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INDIVIDUAL TUTORING PLAN (ITP) IN MAPPING CONTENT FOR TEACHING READING STRATEGIES USING ASYNCHRONOUS E-LEARNING AS SUPPLEMENTARY TOOL: AN EXPERIMENTAL STUDY

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ABSTRACT

The development of new Information and Communication Technology (ICT) is found unavoidable in the field of English Language Teaching and Learning (ELT&L) and students' interests toward online learning platforms and virtual worlds are growing swiftly. A question, 'Can e-learning replace the conventional system of learning and teaching methods?' comes to the mind of all teacher and researcher while dealing with ICT in education. This article aims not on replacing conventional learning with e-learning, but incorporating asynchronous e-learning methods in the conventional system of learning. It is interesting to study e-learning in the context under this adaptation, e-learning as a supplementary tool to in-class instruction, where more investigation is needed (AL Fahad, N.F., 2010). In research and practice there are many educational implementations of technology in classrooms that were found useful (Baytak, A., 2011).

The focus of this article is on setting Individual Tutoring Plan (ITP) for student based on their levels which are identified based on the scores in the pre-test. The curriculum adopted for the study was reading strategies such as identifying main idea, finding supporting details, compare and contrast, distinguishing fact from opinion, and drawing conclusion. The experimental and control groups of this research are post secondary ESL students. Gilly Salmon's Five Stage Model was adopted for e-moderation. The analytical method, ANOVA, is used to project the performance difference between the controlled and experimental groups.

KEYWORDS: Information and Communication Technology (ICT), Online Learning, E-Learning, Conventional System, Supplementary Tool, Individual Tutoring Plan (ITP), Reading Strategies, Post Secondary ESL Students, Five Stage Model

INTRODUCTION

Technological advancements have paved way for an effective learning solution called e-learning. Learning in the traditional context is effective, but the needs and situations are different in the current educational scenario. The number of learners is multiplying day by day. There are more than 70 students, in an average, in a class. It is very difficult for a language teacher to train such a huge group in the allotted time. In the hurry of covering the syllabus/curriculum, teachers are not able to pay attention on students with their specific needs. To bridge this gap, e-learning could be used as a supplementary tool in the classroom. Here, the idea is not replacing the teacher with a computer whereas; e-learning is used as a supplementary tool or process in giving individual attention to the students in terms of their specific needs.

Individual Tutoring Plan (ITP) deals with giving individual attention to the students based on their requirements. This article is an experimentation of using ITP in the language learning process. Incorporation of e-learning methods as supplementary tools in language learning session paves way for effective implementation of ITP. E-leaning, in broad sense, could be classified into two types namely; synchronous and asynchronous e-leaning. Synchronous e-learning is where the teacher and students are connected online in the same time and can interact with each other using some applications like

online chat, white board, etc. Asynchronous e-learning is where the teacher and students are not connected online at the same time. They interact with each other using applications like blogs, email, etc.

Learners are required to be more intensely involved in the learning process than usual in an E-learning environment. E-learning originated from the use of computer in the learning process. Apart from discussing and responding to the other learners, in E-learning environment, physical involvement is required in sending information, which calls for both social and cognitive involvement of the learners. Both the types have their own properties based on requirement and availabilities. In this paper, an asynchronous model of e-leaning application is explored. The students of the experimental group adopted for the study are not familiar with the e-learning methods and aspects. Therefore, they needed a step by step approach where they had to understand e-learning and get socialized with it. In this situation, Gilly Salmon's five stage e-moderation technique was employed during the e-learning sessions. There are various research segments dealing with e-learning in various other contexts.

LITERATURE REVIEW

AL Fahad, N.F. (2010) has studied the learners' satisfaction toward the online e-learning methods implemented in the higher education at College of Applied Studies and Community Service, King Saud University, Saudi Arabia. The objective of the research was 'can e-learning replace the conventional system of education?' The importance of this study is that it is focused on students' voices regarding their experiences and perceptions toward e-learning. At the end of the research, it was found that students were highly satisfied with the overall learning experience. Participants were highly satisfied with the opportunity to interact with the peers and teachers.

Sloman, M & Reynolds (2003) have considered aspects of the theory and practice of e-learning communities. Propositions on the structure of the e-learning community, and on the role of the moderator, have been based largely on lessons drawn from practice in higher education. They have advocated that the growing importance of e-learning as a tool for informal learning and team development in business is leading to new types of e-learning communities with different objectives, different boundaries and membership, different demands on the moderator and different measures of effectiveness. They have outlined some key characteristics of two e-learning communities namely: (1) The Chartered Institute of Personnel and Development (CIPD) and (2) Open Cambridge Principles of On-line Learning Consortium.

Lukaitis, A & Davey, B (2010) have researched on the motivations of the online students. According to them, when courses are offered in online teaching mode tutors lose the constant feedback available during face-to-face classes. They worked on the push technology to overcome this problem and showed significant improvement in performance of the course. They have identified that students are not able to perform effectively in the unstructured online environment.

Awodele, O. et.al (2010) have identified that while e-learning systems are experiencing a proliferated development and adoption by schools in both developed and undeveloped economy, in most cases, there still exist a gap between the e-learning application and other non-academic services and community within the institution. They examined the development, implementation and use of an extended e-learning system that uses a social networking approach to enhance activities in a university.

Steen, H. L. (2008) has examined the e-learning content needs for the training requirements in organizations. He discusses that the content has to be designed understanding the knowledge and skills of the subjects need to be trained. According to Steen, there is no one-size-fits-all content module of e-learning to train various levels and requirements of the subjects. However, there is a general process a content designer balances the elements required to be trained. Therefore, for an effective e-learning programme, requirement specific content has to be designed.

Individual Tutoring Plan (ITP)

With increased demand for online learning as well as more institutions of higher learning striving to provide diverse educational opportunities, online learning continues to grow as a viable means of providing increased access to a greater number of students (Saba, 2005).This article explores one of the avenues called Individual Tutoring Plan (ITP). Individual Tutoring Plan, in e learning context, is termed as Electronic Individual Tutoring Plan (e ITP). ITP is a learning system which allows for formative and summative learner profiling and content packaging. Based on the assessment (pre-test) scores of each student, the content or lessons are mapped. This allows the students to access a specific lesson that educates him/her based on his/her standard or level. Students can access their progress reviews at all times so that they can actively monitor their own performance against eITP set by their teachers or tutors. According to the Input Hypothesis derived by Krashen (1981), a student understands any concept when he/she is exposed to a something extra from his/her learning levels. He calls this "i + 1" or Input hypothesis in his second language acquisition and learning theory. The mention of term ITP may arouse an inevitable question in the minds of the teachers, "Is it practically possible in a class of 50 to 60 students?" Of course, it is a logical question. The answer for this question is created after discussions and experiments.

