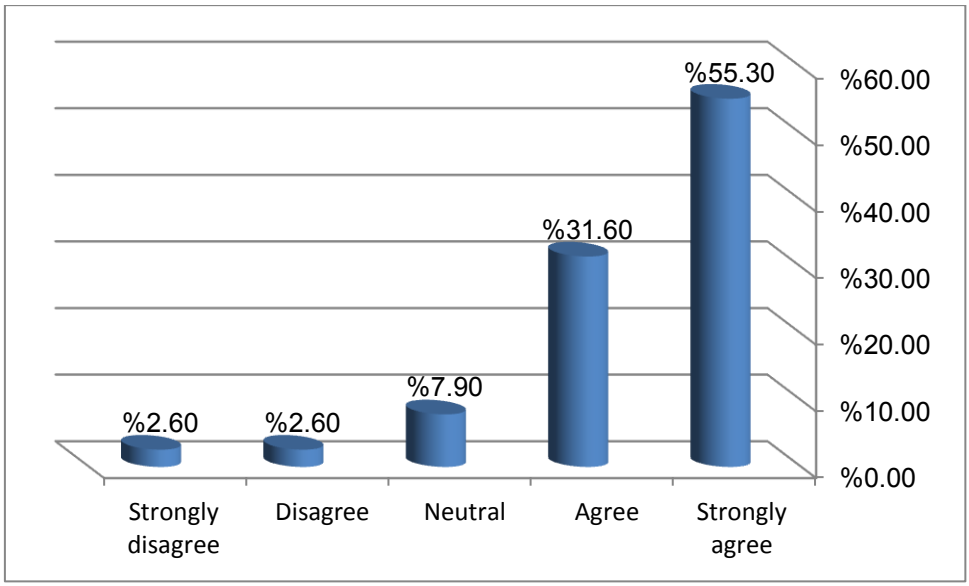


Figure (4-19) academic writing not more important than other branches

Table (4-20) *Tutors know the value of academic writing but because of time factor they rush its handling*

Answers	**Frequency**	**Percentage %**
Strongly agree	23	60.5
Agree	14	36.5
Neutral	1	2.6
Total	**38**	**100**

Table (4-20) demonstrates that as high as (97%) of the respondents do admit that tutors are well aware of the value of academic writing however, pressed by time they hardly think of giving it enough time in handling. So it continues to be poorly understood and reflected in students' bad writing performance.

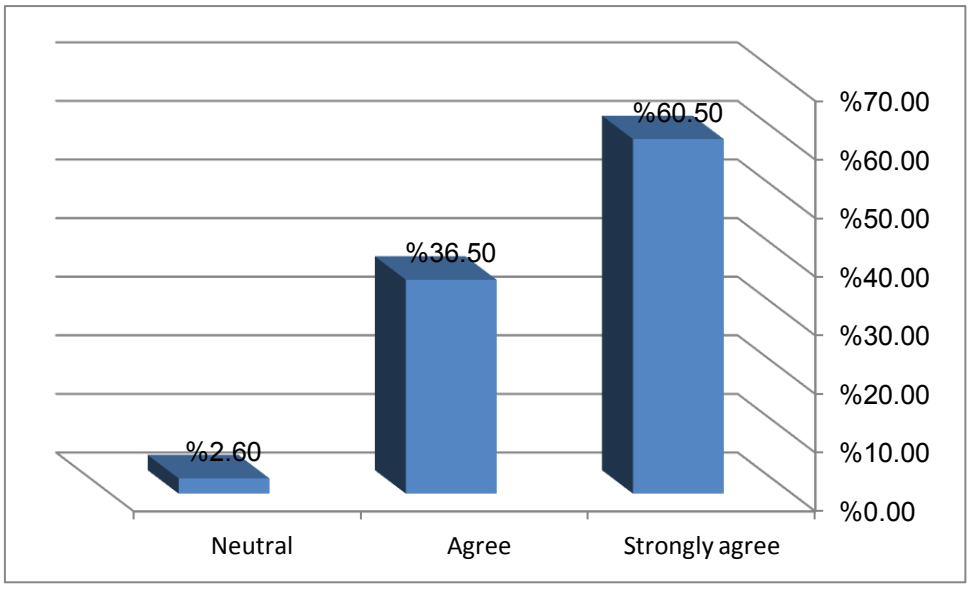


Figure (4-20) academic writing is important but pressed by time tutors barely give it the handling it deserves.

Verification of the Study Hypothesis

Students performed significantly better in the immediate test (SD=3.0716) than in the delay test (SD=2.7154). This confirm the first hypothesis which states action research can be a useful tool that helps teacher grow and develop as classroom practitioners.

The result of analysis reveal that there is high deviation between group (A) control group (SD=1.5446) and group (B) experiment group to indicate that, this confirm the second hypothesis: Action research can be a thought of a powerful systematic reflective process.