Examining the Impact of English Curriculum Designed in line with 7E Model on Academic Achievement and Retention of 11th Grade Students*

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Abstract

The present study aims to investigate the impact of teaching activities designed in line with 7E model on 11th graders' academic success and retention in English courses. The study was conducted on a total number of 63 11th grade students studying in two different classes of a state school in Konya in 2016-2017 academic year. Quasi-experimental model was used within the study. While teaching activities designed according to 7E model were implemented on the experimental group for 7 weeks, the activities of the regular curriculum were implemented on the control group. At the end of 7 weeks of study, English course achievement test was conducted on both groups again as post-test. 3 weeks after the implementation, retention test was conducted on both groups. At the end of the study, it was found out that activities designed according to 7E model significantly contribute to the academic achievement and retention of the students.

Keywords: 7E Model, Teaching English, Constructivism, English Course Achievement Test, Retention Test

7E Modeline göre düzenlenmiş İngilizce Öğretim Programının 11. Sınıf Öğrencilerinin İngilizce dersindeki Başarılarına ve Kalıcı Öğrenmelerine Etkisinin İncelenmesi

Öz

Bu çalışmanın amacı, İngilizce derslerinde 7E modeline göre düzenlenmiş öğretim etkinliklerinin lise 11. Sınıf öğrencilerinin başarılarına ve kalıcı öğrenmelerine olan etkisini incelemektir. Araştırma, 2016–2017 eğitim-öğretim yılında Konya ilinde bulunan bir devlet okulunda iki farklı şubede öğrenim gören 11.sınıf toplam 63 öğrenci ile gerçekleştirilmiştir. Çalışmada yarı deneysel model kullanılmıştır. Deney grubuna 7 hafta süreyle 7E modeline göre düzenlenmiş öğretim etkinlikleri uygulanırken; kontrol grubuna da 7 hafta süreyle mevcut programdaki etkinlikler uygulanmıştır. Uygulama sonucunda her iki gruba sontest olarak İngilizce Dersi Başarı Testi tekrar uygulanmıştır. Uygulamadan 3 hafta sonra da her iki gruba kalıcılık testi uygulanmıştır. Elde edilen verilerle gruplar arasındaki farkın anlamlı olup olmadığını test etmek için t-testi uygulanmıştır. Bu çalışmanın sonunda; 7E modeline göre düzenlenmiş etkinliklerin öğrencilerin başarılarına ve kalıcılıklarına anlamlı bir katkı sağladığı görülmüştür. Yabancı dil öğretiminde 7E modeli uygulamasının eksikliği tespit edildiğinden, bu çalışma 7E modeline göre düzenlenmiş öğretim etkinliklerini alanyazına kazandırması açısından önemlidir.

Anahtar Kelimeler: 7E Modeli, İngilizce Öğretimi, Yapılandırmacı Yaklaşım, İngilizce Dersi Başarı Testi, Kalıcılık Testi

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Introduction

Learning exists since the first day of human beings. All through the years of research, linguists, psychologists, and theorists have looked for different and more effective ways of teaching, suggested new perspectives for better understanding and explaining the concept of *learning*. Some theories changed, some developed, and some became history. One theory opposed the other, and another opposed the other. There has been a never-ending debate on how effective teaching should be. There has always been a search for the better. To meet the needs of the new century, the focus of reformation has been directed to exploring the ways to lead the students to critical thinking and reflection (Shaheen & Kayani, 2015, p.472).

Reviewing the theories, the positivist school lead to behaviourism explaining learning procedures through reflexive responses (Brown, 2007, p.88), and conditioning (Williams&Burden, 2000, p.8) based on stimulus-response-reinforcement trio. Learning was defined purely within mechanistic terms. Focusing on only observable change in performance and publicly observable responses (Brown, 2007, p.9; Ertmer &Newby, 1993, p. 55; Ashworth et. al. 2004, p.2), and underestimating the cognitive processes throughout the learning process, behaviourist view lacked a substantial part- internalising knowledge.