ITP and 'I + 1 Level' Theory of Krashen

Theories are important in order to solve the problems related to any field of study. A language teaching theory incorporates answers to questions related to the nature of the language and the process of Foreign Language Teaching. The nature of language in a language teaching situation has a bearing on what is being taught and how. It can influence a learner towards learning any language.

Krashen (1981) have argued strongly that Second Language Accusation (SLA) is dependent on the availability of comprehensive input before the learners' internal processing mechanism can work. Krashen presents the case for comprehensible input in the form of the input hypothesis. He argues that for SLA to take place, the learner needs input that contains exemplars of the language forms which according to the natural order are due to be acquired next. Input must consist of 'i+1'. Correspondingly, ITP forms a part of the Input Hypothesis of Krashen. According to him, the input hypothesis suggests that people acquire language in only one way: by understanding messages, or by receiving 'comprehensible input'. According to the input hypothesis, learner's progress by receiving second language input, which is one step beyond their current level of learning and accruing language skills. Achievement for learners with language knowledge "i" can only take place if they are exposed to comprehensible input at a next higher level, which Krashen describes as level "i + 1".

However, "i + 1" concept can be used in a classroom for the learners in acquiring language skills. In addition to a teacher's discussion of a topic in the black board, a video tape or a voice over module may be used to increase the intensity of learning. Furthermore, students may be made to explore software with these skills in a language lab which helps them in understanding the concept better. In the next level were students learn these skills through e- learning modules, ITP would help them in a accruing these skills better and faster. According to the input hypothesis, setting ITP technique is an extra input in the mode of learning.

Asynchronous and Synchronous E Learning

There are two types of discussions that can take place in an online environment: asynchronous discussions and synchronous discussions (Al Shalchi, 2009). Asynchronous discussions are discussions that students can take part in at any time, whereas synchronous discussions require that the participants of the discussion all meet at the same time to talk

about the issue at hand (Benson, 2003). According to Hrastinski (2008), asynchronous e-learning is facilitated by media such as e-mail and discussion boards, and work relation among learner and with teachers is supported by asynchronous e-leaning. Another important feature of this type is the participants need not be online at the same time.

In synchronous e-learning session, the learners and the teachers experience an environment that is more similar to face-to-face interaction because the students and instructors are meeting at the same time. Also, students are able to work collaboratively and benefit instant feedback. On the other hand, there may be some learners who are inclined to open up to the possibility of having online interactions.

In such situations, asynchronous e-learning have a number of benefits. To start with, in an asynchronous e-learning environment, students get more time to think about the topic of discussion and to explore more about it. They can respond to posts make on discussion boards or forum after they had spent enough time to think about the topic and read what peers have already contributed. Students are able to log into their classes to view the questions and remarks made by other students and the instructor before making their own contribution (Al Shalchi, 2009). Another advantage to having asynchronous discussions is the fact that the discussions give the students more information and have a more meaningful analysis (Meyer, 2007). Compared to synchronous e-learning, in asynchronous e-learning, it is easy for students to access outside resources to get more information about the topic of discussion. Research has found that students did the extra research before making a comment because they did not want to sound unintelligent in front of their colleagues, and they felt that they did not have enough background knowledge in the subject matter (Du, Zhang, Olinzock, & Adams, 2008).

Gilly Salmons' Five Stage Model

Teachers adapt many models of e-moderations for synchronous and asynchronous e-learning. There are many ongoing researches in developing different models for e-learning, and one of commonly used model was presented by Gilly Salmon called Five Stage Model of e-moderation. During the 1990s, Salmon researched, designed, deployed and tested a five-stage model for teaching and learning through online networking. The following are the five stage model propagated by Salmon.

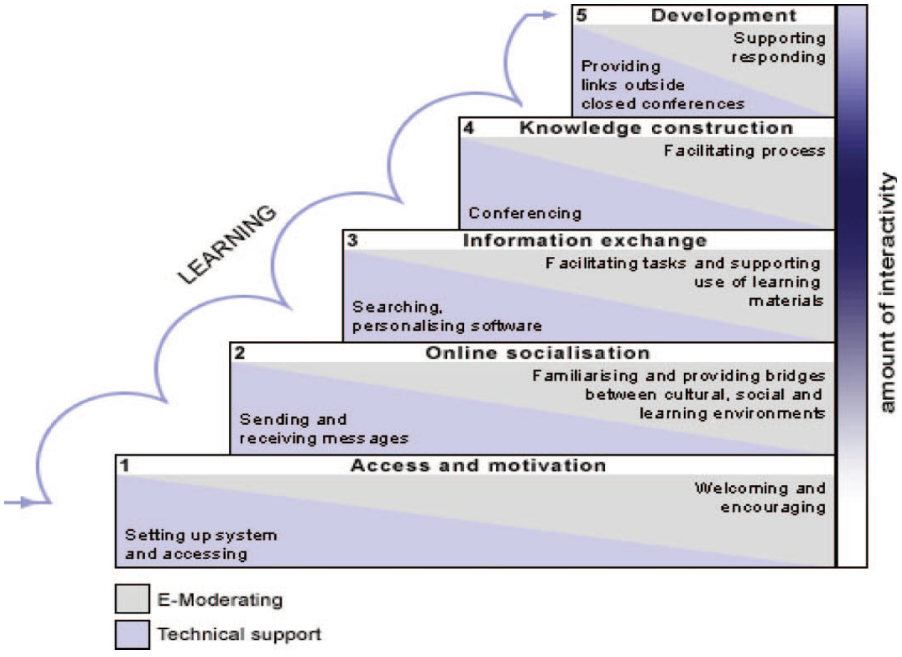

Figure 1: Five-Stage Model of Teaching and Learning Online (Salmon, 2000)

In the Access and Motivation Stage, individuals' essential fundamentals for effective participation: access and the ability to benefit from remote group work for learning is explained. In the Online Socialization stage, Individuals are made to establish a personal online identity and then made to find others with whom to interact. At Information Exchange stage, participants are motivated to give and receive relevant and useful information about the course, and made to undertake course-related learning tasks. Up to and including Information Exchange stage, a form of co-operation is built through the support each learner gets from other participants to achieve his or her goal. At Knowledge Construction stage, more complex constructive tasks are included, learners discuss with other participants synchronously or asynchronously, and the interaction becomes more collaborative. At Development stage, participants look for more benefits from the system; they expect help in achieving their own goals, in exploring how to integrate their online experiences into other forms of learning and in transferring and applying their learning. At this stage, sophisticated individual learning may occur that includes reflection on and transfer of knowledge (Salmon, et.al, 2010).

