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Effects of multimedia-based instructional design on the learning and attitude among Jadara university students: a cognitive load theory outlook

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ABSTRACT

The purpose of this study was to investigate the effects of Cognitive Load Theory on the learning among Jadara University students in Jordan. The lesson developed in two different modes, text and image (TI) and audio, image with text (AIT). A quasi experimental factorial design was adopted in this research. The independent variables were the two modes of courseware. The dependent variable was the post test score and attitude. The study sample consisted of 79 educational technologies and was randomly (simple random sample). Descriptive and inferential statistics were conducted to analyze the collected data. ANCOVA was used to determine the significant differences of the post-test scores among the groups. The findings of this study showed that students using the Text, Images (TI) mode were not significantly higher than that attained by students using the Audio, Images, Text (AIT) mode. Also the findings of this study showed that all of the differences between the attitude scores of students in two treatment groups were not significant.

Introduction

According to Toh (2005) cognitive load theory is one of the theories that is related to mental processes and learning, Cognitive load theory (Paas, Renkl & Sweller, 2003) is a set of principles and guidelines to design and deliver instructional environments that promote learning by utilizing the limited capacity of working memory and minimizing working memory overload. Cognitive load theory assumes a limited working memory capacity that includes partially independent subcomponents for auditory/verbal information and visual information and assumes an unlimited long-term memory capacity holding schemas that vary in their degree of automation (Kalyuga, Ayres, Chandler & Sweller, 2003).

Cognitive load theory suggests that many instructional designs are ineffective because they ignore universal and fundamental aspects of cognition (Sweller, 2005). The theory has three components: a cognitive architecture explained by evolutionary principles and specified as a natural information processing system; a division of cognitive load into three additive categories; and instructional effects that flow from human cognitive architecture and the categories of cognitive load.

When processing integrated information, students are able to avoid the extraneous cognitive load imposed when one source of information is held in working memory while searching for its associated referent (Paas, Tuovinen, Tabbers & Van, 2003). In this way, adjacent and mutually referring instructional elements permitted scarce working memory resources to be directed towards constructing schemas rather than searching for the necessary relations between elements. Similarly, in the dual-modal condition, restructuring the same information across two modes facilitated students' schema construction by making available for learning the expanded processing capacity of combined visual and auditory working memories. In contrast, it is assumed that the extraneous cognitive load generated by the split-attention format interfered with learning by imposing an additional, and excessive, load on limited working memory capacity (Paas, Renkl & Sweller, 2004).

The total amount of mental activity imposed on working memory in an instance of time is known as cognitive load, which has been found to have three distinct parts (Sweller, 1994): Intrinsic load includes the inherent complexity of the subject matter and reflects the level of difficulty of the material to be learned.

Extraneous cognitive load is generated by the manner in which information is presented to learners and is under the control of instructional designers. This load can be attributed to the design of the instructional materials.

Germane load relates to the effort involved in processing and automating new information. Automation helps overcome working memory limitations and decreases cognitive load. According to Sweller (2006) ccognitive load theory highlights several practices that can be applied to training and performance improvement. The most fundamental of these include methodologies for reducing the effects of the extraneous cognitive load of instructional materials to ensure optimal leaning.

Redundancy principle and learning

There is now much evidence to suggest that redundant material imposes a significant extraneous cognitive load that has negative outcomes for learning and understanding (Sweller 1999). Redundant material interferes with learning rather than proving to be advantageous or even neutralwhen acquiring new information.

By eliminating redundant information the load on working memory is considerably reduced, thus facilitating better learning. The Redundancy Effect occurs when learners are required to attend to or engage in activities that are irrelevant to the task at hand (Sweller, 2005). The effect has been shown to interfere with the core material to be learned due to the extraneous load imposed on working memory (Chandler & Sweller, 1991).

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Increasing working memory load by simultaneously processing redundant information with essential information that needs to be learned, results in the transfer of information into long-term memory becoming problematic.

The Redundancy Effect is associated with materials or information that can be understood in isolation of each other (Sweller & Chandler 1994). Information presented in multiple forms, or information that is unnecessarily elaborated is representative of redundancy (Sweller, Paas & Renkl, 2003). Kalyuga, Chandler & Sweller (2004) again demonstrated the redundancy effect in a task involving listening and reading identical text in a series of experiments involving training materials for technical apprentices. The redundancy effect has been described in the past as counter-intuitive (Sweller, 2006) as it is often assumed that an abundance of information is advantageous to the learner. Cognitive load theory states otherwise asserting that an overload on working memory inhibits learning. Pictures are an additional and unnecessary load for the working memory to process when learning to read, and therefore redundant. Pictures are very likely to distract the child from the text thereby drawing on working memory resources that could be otherwise used for the processing and storing of core information associated with the decoding process (Diao & Sweller, 2007).