In contrast, having relations to mainly intellectual functions, thinking skills, mental procedures (Brown, 2001, p. 55), cognitive theory focuses on what really happens in mind throughout the learning process. According to cognitivism, learning is more of a subject of mental or cognitive processes rather than only a difference in behaviour. Instead of focusing on the stimulus-response-reinforcement connections mechanically, cognitivists relied on internal mental processes such as insight, information processing, memory, perception (Ashworth et al. 2004, p.2), meaning, understanding, and knowing. Cognitivist theory is concerned with the way in which the human mind thinks and learns (Williams&Burden, 2000, p.13). The theory asserts that learners are cognitively involved within the learning process in great contrast to what is thought to happen according to behaviourist view.

Constructivist theory which goes a step further than that of cognitivism, is based on learners' having meaningful experiences to learn (Güven & Düzenli, 2015, p. 59). The theory is simply explained with a sentence: "*Give the pupils something to do, not something to learn; and the doing is of such a nature as to demand thinking; learning naturally results. –John Dewey*". The individuals are in search for bringing a sense of personal meaning to their worlds (Williams & Burden, 2000, p. 21). Constructivism suggests that learning is the process of constructing new ideas based upon previous learning experiences or past knowledge. Throughout the process of learning, the learner interacts with the previous knowledge, experience, and environment; and the mind is regarded as a reference tool to the real world

(Ertmer & Newby, 1993, p. 62) to understand and construct meaning from all these; which makes it a really individual oriented process. As one moves along the behaviourist-cognitivist-constructivist continuum, the focus of instruction shifts from teaching to learning, from the passive transfer of facts and routines to the active application of ideas to problems (Ertmer &Newby, 1993, p.62), from a teacher-based approach to learner- centered one.

Having its roots on constructivism, learning cycle model started to be implemented within 3 stages first, and then followed by four, five, and seven stages respectively (Kanlı, 2009, p.45). Each model is an expanded version of the previous one/s. Comparing the most recent ones, in 5E model, *Engage, Explore, Explain, Elaborate,* and *Evaluate* parts are actively in use (Köksal, 2014, p. 1461) whereas 7E model- a modified version of 5E model (Duran et. al., 2011)- involved *Elicit* and *Extend* stages as well. 7E model has the basis upon Bybee's (1997) 5E model (Kanlı, 2009, p. 55). By adding *Elicit* and *extend* stages, Eisenkraft (2003) proposed an emphasis on "transfer of learning" and significance of "eliciting prior understanding". The proposed model divided *engage* stage of 5E model into *elicit* and *engage;* and *elaborate* and *evaluate* into *elaborate, evaluate,* and *extend* stages.
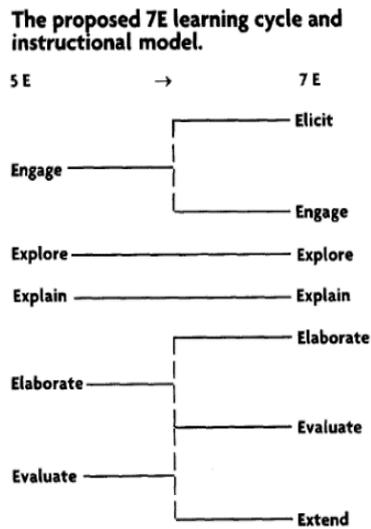

Figure 1: Proposed 7E learning cycle and instructional model (Eisenkraft, 2003)
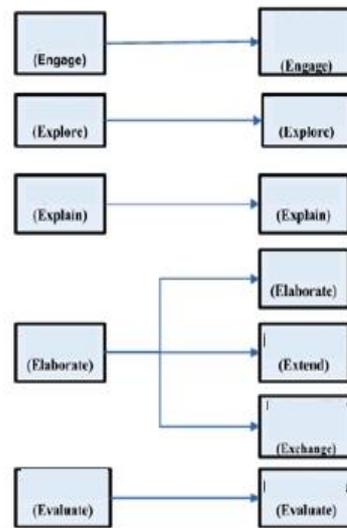
Figure 2: Bybee's (2003) 5E to 7E Model (Kanlı, 2007).