In this experimental study, the experimental group was exposed to asynchronous e-learning process. Learning concepts via computer or virtual mode is not a familiar model to the students here. Therefore, e-learning or virtual learning model needs to be familiarized to the students.

An Experimental Study on the Effectiveness of deriving ITP for students in Reading Comprehensions

Participants

This study was carried out in a University in the northern part of Tamil Nadu, India. This is a University where English is being taught as a second language. In this university, the students are being taught reading skills in the first and second semesters to facilitate their reading. Students of Bio-medical Engineering and Computer Science Engineering were assigned as experimental and control group respectively. The controlled group was taught with the traditional reading approach, while the experimental group was trained by setting ITP and using E-Learning tools and content.

The intervention lasted for 30 sessions (one hour each). The number of students in the classes was fifty each. During the experiment, students from each class were trained in reading comprehension. The experimental group was called as Group – A and controlled group was called as Group B. Students of group A were trained in reading comprehension by setting ITP and using E-Learning tools and content whereas, group B in the traditional ways like making the students read the passage again and again, read the passage after reading the comprehension questions, etc.

The Experimental Group

At the beginning of the instruction, the researcher familiarized the students with what is individual tutoring plan (ITP) and how it helps them in accessing content pertaining to the their specific needs. Based on the pre-test score, ITP were fixed for each student. This means, during the E-learning session, each student accessed the content in which he/she specifically needs help with. Apart from the classroom sessions, they were made to access E-content designed to their requirement. This intervention lasted up to 30 session of one hour duration each.

The Controlled Group

The instruction material and content provided for both the experimental and control groups were the same, but the control group was not exposed to E-content and ITP was not set for each student. The control group adopted traditional methods where students were made to read the passage again and again to understand the content and answer the comprehension questions. They were able to understand the meaning conveyed in the paragraph or passage but they could not classify a paragraph into main idea, topic sentence, supporting details, etc.

Reading Materials

The reading materials used in the present study was designed by the researcher and consisted passages for reading comprehension. This content consisted of both expository and narrative passages for the students. The selection of the reading material was based on the following parameters: (a) Complexity level (b) Variety of topics and (c) Lexical count. The reading strategies focused in the passages were classified as follows:

- Identifying Main Idea
- Finding Supporting Details
- Compare and Contrast
- Distinguishing Fact from Opinion
- Drawing Conclusion

Instructional Procedure

Based on the pretest scores, Individual Tutoring Plan (ITP) was derived for the students of the experimental group. During the process of setting ITP, it was identified that student fell in seven different categories based on the specific requirement in terms of the focused topics of study. This means seven ITPs were needed to be prepared. Based on the identified requirements of the students, ITPs were prepared and set to each student. Each student was made to access material pertaining to his or her specific needs. The resources for materials were identified and the students accessed the material according to their ITP asynchronously. The sessions were planned both within the classroom and without the classroom. Teacher assisted the students with the topics in the classroom using lecture method and moderated them during the online sessions. Gilly Salmons' Five Stage Model was adopted by the teachers during asynchronous e-learning sessions.

The Pre-Test and Post-Test Model

All true experiments have a post-test – that is, measurement of the outcome in both groups after the experimental groups have received the treatment. Many true experiments also have pre-tests, which measure the dependent variable prior to the experimental intervention (Rafael & Russell, 2005). A pre--test was administered to both experiment and control groups to ascertain the standard of the students in reading comprehension. The pre-test scores of both the groups were recorded. The test material was designed based on the scope of the study. It was made up of 2 passages, totaling 20 questions which can be classified into five types of reading questions – (1) Identifying the main idea, (2) finding the supporting details, (3) comparing and contrasting, (4) distinguishing fact from opinion and (5) drawing conclusion. Out of 20 questions, there were 4 main idea questions, 4 supporting detail questions, 4 compare and contrast questions, 4 fact and opinion questions and 4 based on drawing conclusion. Each question was worth 1 mark and the sum total of the test was 20 which was calculated over 100 marks. The scores of the pre-test proved that the proficiency level of the students in both experimental and controlled groups is the same.

Analysis of Variance (ANOVA)

According to Prof. R.A. Fisher, originator of ANOVA, "Analysis Of Variance (ANOVA) is the separation of variances ascribable to one group of process from the variance ascribable to the other group". From the One Way Analysis of Variance it is understood that there are significant changes between the pre-test and the post-test. The 2nd column in the above ANOVA table titled as 'Types of Questions' and the fourth column gives the value of sum of squares between and

within the controlled group and experimental group. The next column, the 'Degrees of Freedom' is the number of data considered. The 'Mean Square' column is obviously the ratio between the 4th and 5th columns. The last two columns are the final calculations of F ratio and the significance between the two groups.

Analysis of variance involves dividing the overall variability in observed data values so that conclusion can be drawn about the equality, or lack thereof, of the means of the populations from where the data is derived. The overall (or "**total**") variability is divided into two components:

- the variability "**between**" groups
- the variability "**within**" groups
- **DF** - "the degrees of freedom in the source."
- **SS** - "the sum of squares due to the source."
- **MS** - "the mean sum of squares due to the source."
- **F** - "the *F*- ratio."
- **P** - "the significant *P*-value."
- If the null hypothesis is true, that is, if all of the population *means* are equal, we'd expect the F ratio to be close to 1.
- If the alternative hypothesis is true, that is, if at least one of the population *means* differs from the others, we'd expect the ratio to be inflated above 1.