The Redundancy Principle suggests improving multimedia presentation by presenting animation along with concurrent recitation and on-screen text. To allow the students to choose the format that goes well with their learning style, the above principle suggests presenting the same words in two formats (Kalyuga, Chandler, & Sweller, 1999; Mayer, 2005). Therefore, the students can pay more attention to the auditory words if their learning is better compared to other learning methods. Adding on-screen text to a recited animation can be justified by better containing individual learning styles. However, the cognitive theory of multimedia learning as discussed previously, suggested that the added on-screen text will interfere with the animation of cognitive resources in the visual-pictorial channel as illustrated in creating what Sweller (1999) calls a split-attention effect. Students will have to put more effort and pay more attention visually to both the printed words and the animated pictures as illustrated in Figure 1.

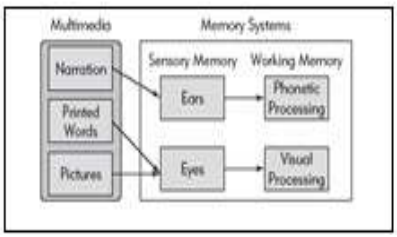

Figure 1: Redundancy Principles (Mayer, 2001)

Multimedia learning incorporates the presentation of visual materials (such as animations, video, or graphics) along with a synchronized text and audio (Moreno & Mayer, 2000). However, the redundancy principle indicates that learning and its achievements of the student using animation and recitation is much better compared to the learning and its achievements of the student using animation, recitation, and text, especially if the visual information is presented concurrently with the vocal information (Mayer & Moreno, 1997). At the same time, simultaneous presentations of printed text explanations and auditory recitation of the same information would be inappropriate as they exhaust the student's cognitive abilities of the working memory and upset learning (Clark & Mayer, 2003) because the printed text representation will trouble the visual channel. This visual channel will instead have to manipulate the textual and graphical information, especially, when the text is redundant and auditory narrations are duplicated (Muthukumar, 2005).

The redundancy effect will occur if the information that can be completely understood in isolation (as either visual or auditory information) is presented to both channels and is the same information. However, incorporating the redundant information in both working memories can eventually increase the cognitive load. This results in a split-attention dilemma. This dilemma varies depending on the learner's experience. However, a diagram with text may be favorable for beginners because they need to incorporate the text to the diagram to make more sense for them. At the same time, the same strategy might become redundant for a more experienced learner and the diagram alone makes more sense for them (ie. computer manuals that have minimal text and plenty of diagrams). In summary, the redundancy effect is that "less is often more" in learning and that cognitive capacity is over excised (Sorden, 2005).

To evaluate the previous prediction (cognitive theory of multimedia learning), conducted two assessment studies based on the lightning formation. The students were put into two groups where the first group learned about lightning formation through animation and narration, and the second group learned about lightning formation through animation, narration, and on-screen text (Mayer, Heiser, & Lonn, 2001, Experiments 1 and 2). In both studies, the first group (students who received animation and recitation) performed better based on their transfer tests.

The findings obtained from this study were identical to the findings obtained in the previous study. Thus, we can see that both studies reported one important finding that is adding sounds that are unrelated to the learning material have negative effects on the students' learning. This finding provides significant support to the coherence theory. Nonetheless, these two studies did not find any clear effect from adding sounds related to the learning material on students' learning progress. This result has opened the door to test a very important principle in instructional software design, that is, the redundancy effect on students' learning. Kalyuga, Chandler & Sweller (1998) used this term in instructional software design to indicate the case when replicated parts are omitted to promote better learning. We found that the text was deleted from the program because the same information had been made clear in some tables or illustrative sketches. This led to better learning as it reduces the burden on the working memory.