Stages of 7E model:

Engage&Excite: Based on creating student engagement to elicit previous knowledge, the stage dwells upon drawing attention of the students to their previous understanding. Bybee (2003) explained the aim of the teacher here

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as to get students realise what they know rather than covering up the lacking parts of their prior knowledge (Köksal, 2014, p. 1462).

Explore: In this stage, the teacher poses questions to lead the students find answers. This stage provides the students the opportunity to observe, design, plan, hypothesise, and organise the data gained (Eisenkraft, 2003, p. 57).

Explain: The teacher encourages the students to share their understanding on the process. This stage is relatively teacher-based. Considering the students' previous knowledge, the teacher accounts for some explanations, definitions, and concepts (Kanlı, 2007, p. 64).

Elaborate: At this stage of the cycle, students get the chance to apply their learning into new domains, tying directly to Thorndike's "transfer of learning" (Eisenkraft, 2003, p.58). They integrate their new learning outcomes into their lives, experiences. The students should have direct links to real life, having the topics to be a part of real-life (Köksal, 2014, p. 1462).

Extend: This stage is focused on extending the boundaries of new learning outcomes- not limited to single elaboration (Eisenkraft, 2003, p.59)- and relating new knowledge to the previously existing ones.

Exchange: The stage stands on the cooperation of the students to exchange beliefs and ideas. The students get the chance to work and discuss together (Ercan, 2009, p. 46) to overcome and solve a problem (Köksal, 2014).

Evaluate: This stage has its significance in that it provides a feedback to the students on their learning process. An assessment based on process rather than product, should be used considering the interaction of the students with the peers (Köksal, 2014, p. 1462) as peer learning matters a lot in terms of knowledge transmission.

Throughout the review of literature, there have been thesis studies conducted on the efficiency of 7E model in teaching in science and technology field (Öztaş, 2016; Saraç, 2015; Yenice, 2014; Çekilmez,2 014; Çolak, 2014; Kunduz, 2013; Çın, 2013; Şahin, 2012; Gürbüz, 2012; Bulut, 2012; Demirezen, 2010; Avcıoğlu, 2008; Kanlı, 2007; Feyzioğlu, 2006); and only one on religion and moral learning. In addition to these master and doctorate dissertation studies, several other studies were also conducted on the science and technology field (Kanlı, 2009; Shaheen&Kayani, 2015; Kanlı&Yağbasan, 2008; Saraç, 2017; Adesoji&Idika, 2015). It was found out that research on 7E model is largely dependent on the science and mathematics field, mostly lacking in social sciences and linguistic studies (Saraç &Kunt, 2016, p.713). Only two studies has been found to be directly related to teaching English (Bozorgpouri, 2016; Köksal, 2014). With the need on the field, the present study searched for the insights on implementing 7E model into language classes and the process of teaching/learning.

Purpose of the study:

The study aims to shed light on the impact of teaching activities designed in line with 7E model on 11th graders' academic success and retention in English courses. As the literature lacks a great number of studies on 7E model, the research was conducted to give insights on implementing 7E model into language classes and examined the efficacy of the model in terms of students' academic achievement and retention.

Research Questions:

Research Question 1: "Is there a significant difference in experimental group's academic achievement pre-test and post-test mean scores?"

Research Question 2: "Is there a significant difference in control group's academic achievement pre-test and post-test mean scores?"

Research Question 3: "Is there a significant difference in experimental group's and control group's academic achievement post-test mean scores?"

Research Question 4: "Is there a significant difference in experimental group's and control group's retention test mean scores?"