Table 1: Shows the Statistical Results of Pre-Test Based on One-Way ANOVA on Types of Comprehension Questions

S.No.	Types of Questions		Sum of the Squares	Df	Mean Square	F	Sig.
1	Identifying Main idea	Between Groups	0.36	1	0.36	0.706	0.4
		Within Groups	50	98	0.51		
		Total	**50.36**	**99**			
2	Finding Supporting Details	Between Groups	0.49	1	0.49	0.657	0.42
		Within Groups	73.7	98	0.752		
		Total	**74.19**	**99**			
3	Comparing & Contrasting	Between Groups	0.64	1	0.64	1.022	0.31
		Within Groups	61.36	98	0.626		
		Total	**62**	**99**			
4	Distinguishing Fact from Opinion	Between Groups	0.36	1	0.36	0.422	0.52
		Within Groups	83.68	98	0.854		
		Total	**84.04**	**99**			
5	Drawing Conclusion	Between Groups	0.25	1	0.25	0.409	0.53
		Within Groups	58.86	98	0.611		
		Total	**60.11**	**99**			

When performing the ANOVA test, the null hypothesis is set as "the mean score is the same for all the testing parameters for the two groups". The alternate hypothesis is set as "there is significant difference in the mean score for the

two groups". If the P value is close to 1, the null hypothesis is accepted. This means there is no significant difference between the mean score of the students in almost all the parameters. The score in the individual parameter average is also almost the same for the two groups. Hence, while administering the pretest, the two groups of students, classified as controlled and experimental groups, are in the same level in terms of the tested strategies.

The set of graphs given below shows the performance of the students in each type of questions in the pre-test (identifying the main idea, finding the supporting details, comparing and contrasting, distinguishing fact from opinion, drawing conclusion).

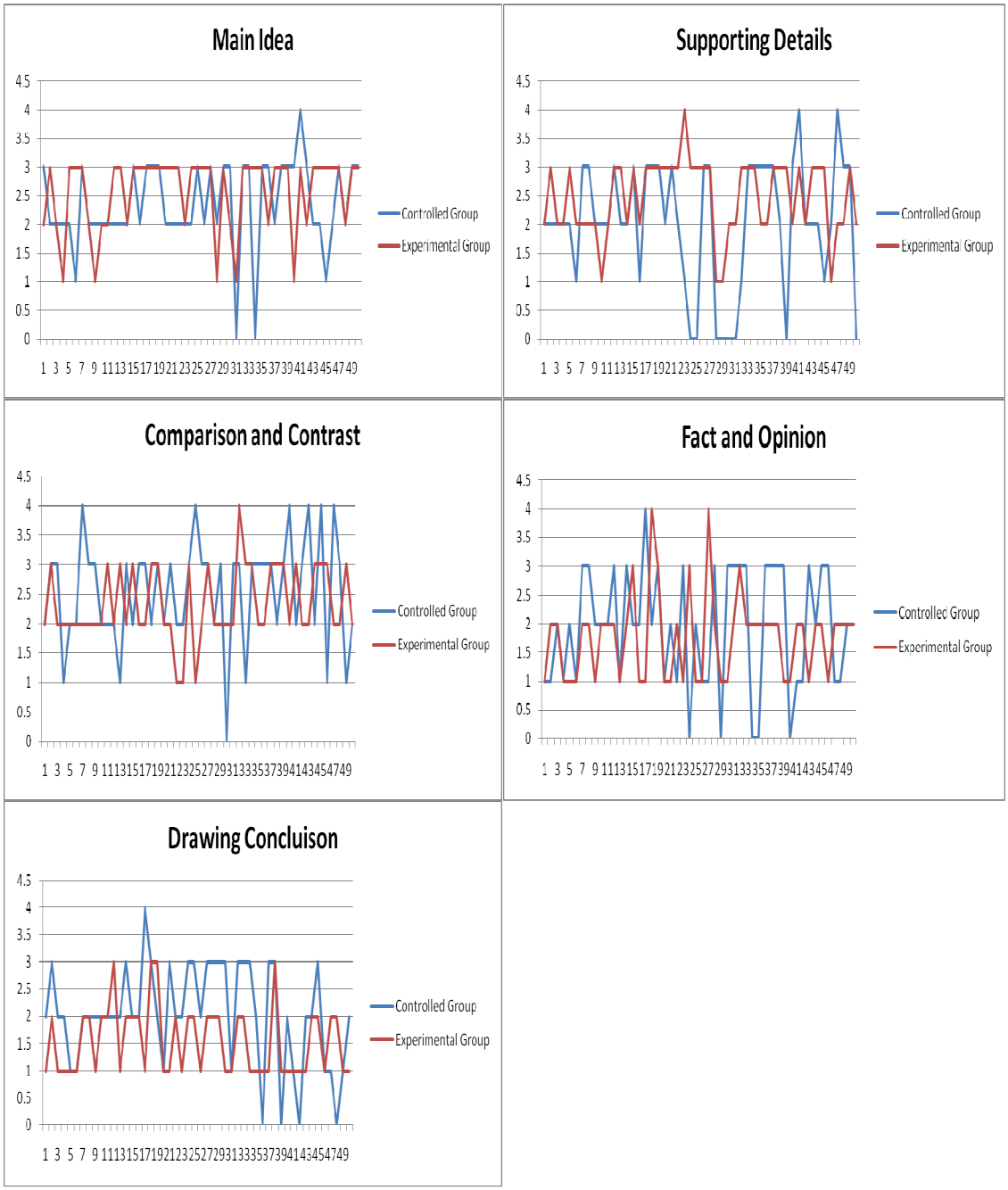

Figure 1: Graphical Representation of the Performance of the Students in the Pre-Test

Table 2: Demonstrates the Results of Post-Test for One-Way ANOVA on Types of Comprehension Questions between the Two Groups after the 2 Weeks' Training

S.No	Types of Questions		SS	DF	MS	F	P
1	Main idea	Between Groups	3.61	1	3.61	8.2	0.01
		Within Groups	43.1	98	0.44		
		Total	**46.8**	**99**			
2	Supporting Details	Between Groups	4	1	4	6.708	0.01
		Within Groups	58.4	98	0.6		
		Total	**62.4**	**99**			
3	Compare & Contrast	Between Groups	0.09	1	0.09	0.156	0.69
		Within Groups	56.5	98	0.58		
		Total	**56.6**	**99**			
4	Fact & Opinion	Between Groups	13.7	1	13.7	21.77	0
		Within Groups	61.6	98	0.63		
		Total	**75.3**	**99**			
5	Drawing Conclusion	Between Groups	6.25	1	6.25	14.19	0
		Within Groups	42.3	98	0.43		
		Total	**48.5**	**99**			

The ANOVA performed for the post test scores of both the groups are stated below. In the post test, as in the pre test, the null hypothesis is set as "the mean score is the same for all the testing parameters for both the groups". The alternate hypothesis is set as "there is significant difference in the mean score of both the groups". It can be noticed that the P value for all the parameters except Compare and Contrast are close to 0. Therefore, we reject the null hypothesis and accept the alternate hypothesis. It clearly shows that there is significant difference in the mean score secured by control group and experimental group. Also the average score of the experimental group is higher than that of controlled group.