Mayer, Heiser & Lonn (2001) tested the redundancy effect on a sample consisting of 78 psychology students from Santa Barbara University– California in a 2×2 factorial design: The First Factor, the presence or absence of the text summarizes and explains the motion pictures, and the Second Factors the presence or absence of added information. A study sample was randomly assigned into four groups included instructional software explaining how lightning using these four interventions happened: The first instructional application consisted of a series of cartoon films about how lightning occurs and simultaneously with verbal explanation. The group that watched these films has neither text explanation nor additional information. The second instructional software application is similar to the first application except for the presence of text that summarizes each

step in the film about how lightning occurs which is located at the bottom of the cartoon film accompanied with commentary headphones. The third software application consisted of a film with an audio explaining the images with the addition of some words and supplementary information. The fourth processing software consisted of a film together with an audio explanation for the pictures, some words and supplementary information in addition to the text at the bottom that summarizes the film and how lightning occurs.

After the completion of watching the motion pictures the students were given a recalling and problem solving tests. The findings indicated that students who watched the instructional software with a printed text summarizing how lightening occurs showed poorer performance in both recalling and problem solving tasks compared to the students who did not see a text summarizing the motion pictures. The students who were watching the instructional software while hearing added information showed poorer performance in both recalling and problem solving compared to students who did not hear the added information. The findings indicated no significant interactions between the following two factors: the absence or presence of text, and absence or presence of additional information. This means that adding printed texts summarizing the motion pictures and adding information have negative effects on student learning. It is possible that the addition of text has increased the burden on the memory through the overlap between watching the film and trying to read what is up on the screen and what is being heard.

Thus, Mayer, Heiser & Lonn (2001) conducted a study to test these findings. To do so, the authors gave a group of students a summarized text at the bottom of the motion pictures on the screen and another group with the same text however using audio explanation.

If the redundancy effect observed in the previous study is due to students' attempts to follow what they hear with what they read, then, the summarized text group will perform poorly compared to the full text group. If the redundancy effect is due to additional processing burden on eye, both groups "summarized text and full text" will perform poorer than the group without a text on the screen. To test this hypothesis, a group of students consisting of (109) psychology students in Santa-Barbara University-California were divided randomly into three groups: In the first intervention, the software included a set of motion pictures and (an audio explanation without a text presented concurrently.) showing how lightning occurs. The second intervention was similar to the first, except for the presentation of a text summarizing each step in the motion pictures and (presented concurrently with audio explanation) explaining how lightening occurs shown at the bottom of the screen. In the third intervention, the software contained motion pictures with a full text and (presented concurrently with audio explanation) explaining how lightning occurs. After watching the software, students were given a recall and problem solving tests. The findings indicated that the "absence of text" group outperformed both summarized and full text groups in both recall and problem solving tests. No significant differences were found between the summarized and full text groups in both recall and problem solving tests. This finding supports the split attention effect theory.

Recent research on the redundancy effect has been found in the literature within the educational multimedia context, where auditory and printed are presented at the same time (Craig, Gholson & Driscoll, 2002; Kalyuga, Chandler & Sweller, 2002 ; Kalyuga, Chandler & Sweller, 2004). It occurs when one source of presentation is redundant and should be eliminated to free the working memory capacity for efficient learning (Sweller & Chandler, 1994).

Since the working memory is divided into a separate auditory and visual processors, visually presented information are processed in the visual working memory and auditory presented information are processed in the auditory working memory (Moreno & Mayer, 2002b). The two working memories channels are to some extent self-sufficient and both are a question to the capacity limitations. This capacity will increase if both channels are used (Penney, 1989).

The relation between the auditory and the visual material decides the level of benefit from tapping the two channels. However, if none of the two sources of information is meaningless on its own, then, learning is enhanced by using dual-coding presentation (Tindall-Ford, Chandler & Sweller, 1997). On the contrary, if both channels are presenting indistinguishable information such as printed and auditory text, riddance of the redundant sources improves learning (Craig et al., 2002; Kalyuga, Chandler & Sweller, 2000; Kalyuga et al., 2004 and Mayer et al., 2001). On the other hand, Moreno & Mayer (2002) achieved a reverse redundancy effect with auditory text alone proving lower to concurrent auditory and printed text

Methodology

This study is designed to identify the effects of implementation of cognitive load theory through a computer-based learning courseware that handles the learning of e-learning Course on Jadara University students in Jordan.

Population sample

The population of this study comprised all students in educational technology (191) enrolled in Jadara University (Jordan) in the second semester of the 2010/2011 academic year. The sample consisted of 79 students.

Experimental condition

The student's distribution within the treatment groups was conducted randomly. Then the treatment groups were exposed to the treatment consecutively. The two treatment groups are as follows:

First treatment: The educational material was shown as text and images (TI).

Second treatment: The educational material was shown as audio, image with text (AIT).