Method

The study employs a pre-test & post-test design quasi-experimental method with a control group. Assigning the groups, English course achievement test was conducted as pre-test on the total number of four 11th grade classes. Considering the results, two classes having no significant difference in terms of pre-test scores were assigned to be control and experimental groups. One of these two classes were assigned as control and the other as experimental at random.

Table 1. English course academic achievement test Pre-test scores of Experimental and Control Groups

| Test | Class | PRE-TEST | | | | |
		N	x	ss	t	p
Academic achievement test	Experimental	30	8	2.74		
	Control	33	10	2.68	2.926	0.000

According to the results of the pre-test scores of both groups, no significant difference was found in terms of English course academic achievement prior to the study, with the significance level of (t= 2,926, p>.05).

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Table 2. Gender distribution among Experimental and Control Groups

Groups	Female	Male	Total
11/D (Experimental Group)	16	14	30
11/B Sınıfı (Control Group)	18	15	33
Total	34	29	**63**

While teaching activities designed according to 7E model were implemented on the experimental group, the activities of the regular curriculum were implemented on the control group. The study was conducted on a total number of 63 11th grade students studying in two different classes of a state school in Konya in 2016-2017 academic year for 7 weeks-28 sessions. 3 weeks after the implementation, retention test was conducted on both groups. During the process, "Theme 1- Jobs", "Theme 2- Nature and Environment", "Theme 3-Health and Diet" units were studied.

Data Collection

English course academic achievement test was administered to both groups- experimental and control- as pre-test and post-test. 3 weeks after the implementation, the same academic achievement test was conducted again as retention test.

English Course Academic Achievement Test:

The instrument is a 25-item multiple choice test which was developed by the researchers with the aim of measuring 11th graders' English course academic achievement. During the development of the test, the studies on 11th grade English course were analysed, and a question pool was formed with the questions from English coursebooks, test books, and literature review. Considering the field expert views, the number of the questions was reduced to 41, and was prepared in the form of multiple choice test under the supervision of scale development experts. The test was piloted to 90 students at 12th grade before being administered as a pre-test. After the data collection, item analysis was conducted for each item of the test. The items with co-efficiency item strength between pj 0.60 and 0.40, and item discrimination index (rjx) over 0.30 were accepted as they were. In this way, a standard achievement test of 25 items was developed with a moderate level of item facility and high level of item discrimination According to the results of the pilot study, the test was found to be reliable with Cronbach Alpha 0.91.

English Course Retention Test:

The same English course academic achievement test developed by the researchers was used as retention test after the implementation.

Procedure:

A sample lesson activity based on 7E model was designed to teach "Nature and Environment" theme - "Natural Disasters" section to the experimental group students. The steps and the procedures are explained below:

Engage & Excite:

The students are grouped into four or five to have a cooperative and warm atmosphere for learning. The groups are shown visuals of different natural disasters. The teacher proposes some questions to the students such as *"Do you know any of these natural disasters?", "What are they called?* The aim here is not to evaluate or assess the students, rather to warm them up, arouse their interest, and to promote new learning with reference to their existing knowledge. In this way, the students are getting ready for the topic thinking about their prior knowledge. The teacher tries to get the students have a purpose.

Explore:

The teacher poses some more questions related to daily life to get the students to be active. These questions are more detailed than those given at the beginning: "Where do these natural disasters happen?" "Are the natural disasters specific for different parts of the world?" "Why do they happen in those places? "Which of the disasters happen in our country more often?" "Have you experienced any of them?".

Thus, the teacher makes the topic more of a thing related to the students' lives. Later, more specifically, the teacher presents some more visuals of natural disasters and asks more questions. "What happened here?" "What were the reasons for the disaster?" The teacher gives each group a picture. The group members talk about the picture, commenting on the disasters to share ideas. The teacher do not have any interference with the groups discussing. They learn to work together and exchange ideas. The students raise awareness on their existing knowledge and have new perspectives.