RESULTS

This study discusses the effect of deriving ITP for the EFL learners and using e-learning tools to familiarize different type of comprehension strategies. An analysis of variance (ANOVA) was performed to evaluate the performance of controlled and experimental groups in the pre-test and post-test. The averages of the pre-test and post-test scores of controlled and experimental groups are 43% and 53.8% respectively.

When comparing the pre-test and post-test scores of the whole group (N=100), the percentages of pre-test and post-test average were 43.04 and 52.88 respectively yielding a difference of +9%. This positive increase proves that the difference in percentage is statistically significant. In the ANOVA, there is a significant difference between the pre-test and post-test scores of the students. The variance ratio is calculated for the scores in both pre and post tests. The ratio calculated for the pre-test is between 0.42 and 1.08 and between 0.14 and 20.7 for the post-test, which shows that there is a considerable improvement in the post-test for the second set of data (i.e. the experimental group) at 0.01 level (F_{α}=.01). Further, the results yield significance at the .001 level- meaning that for the whole group, the difference between the pre-test average score and the post-test average score is statistically significant.

The average of the pre-test score of group A (Controlled Group) is 43%, and the average of the post-test score of the same group is 48.9%. This proves that there is no significant improvement between pre and post-tests in the controlled group. But the case is different with the group B (Experimental Group). This group has secured an average of 42.43% in the pre-test and 56.23% in the post test, which means that the group has improved significantly. This is an increase of +14%. This shows that the increase is more than 10% which is significant. This can be understood from the ANOVA

Table 1 and Table 2. The mean sum of squares has increased in all types of questions. This could be understood from the data of 'between groups'. In *identifying the main idea,* the pretest sum of squares is 0.3 and 3.6, and in the post-test, there is an increase of 3.3. In *finding the supporting details,* the pretest mean sum of squares is 0.4 and 4, and in the post-test, there is an increment of 3.6. For fact *and opinion*, the pre-test sum of squares is 0.36 and 13.39, and in the post test, there is an increment of 13.8. For questions pertaining to *drawing conclusions,* the improvement was also considerable. The data gave the sum of squares as 0.25 in the pre-test and 6.25 in the post-test. Hence, it can be concluded that the ITP based asynchronous e-learning method of teaching the above reading strategies for EFL students is effective.

The set of graphs given below shows the performance of the students in each type of questions in the post-test (identifying the main idea, finding the supporting details, comparing and contrasting, distinguishing fact from opinion, drawing conclusion).

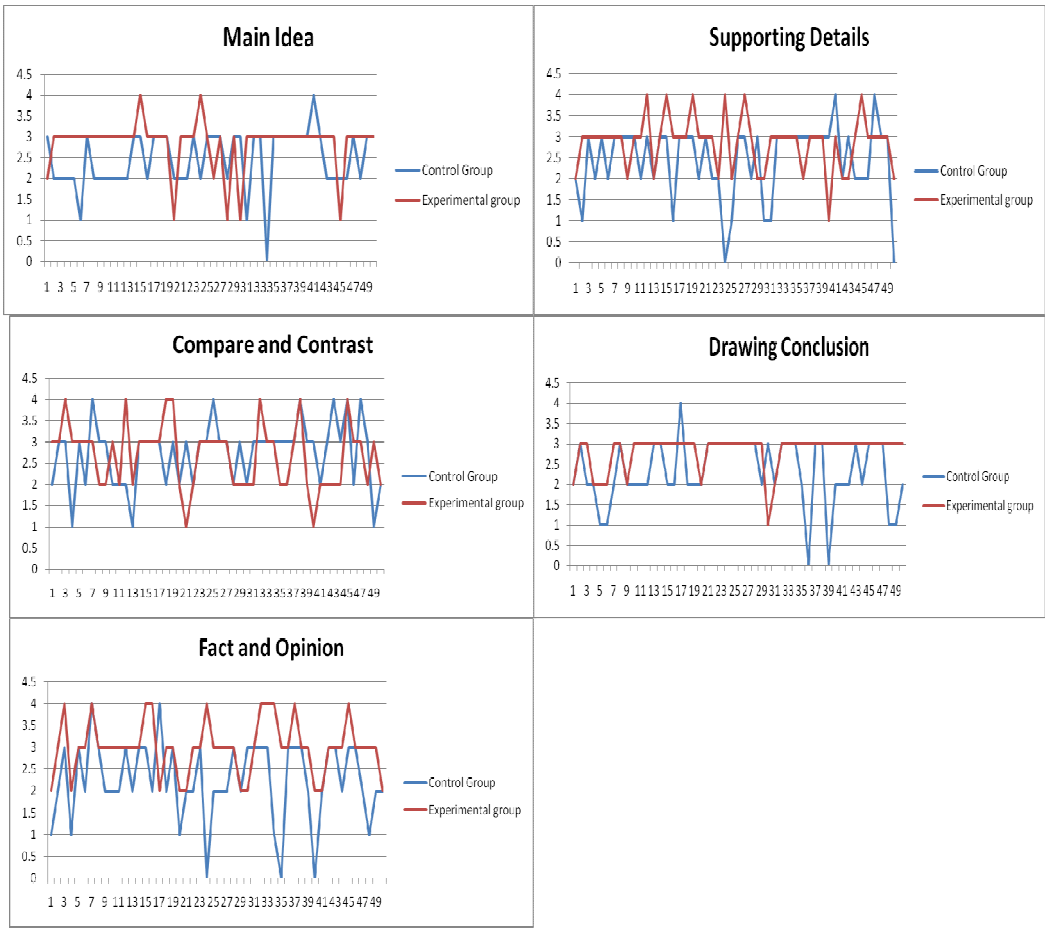

Figure 2: Graphical Representation of the Performance of the Students in the Post-Test

PEDAGOGICAL IMPLICATION AND CONCLUSIONS

This paper has shed some light on the impact of ITP based asynchronous e-learning on EFL Tertiary level students' answers on five different types of comprehension questions categorized in the reading measure. The findings of the study offer some pedagogical implications for university reading instruction in EFL contexts. First, ITP based instruction using asynchronous e-learning has prompted the EFL tertiary level learners' ability to differentiate the reading strategies employed to comprehend a reading passage. Second, arranging or classifying students based on their specific requirement by deriving ITP helps the teachers to monitor the improvement of learners in a language class where there are

more than 60 students. Third, the incorporation of asynchronous e-learning process enables the students to have access to the varied content available on their specific requirements. Also, since the e-learning process is asynchronous, the teachers and students need not be connected online at the same time.