Instruments

The achievement test was administered on the participants of the two groups in this study. The achievement test consists of 30 items. The duration of the achievement test was 30 minutes.

Achievement test reliability

To ensure the reliability of the achievement test, the researchers checked the reliability of the instrument with a Test-Retest where it was applied on the pilot study samples. The reliability of the test questions was calculated using the Cronbach Alpha procedure to calculate the internal consistency. The Cronbach Alpha of the test was 0.79. The internal consistency of the test was 0.83.

Instruments validity

Validity of the instruments is important aspects that should be taken into account when conducting a research. Validity consists of two different aspects that are face and content validity. According to Gay and Airasian (2000) face validity

relates to "the degree to which a test appears to measure what it claims to measure".

Face validity was judged by a panel of experts in the field of education and e-learning. Content validity refers to the "degree to which a test measures an intended content area" (Gay and Airasian, 2000). Content validity of the instruments in this research was justified by the panel. The instruments were evaluated during and after the development of the research study. The feedback and comments received from the panel of experts were employed to establish the necessary clarifications, changes, and modifications before and after piloting the study.

Attitude instrument

The attitude instrument was adapted from Moreno (1999). The instrument Comprises of eight items (Friendliness, Helpfulness, Interesting, Entertaining, Understanding, Difficulty, Effort required) in a ten scale format.

Study design

This study followed the quasi experimental method to measure the impact of the 2 modes of treatments on the post test scores of the educational technology students in the e-learning classes.

Research variables

The present research contains two types of variables (independent and dependent variables) that are presented as follows:

Independent variables

The independent variables in this study were the two modes of presentation:

Multimedia computer-based learning courseware with e-learning presented in text and image (TI)

Multimedia computer-based learning courseware with e-learning presented in audio, image with text (AIT).

Dependent variable

Post Test Scores (learning)

Attitude

Results

The analyses of the collected data were carried out through ANCOVA statistical techniques, The data were compiled and analyzed using the Statistical Package for the Social Science (SPSS 17) for Windows computer software.

Testing the Two groups' equivalence

To examine the equality of treatment mode on the pre-scores, the t-test procedure was used. The p values = 0.60 showed that there is no significant difference in the pre-test scores among the two treatment groups. This means that the two groups have the same level of prior knowledge of the e-learning.

Testing Homogeneity of Variances for the Variables in the Post-test

The results from Levene's Test for homogeneity of variance by comparing the dependent variables across the two groups for Treatments indicated homogeneity of variance was met by all the dependent variables. As $p > 0.05$ for all variables, the results show that the groups were homogenous.

Testing of Normality of Distributed Post-test

A skewness range and kurtosis range presented values reveal that the variables are normally distributed and have met the criteria for further analysis.

Mean, Mode and Standard Deviation of the Pre-Test:

Table 1 shows the Mean, Mode and Standard Deviation of the Pre-test scores of the sample. Based upon a score of 1 mark per correct response to the 30 items, the maximum score is 30.

Frequency Distribution of the Pre-test:

Figure 2 shows the frequency distribution of the pre-test scores of the 79 students involved in the study. From the frequency distribution it can be seen that a normal distribution was obtained with a median of 10.0000.

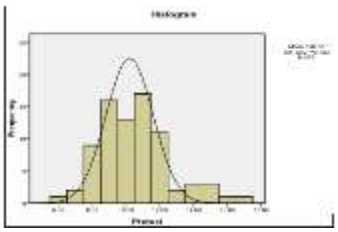

Figure 2: Frequency Distribution of the Pre-test

Mean, Mode and Standard Deviation of the Post-test

Table 2 shows the Mean, Mode and Standard Deviation of the Post-test scores of the sample.

The mean score of the post-test is 18.96203 and compared to the pre-test mean score of 10.5, there is an increase of 10.5 in the mean score.

Frequency Distribution of the Post-test

Figure 3 shows the frequency distribution of the post-test scores of the 79 students involved in the study. The mode of the post-test is 19.00, and compared to the pre-test score mode of 11.00, more people obtained higher scores in the post-test. From the frequency distribution it can be seen that a normal distribution was obtained with a median of 19.0000.