Explain:

In response and related to the students' ideas, the teacher at this stage gives explanations. The teacher presents detailed information about different natural disasters around the world. Still, the stage is not totally T-based (teacher-based). Rather, while giving explanations the teacher encourages students express their ideas.

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Elaborate:

At this stage the students begin to use their new learning. They adapt their new learning into real life experiences. The teacher asks the students to have some suggestions about what to do to prevent these natural disasters considering the reasons they have discussed so far. "How can we prevent earthquakes?" "Is it possible to have some precautions against hurricanes?" This stage embodies higher level thinking skills such as researching, problem solving, and discussion.

Extend:

Comparing their prior knowledge and new learning, the students discuss about different natural disasters they experienced or witnessed. They make some inferences thinking over their new learning outcomes. They make comparisons of natural disasters making use of adjectives.

Exchange:

At this stage, the students exchange beliefs, share ideas with the peers, explaining the reasons of changing their ideas "My beliefs on the reasons of earthquakes have changed because…."

Evaluate:

The teacher again uses group discussion to help students get together to evaluate the overall topic. Some discussion questions are given to each group related to different natural disasters: "What are the differences of the natural disasters?", "What can be the best way to prevent earthquakes /hurricane/ flood?"etc. After the discussion, the students get together to organise a paragraph of their ideas using the linguistic structures given within the unit- Simple past tense (*organise& write a paragraph on earthquake which took place in 1999- what the reasons were, which precautions were taken*).

The control group had their classes according to the pre-determined existing programme. The procedure is more of a teacher-based one. The teacher explains the content, and helps the students when needed. No other activities than provided by the book were given to the control group students.

Data Analysis

The study searched for the significant differences between experimental and control group students' English course academic achievement test and retention test scores through dependent and independent samples t-tests before and after the implementation. Data gained was analysed with SPSS 21 statistical programme. Data analysis was based on 0.5 level of significance.

Findings

The data gained from the English course academic achievement test and retention test scores were analysed in this part.

Table 3. Dependent samples t-test of experimental group students' English course academic achievement pre-test post-test scores

Test	GROUP	N	x	ss	t	p
	EXPERIMENTAL GROUP					
Academic achievement test	Pre-Test	30	8,00	2,74		
	Post-Test	30	21,00	1,93	-20,380	0,000

Considering Research Question 1: "Is there a significant difference in experimental group's academic achievement pre-test and post-test mean scores?", pre-test and post-test scores of the experimental group were studied. As seen in Table 3., experimental group students' pre-test mean scores were calculated as 8.00, whereas post-test mean scores were found to be 21.00. According to these findings, it could be concluded that there has been found a significant difference in pre-test and post-test scores of experimental group students who had the experience of 7E learning model (p<.05).

Table 4. Dependent samples t-test of control group students' English course academic achievement pre-test post-test scores

Test	GROUP	N	x	Ss	t	p
	CONTROL GROUP					
Academic achievement test	Pre Test	33	10.00	2.68		
	Post Test	33	17.00	2.44	-11.207	0.000

Searching for the answers to the Research Question 2: "Is there a significant difference in control group's academic achievement pre-test and post-test mean scores?", pre-test and post-test scores of the control group were studied. As seen in Table 4., control group pre-test mean scores were calculated as 10.00, and post test scores as 17.00. According to the findings, it is possible to say that their academic achievement levels increased. Statistics show that there is significant difference in pre-test and post-test scores of control group students who were taught through the activities of the regular curriculum (p<.05).