To investigate the effect of ITP based asynchronous e-learning on EFL Tertiary level students' reading comprehension with reference to specific types of reading comprehension questions. The statistical results discussed above are based on the analysis of the pre-test and post-test scores of the controlled and experimental groups.

The statistical analysis of this study found that the experimental group performed better than the control group when answering the comprehension questions concerning to identifying main idea, finding supporting details, compare and contrast, and distinguishing fact from opinion. As far as the result of the post-test is concerned, in the questions pertaining to drawing conclusion, the difference between the controlled and experimental groups was comparatively less.

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APPENDICES

Annexure I: Control Group: Pre-Test and Post-Test Score Analysis

S.No	Control Group	Pre-Test (20)						Post-Test (20)					
		TP1	TP2	TP3	TP4	TP5	Total	TP1	TP2	TP3	TP4	TP5	Total
1	Student 1	3	2	2	1	2	10	3	2	2	1	2	10
2	Student 2	2	2	3	1	3	11	2	1	3	2	3	11
3	Student 3	2	2	3	2	2	11	2	3	3	3	2	13
4	Student 4	2	2	1	1	2	8	2	2	1	1	2	8
5	Student 5	2	2	2	2	1	9	2	3	3	3	1	12
6	Student 6	1	1	2	1	1	6	1	2	2	2	1	8
7	Student 7	3	3	4	3	2	15	3	3	4	4	2	16
8	Student 8	2	3	3	3	2	13	2	3	3	3	3	14
9	Student 9	2	2	3	2	2	11	2	3	3	2	2	12
10	Student 10	2	2	2	2	2	10	2	3	2	2	2	11
11	Student 11	2	2	2	2	2	10	2	2	2	2	2	10
12	Student 12	2	3	2	3	2	12	2	3	2	3	2	12
13	Student 13	2	2	1	1	2	8	2	2	1	2	3	10
14	Student 14	2	2	3	3	3	13	3	3	3	3	3	15
15	Student 15	3	3	2	2	2	12	3	3	3	3	2	14
16	Student 16	2	1	3	2	2	10	2	1	3	2	2	10
17	Student 17	3	3	3	4	4	17	3	3	3	4	4	17
18	Student 18	3	3	2	2	3	13	3	3	2	2	2	12
19	Student 19	3	3	3	3	2	14	3	3	3	3	2	14
20	Student 20	2	2	2	1	1	8	2	2	2	1	2	9
21	Student 21	2	3	3	2	3	13	2	3	3	2	3	13
22	Student 22	2	2	2	1	2	9	2	2	2	2	3	11
23	Student 23	2	1	2	3	2	10	3	2	3	3	3	14
24	Student 24	2	0	3	0	3	8	2	0	3	0	3	8

Annexure I: Contd.,

S.No	Control Group	Pre-Test (20)						Post-Test (20)					
		TP1	TP2	TP3	TP4	TP5	Total	TP1	TP2	TP3	TP4	TP5	Total
25	Student 25	3	0	4	2	3	12	3	1	4	2	3	13
26	Student 26	2	3	3	1	2	11	3	3	3	2	3	14
27	Student 27	3	3	3	1	3	13	3	3	3	2	3	14
28	Student 28	2	0	2	3	3	10	2	2	2	3	3	12
29	Student 29	3	0	3	0	3	9	3	3	3	2	2	13
30	Student 30	3	0	0	3	3	9	3	1	2	3	3	12
31	Student 31	0	0	3	3	1	7	1	1	3	3	2	10
32	Student 32	3	1	3	3	3	13	3	3	3	3	3	15
33	Student 33	3	3	1	3	3	13	3	3	3	3	3	15
34	Student 34	0	3	3	0	3	9	0	3	3	1	3	10
35	Student 35	3	3	3	0	2	11	3	3	3	0	2	11
36	Student 36	3	3	3	3	0	12	3	3	3	3	0	12
37	Student 37	2	3	3	3	3	14	3	3	3	3	3	15
38	Student 38	3	2	2	3	3	13	3	3	4	3	3	16
39	Student 39	3	0	3	3	0	9	3	3	3	2	0	11
40	Student 40	3	3	4	0	2	12	3	3	3	0	2	11
41	Student 41	4	4	2	1	1	12	4	4	2	2	2	14
42	Student 42	3	2	3	1	0	9	3	2	3	3	2	13
43	Student 43	2	2	4	3	2	13	2	3	4	3	3	15
44	Student 44	2	2	2	2	2	10	2	2	3	2	2	11
45	Student 45	1	1	4	3	3	12	2	2	4	3	3	14
46	Student 46	2	2	1	3	1	9	2	2	2	3	3	12
47	Student 47	3	4	4	1	1	13	3	4	4	2	3	16
48	Student 48	2	3	3	1	0	9	2	3	3	1	1	10
49	Student 49	3	3	1	2	1	10	3	3	1	2	1	10
50	Student 50	3	0	2	2	2	9	3	0	2	2	2	9
Total		**117**	**101**	**127**	**97**	**102**	**544**	**123**	**123**	**137**	**113**	**116**	**612**
Average		**2.3**	**2**	**2.54**	**1.9**	**2.04**	**10.9**	**2.5**	**2.5**	**2.7**	**2.26**	**2.32**	**12.2**
Standard Deviation		**0.8**	**1.1**	**0.91**	**1.1**	**0.95**	**2.22**	**0.7**	**0.9**	**0.8**	**0.92**	**0.82**	**2.29**