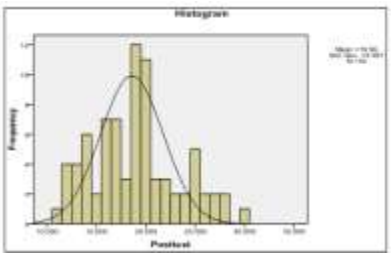

Figure 3: Frequency Distribution of the Post-test

Description of the Post-test Scores of Students in Various Treatment Groups

Comparison was made between group TI and AIT based upon the mean of the post-test scores (Table 3). It showed a difference between the means of the post-test scores for groups using the TI and AIT modes. The mean of the post-test scores for the group using the TI mode (18.60) was higher than the mean of the post-test scores for the group using the AIT mode (20.37). In order to reduce the statistical error, the pre-test scores were used as the covariate variable and a comparison was made among the two groups (TI & AIT) using the ANCOVA procedure (Table 5).

Table 5 indicated the results of ANCOVA test of statistical significance on the differences observed in the mean score of the post-test for the various treatment groups with $F(1,77) = 3.266$, Mean Square = 647.571 and $p = 0.075$. Therefore, these differences in the post-test scores among the two groups were not significant.

Description of the Attitude Scores of Students in (TI, AIT) Treatment Modes

Comparison was made between group TI and AIT, based upon the mean of the attitude scores (Table 6). It showed a difference between the means of the attitude scores for groups using the TI mode and AIT mode. The mean of attitude scores for groups using the TI mode record higher in the (Helpfulness M = 6.22, Interesting M = 6.07, Entertaining M = 6.50) was

higher than the mean of attitude scores for the group using the AIT mode in the (Helpfulness M = 5.97, Interesting M = 5.75, Entertaining M =5.90). And record lower in the mean of attitude scores for groups using the TI mode in the (Friendliness M = 5.92, Understanding M = 5.15, Difficulty M = 5.36, Effort Required M = 5.39, Eagerness M = 5.73) than the mean of attitude scores for the group using the AIT mode in the (Friendliness M = 6.00, Understanding M = 5.95, Difficulty M = 5.92, Effort Required M = 5.70, Eagerness M = 6.13)

ANCOVA of the Attitude Scores of Students of Students in (TI, AIT) Treatment Modes

In order to reduce the statistical error, and a comparison was made among the two groups (AI, TI) using the ANOVA procedure (Table 6).

However, the observed probably value $p > 0.05$ which mean that all of the differences between the attitude scores of students in two treatment groups was not significant.

Discussion

This study found that students using TI mode did not learn better compared to students using the AIT mode. A possible reason for this result can be explained by the phenomena of cognitive overload and split attention. The cognitive theory of multimedia learning is based on the assumptions that (a) all people have separate channels for processing verbal and pictorial material, (b) each channel is limited in the amount of processing that can take place at one time, (c) learners actively attempt to build pictorial and verbal models from the presented material and build connections between them, and (d) the function of instruction is to alter the contents of long term memory but the limitations of working memory when dealing with novel information can interfere with or prevent the realization of the goal. Students using the TI mode did not significantly have better post-test scores compared to students using the AIT mode. According to Mayer & Moreno (2008), loading redundant onscreen text to a multimedia presentation could overload the visual channel because the image enters the student's cognitive system through the eyes and is processed in the visual channel, whereas the audio enters the student's cognitive system through the ears and is processed in the auditory channel. Since the printed text enters through the eyes and must be processed in the visual channel, and since the limited cognitive resources in the visual channel must be shared in processing both the image and the text, an overload occurs. According to the cognitive theory of multimedia learning, learners have limited cognitive capacity in the visual and auditory channels. Students may pay so much attention to the printed text that they pay less attention to the image. When their eyes are on the printed text, the students cannot be looking at the image at the same time. In addition, the students may try to compare and reconcile the printed text with the narration text, which requires extraneous cognitive processing to learning the content. This will result in as cognitive overload.

Split-attention effect holds that the use of materials that require students to split their attention between two sources of information causes a higher cognitive load on working memory and therefore impedes the learning process (Mayer & Moreno, 2003). In the TI and AIT mode Burkes (2007) states that a split-attention effect is induced if two or more sources are carried in the same channel. Attending to multiple sources in the same channel requires more mental effort than attending to two channels, resulting in a reduced portion of the working memory available for the process of learning. Toh (2005) concluded that presenting different sources of information in the TI (for example, only visually) will result in a split-attention effect which leads to poor learning performance. As Sweller (2005) pointed out, there is a link between cognitive load and the redundancy principle because when additional information is presented; there can be a learning decrement because of the redundancy effect. The results of this study show that when information is presented in multiple forms such as was the case in this study (AIT mode), the information may interfere with learning rather than facilitate it. Moreover, Mayer (2001) observed that if additional information is used to enhance or elaborate, and that information is fundamentally redundant, then learning can be enhanced by the exclusion of that additional information. Apparently, the addition of the redundant narrated text decreased the capacity of the working memory and hence resulted in lower post-test scores. This result was consistent with results from many studies Mayer (2005), Diao & Sweller, (2007), Moreno & Mayer (2000) Clark & Mayer (2003) Muthukumar (2005) Sorden (2005).