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Table 5. Independent Samples t-test of Experimental and Control Groups'

English course academic achievement test post-test scores

Test	GROUP	N	x	ss	t	p
Academic achievement test	Experimental	30	21.00	2.44	-7.764	0.000
	Control	33	17.00	1.93		

Research Question 3 of this study aimed at finding whether there is a significant difference in experimental group's and control group's academic achievement post-test mean scores. Considering this research question in mind, post-test scores of the experimental and the control groups were studied. The mean scores of control group students, who were taught through the activities of the regular curriculum, were found to be 17.00. On the other hand, the mean scores of the experimental group students who had experienced 7E learning model, were calculated as 21.00. Through the analysis, it was found out that there is significant difference in post-test scores of control group students and experimental group students ($p < .05$). Considering the mean scores again, it can be concluded that there is significant difference in post-test scores of both groups in favour of experimental group. It is possible to say that experimental group students were found to be more successful in terms of English course academic achievement.

Table 6. Independent samples t-test of Experimental and control group students' retention test scores

Scale	GROUP	N	x	ss	t	p
Retention test	Experimental	30	18.00	3.19	6.440	0.000
	Control	30	12.90	2.96		

In search for the answers to the Research Question 4: "Is there a significant difference in experimental group's and control group's retention test mean scores?", retention test scores of the experimental and the control group were studied. As seen in Table 6., mean scores of control group students on retention test were found to be 12.90, whereas the mean scores of the experimental group were calculated as 18.00. According to the data gained, there is significant difference between control group students' English course retention post-test scores and that of experimental group students ($p < .05$) in favour of the experimental group. Considering the findings, it is possible to say that teaching English through 7E model was found to be more effective in retention compared to teaching through the activities of the regular curriculum.

Discussion&Conclusion

English course academic achievement test was conducted as pre-test on the experimental group students experiencing 7E model and the control group students who had the activities based on the regular curriculum. The results (Table 1) showed that there was no significant difference within two groups, and it was concluded that two groups could be regarded as equal. After the implementation of the programme, English course academic achievement test was conducted again on both groups as post-test. The results of the Independent samples t-test scores (Table 5) indicated that there was significant difference between the groups in terms of academic achievement in favour of the experimental group.

The findings could be interpreted as experimental group, which practised the 7E model, scored better than the control group who had the activities based on the regular curriculum. It can be suggested that experimental group students were found out to be academically more successful compared to the control group. Another inference might be that 7E model was found to be more effective in terms of English course academic achievement and made the learning of the target topics easier for the students. The underlying reasons for the outcomes and the effectiveness of the 7E model could be related to its making students cooperate to exchange beliefs, focusing on the eliciting prior knowledge and extending the concepts (Eisenkraft, 2003,p.59), having students lead into actively participate within the problem solving activities (Köksal, 2014, p.1470). The retention test was conducted 3 weeks after the implementation and the results suggested there found to be a significant difference in favour of the experimental group (Table 6). Considering retention, 7E model was also found to be more effective. It is possible to assert that the learning outcomes of the experimental group turned out to be longer lasting. This could be explained with the fact that the students are actively involved within the learning process in 7E model and they learn by doing so that the results are more permanent.

The findings go in line with the results of many of the previous studies suggesting 7E model to be effective in enhancing students' academic achievements (Köksal, 2014; Bozorgpouri, 2016; Adesoji &Idika, 2015; Saraç, 2017; Shaheen&Kayani, 2015), and some other studies also asserted that 7E model improved students' attitude (Köksal, 2014; Adesoji &Idika, 2015), retention, and scientific process skills (Kanlı &Yağbasan, 2008) as well.

Pedagogical Implications& Suggestions

Throughout the literature review, it was seen that the field lacks enough number of studies on teaching English through 7E model. With the need on the field, the study was conducted and it was found out that 7E model was effective in both academic achievement and retention of English course.

Taking all these findings into consideration, it is possible to reach the following suggestions:

• More studies should be conducted on the field to provide more data on the efficiency and effectiveness of the 7E model.

• More activities should be designed in line with the 7E model and they should be provided for the field.

• Longitudinal studies should be conducted as to give more insights on the efficacy of the 7E model in the long run.

• The curriculum should include more activities based on the 7E model to improve academic achievement and retention of the learners.

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