Annexure II: Experimental Group: Pre-Test and Post-Test Score Analysis

S.No	Experimental Group	Pre-Test (20)						Post-Test (20)					
		TP1	TP2	TP3	TP4	TP5	Total	TP1	TP2	TP3	TP4	TP5	Total
1	Student 1	2	2	2	1	1	8	2	2	3	2	2	11
2	Student 2	3	3	3	2	2	13	3	3	3	3	3	15
3	Student 3	2	2	2	2	1	9	3	3	4	4	3	17
4	Student 4	1	2	2	1	1	7	3	3	3	2	2	13
5	Student 5	3	3	2	1	1	10	3	3	3	3	2	14
6	Student 6	3	2	2	1	1	9	3	3	3	3	2	14

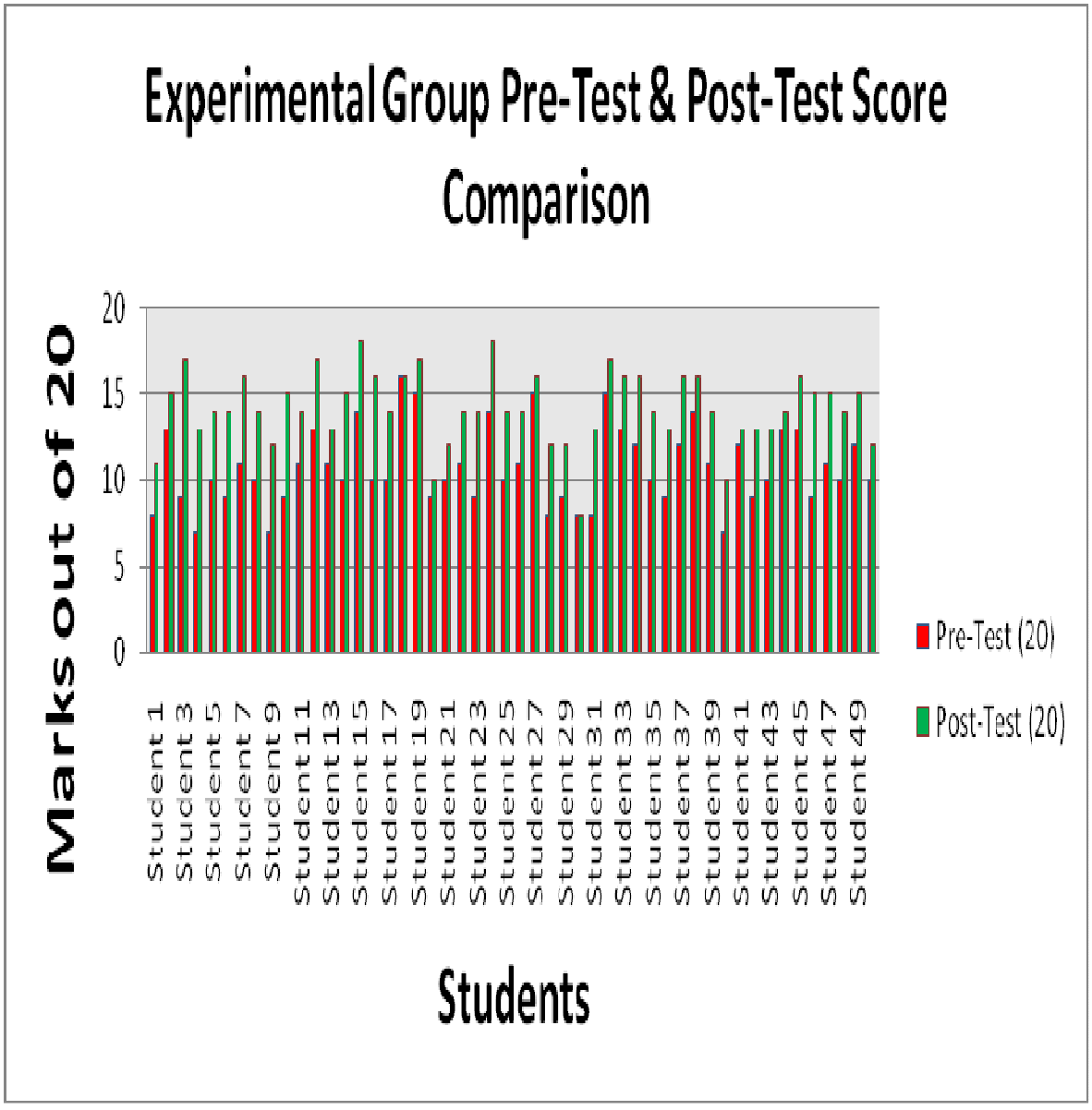
Annexure II: Contd.,

S.No	Experimental Group	Pre-Test (20)						Post-Test (20)					
		TP1	TP2	TP3	TP4	TP5	Total	TP1	TP2	TP3	TP4	TP5	Total
7	Student 7	3	2	2	2	2	11	3	3	3	4	3	16
8	Student 8	2	2	2	2	2	10	3	3	2	3	3	14
9	Student 9	1	2	2	1	1	7	3	2	2	3	2	12
10	Student 10	2	1	2	2	2	9	3	3	3	3	3	15
11	Student 11	2	2	3	2	2	11	3	3	2	3	3	14
12	Student 12	3	3	2	2	3	13	3	4	4	3	3	17
13	Student 13	3	3	3	1	1	11	3	2	2	3	3	13
14	Student 14	2	2	2	2	2	10	3	3	3	3	3	15
15	Student 15	3	3	3	3	2	14	4	4	3	4	3	18
16	Student 16	3	2	2	1	2	10	3	3	3	4	3	16
17	Student 17	3	3	2	1	1	10	3	3	3	2	3	14
18	Student 18	3	3	3	4	3	16	3	3	4	3	3	16
19	Student 19	3	3	3	3	3	15	3	4	4	3	3	17
20	Student 20	3	3	2	1	1	10	1	3	2	2	2	10
21	Student 21	3	3	2	1	1	10	3	3	1	2	3	12
22	Student 22	3	3	1	2	2	11	3	3	2	3	3	14
23	Student 23	2	4	1	1	1	9	3	2	3	3	3	14
24	Student 24	3	3	3	3	2	14	4	4	3	4	3	18
25	Student 25	3	3	1	1	2	10	3	2	3	3	3	14
26	Student 26	3	3	2	1	1	10	2	3	3	3	3	14
27	Student 27	3	3	3	4	2	15	3	4	3	3	3	16
28	Student 28	1	1	2	2	2	8	1	3	2	3	3	12
29	Student 29	3	1	2	1	2	9	3	2	2	2	3	12
30	Student 30	2	2	2	1	1	8	1	2	2	2	1	8
31	Student 31	1	2	2	2	1	8	3	3	2	3	2	13
32	Student 32	3	3	4	3	2	15	3	3	4	4	3	17
33	Student 33	3	3	3	2	2	13	3	3	3	4	3	16
34	Student 34	3	3	3	2	1	12	3	3	3	4	3	16
35	Student 35	3	2	2	2	1	10	3	3	2	3	3	14
36	Student 36	2	2	2	2	1	9	3	2	2	3	3	13
37	Student 37	3	3	3	2	1	12	3	3	3	4	3	16
38	Student 38	3	3	3	2	3	14	3	3	4	3	3	16
39	Student 39	3	3	3	1	1	11	3	3	2	3	3	14
40	Student 40	1	2	2	1	1	7	3	1	1	2	3	10
41	Student 41	3	3	3	2	1	12	3	3	2	2	3	13
42	Student 42	2	2	2	2	1	9	3	2	2	3	3	13
43	Student 43	3	3	2	1	1	10	3	2	2	3	3	13
44	Student 44	3	3	3	2	2	13	3	3	2	3	3	14
45	Student 45	3	3	3	2	2	13	1	4	4	4	3	16