The results of this study indicated that students possess positive attitudes with regards to the treatment modes. Further, there were no significant differences in attitudes regarding the two treatments. The latter is attributed to the very nature of e-learning, and to the interactivity allowed by computers in which the content was delivered. The treatments in this study stimulated the student's attention, provided new ways of delivering the lesson, and used new stimuli and strategies based on the cognitive over lode theory that assimilates the human brain in dealing with data processing. In light of the students need, the treatments in the current study provided learners with rich, vigorous, and exciting experiences that contributed to their positive attitudes, and because the treatments are somewhat modern teaching methods, they motivated and enhanced the student's interests in specific fields. This makes certain cognitive activities most desirable for the students. Taking into account the powerful role of computers in contemporary life, the importance of learning about software packages and Information Technology advancements also boosted their positive attitudes towards the treatments. The easy-to-use program with the excitement involved, also contributed, to the positive attitudes of the students.

Similar results were reported by Kian & Chan, Orit (2000) who found positive attitudes towards using computers in education. Another support to this result was reported by Dhyabat (2007); Al-Dala'ah, (2003); and Al-Mallah (2005); who found positive attitudes to computer-based instruction.

Summary and Conclusions

This study found no statistical difference in the performance between students using TI treatment mode and students using AIT treatment mode. It supports the effects of cognitive overload and split attention on learning. According to Mayer and Moreno (2002) redundant printed text in a multimedia presentation could overload the visual channel. The image enters the student's cognitive systemthrough the eyes and is processed in the visual channel. The image enters the student's cognitive system through the eyes and is processed in the visual channel; similarly, the printed text enters through the eyes and is also processed in the visual channel. The cognitive resource in the visual channel is limited and must be shared in processing both the image and the text. This sharing results in a cognitive overload in the visual channel of the working memory. Moreover, Sweller (2005) and Moreno & Mayer (2003) found

that two sources of redundant information will result in a split-attention. This will also result in a higher cognitive load on the working memory and, therefore, impedes the learning process. Apparently, the addition of redundant audio did not improve the capacity of the working memory. Audio, text and images are important and powerful multimedia components for e-learning.

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Table 1: Mean, Mode and Standard Deviation of the Pre-Test

	N	Mean	Median	Mode	Std. Deviation
Pretest score	79	10.5190	10.0000	11.00	2.12350

Table 2: Mean, Mode and Standard Deviation of the Post-test

	N	Mean	Median	Mode	Std. Deviation
Pretest score	79	18.96203	9.0000	9.00	4.386585

Table 3: Post-test Scores of Students in Various Treatment Groups

Groups	Mean	Std. Deviation	N
TI	18.60733	12.079802	38
AIT	20.37862	15.706396	41
Total	19.56438	14.283892	79

Table 4: Correlation between Pre-test Scores and Post-test Scores

		Pre-test	Post-test
Pre-test	Pearson Correlation	1	0.689**
	Sig. (2-tailed)		0.000
	N	79	79
Post-test	Pearson Correlation	0.689**	1
	Sig. (2-tailed)	0.000	
	N	79	79
**. Correlation is significant at the 0.01 level (2-tailed).			

Table 5: ANCOVA of the Post-test Scores of Students in Various Treatment Groups

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	647.571a	1	647.571	3.266	.075
Intercept	313707.499	1	313707.499	1582.230	.000
Groups	647.571	1	647.571	3.266	.075
Error	15266.734	77	198.269		
\Total	333992.000	79			
Corrected Total	15914.306	78			
. R Squared = .041 (Adjusted R Squared = .028)					

Table 6: ANOVA of the Attitude Scores of Students in (TI, AIT) Treatment Modes

	ode		ean	ig
Friendliness	I	8	.92	432
	IT	1	.00	
Helpfulness	I	8	.26	446
	IT	1	.97	
Interesting	I	8	.07	543
	IT	1	.75	
Entertaining	I	8	.50	441
	IT	1	.90	
Und				