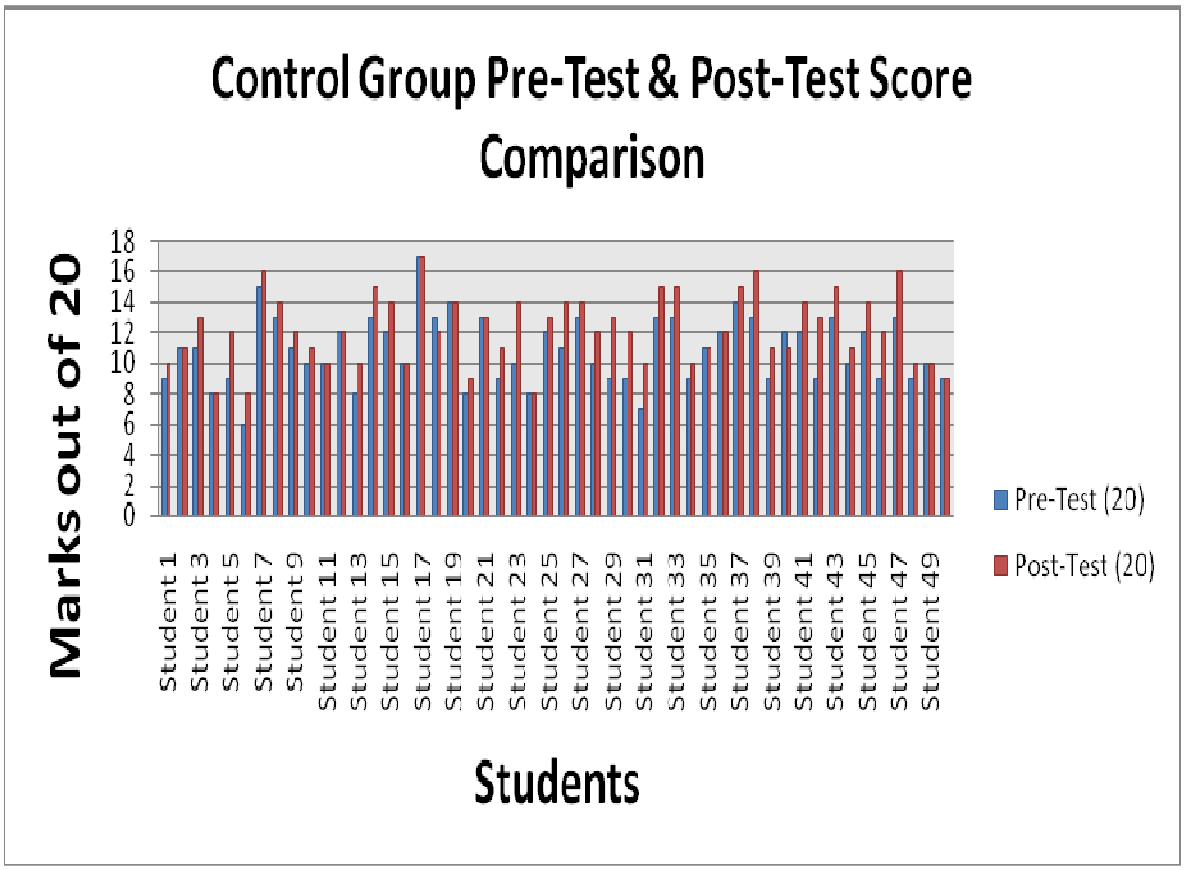
Annexure II: Contd.,

S.No	Experimental Group	Pre-Test (20)						Post-Test (20)					
		TP1	TP2	TP3	TP4	TP5	Total	TP1	TP2	TP3	TP4	TP5	Total
46	Student 46	3	1	3	1	1	9	3	3	3	3	3	15
47	Student 47	3	2	2	2	2	11	3	3	3	3	3	15
48	Student 48	2	2	2	2	2	10	3	3	2	3	3	14
49	Student 49	3	3	3	2	1	12	3	3	3	3	3	15
50	Student 50	3	2	2	2	1	10	3	2	2	2	3	12
Total		**129**	**124**	**117**	**89**	**78**	**537**	**142**	**143**	**134**	**150**	**141**	**710**
Average		**2.58**	**2.48**	**2.34**	**1.78**	**1.6**	**10.74**	**2.8**	**2.9**	**2.7**	**3**	**2.8**	**14.2**
Standard Deviation		**0.67**	**0.68**	**0.63**	**0.76**	**0.6**	**2.257**	**0.6**	**0.6**	**0.8**	**0.6**	**0.4**	**2.08**

Annexure III



Annexure IV


Control Group Pre-Test & Post-Test Score Comparison
Marks out of 20
18
16
14
12
10
8
6
4
2
0
Student 1
Student 3
Student 5
Student 7
Student 9
Student 11
Student 13
Student 15
Student 17
Student 19
Student 21
Student 23
Student 25
Student 27
Student 29
Student 31
Student 33
Student 35
Student 37
Student 39
Student 41
Student 43
Student 45
Student 47
Student 49
Students
Pre-Test (20)
Post-Test (20)