



The Comparison Of effectiveness Connectivism Instructional Method With Grammar-Translation Method On Students' Academic Engagement In EFL

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ABSTRACT

The purpose of this study was to examine the effect of connectivism instructional method in comparison with grammar-translation method on academic engagement among students in EFL. The current study was a 2 (instructional methods)*2 (gender) quasi-experimental design with pre-post-test. Statistical population included all the high school students in grade 3 from Ramhormoz city in Iran. Participants included students in four classes that were selected by available sampling method and then completed the Academic Engagement Questionnaire (2013). The results showed the connectivism instructional method was significantly more effective than grammar-translation method. Based on the results of this research, it is concluded that connectivism instructional method provide unique opportunities for engaging of students by managing of available knowledge and pay attention to the diversity. Accordingly, this research suggests the application of connectivism instructional method in order to increase English academic engagement as a foreign language for the students.

1. Introduction

The ultimate goal of educational approaches in English teaching as a foreign language, is facilitating the learning processes in learners. However, education in its best form should not only lead to learning in learners but also need to activate learning-related potentials (Hargreaves, 2004). Hence, academic engagement can be regarded as one of the most important learning outcomes associated with learning (Feredricks, Blumenfeld, & Paris, 2004). Academic Engagement was first introduced indirectly by K. Yamamoto's (1968), and A.W. Astin (1985) was the first people that conceptualized Academic Engagement. Academic Engagement is the amount and quality of psychological and physical energy that learners spend on learning experiences (Astin, 1985). Academic engagement is described as an energy in action and indicates the relationship between the learner and the task. Also, academic engagement indicates the participation and activity of learners in performing a task (Russell, Ainley, & Frydenberg, 2005), and The direct relationship of the academic engagement to learning has been reported in various studies (e.g. Skinner, Zimmer-Gembeck, & Connell, 1998; Kuh, Cruce, Shoup, Kinzie, & Gonyea, 2008; Krause & Coates, 2008). Finally, According to J. Reeve (2013), the academic engagement is active learner participation in educational activities and includes a range of behavioral, cognitive and agentic components that lead to academic achievement in learners. Behavioral component includes (task attention, effort, persistence, lack of conduct problems) aspects, cognitive component includes (use of strategic and sophisticated learning strategies, active self-regulation) aspects. Also, agentic engagement is a new component of academic engagement that J. Reeve and C.M. Tseng (2011)

pointed it out. They define agentic engagement as students' constructive contribution into the flow of the instruction they receive. Agentic component includes express a preference, offer a suggestion, ask a question, communicate what they are thinking and needing, recommend a goal or objective to be pursued, communicate their level of interest, solicit resources or learning opportunities, seek ways to add personal relevance to the lesson, ask for a say in how problems are to be solved, seek clarification, generate options, communicate likes and dislikes, or request assistance such as modeling, tutoring, feedback, background knowledge, or a concrete example of an abstract concept.

According to D. Lester (2013), educational systems always follow new approaches in order to engage students in formal and informal activities related to education and learning. Also, D. Maronde (2006) and N. Zepke and L. Leach (2010) believe that the quality of education, teaching approaches and the teacher's teaching style have central roles in order to enhance academic engagement in students. Finally, R.T. Walls and W.L. Cather (1987) and S.M. Bulger, D.J. Mohr, and R.T. Walls (2002) believe that one of the most important outcomes of affective education is academic engagement. In fact, in their view one of the most important feature in identifying or distinguishing desirable approaches from undesirable ones is related to academic engagement outcomes of these approaches. Accordingly, the present research tries to examine the effectiveness of connectivism-based method on academic engagement in comparison to grammar-translation method among high school students.

The grammar-translation method (GTM) as the first method in the field of EFL seeks to improve learner language skills through strengthening grammatical competence and paying special attention to the accurate translation of English language texts into their mother tongue (Richards, 2006; Tan, 2016). In the other words, the essential aim of learning a language is to be able to read literature written in the target language (Larsen-Freeman and Anderson, 2011). Also, according S.C. Chang (2011) the main characteristic of this method is that this method focuses on learning the rule of the grammar (sentence structure) and the implementation of it in translating passage from one language to another language. In another word, a teacher who teaches English by using GTM will teach the grammar. Furthermore, the teacher uses grammar to teach the students by translating one language to another language (Prastyo, 2015).

Although GTM has improved grammatical competence, however it ignored to community competence, the motivational-related learning outcomes such as academic engagement, the strengthening of social interactions in the international area, and most importantly, use the first language in the classroom, attention to the characteristics of digital age such as virtual education and Knowledge management available (Hymes, 1972; Mohammad, 2016; Wang & Jiaping, 2017). Therefore, the need to pay attention to new educational theories and approaches such as connectivism theory to overcome the challenges of EFL is becoming more important.

Connectivism is a new theory of learning that has been proposed by George Siemens and Stephene Downs in recent years following the changes in the digital era (Siemens, 2005, 2012; Downes, 2008, 2012). The connectivism theory has been developed for global village with insisting on distributing knowledge and experience and consequently changing the concept of learning (Bell, 2011; Barnett, McPherson, & Sandieson, 2013; Ozan, 2013; Ibrahim & Ibrahim, 2017). Stated simply, connectivism is social learning that is networked (Duke, Harper, & Johnston, 2013). G. Siemens (2005; 2012) coined the term connectivism, to describe learning networks. Also, connectivism is a learner's active engagement with learning-related nodes and networks (kop, 2011). Connectivism is the thesis that knowledge is distributed across a network of connections, and therefore that learning consists of the ability to construct and traverse those networks. An account of connectivism is therefore necessarily preceded by an account of networks (Downes, 2012). This theory claims to have made new developments through the attention to the effects of the advent of the digital era, in the field of education and learning in general and teaching and learning of EFL in particular (al-shehri, 2011; Sgar, 2013; vesella, 2013). For instance, K. vesella (2013)

believes that the application of the principles of connectivism theory in teaching EFL includes focusing on the categories that are rarely found in the common approaches of teaching EFL such as the GTM approach. Categories such as concurrent attention to the diversity of opinions, English learning is a process of creating connections among the nodes or information resources, English teaching may reside in human and non-human appliances, in order to English learning currency (daily use and operation) and accuracy is the aim of connectivist activities, also the role of supportive and facilitator of the teacher among the most important components that are considered in the teaching of English using connectivism theory. These components have not been considered in the GTM approach.

Connectivism is a new theory and its effects on education and learning have not been properly investigated in compared to traditional approaches such as GTM and there are few researches on the effect of connectivism-based education on the academic engagement. On the other hand, these researches were non-experimental or reduced the use of connectivism to a special educational tool such as a mobile phone (e.g. Fenoglio, 2006; Dixon, 2010; Noytim, 2010; Dessele, 2017).

So, it is necessary to examine the impact of connectivism theory through experimental researches in comparison with traditional methods such as GTM on academic engagement. However, few studies examined the relationship between connectivism theory and academic engagement in the recent years. For example, P.J. Fenoglio (2006) believes that the connectivism theory as a dynamic theory in present era has the potential strength to increase learner's academic engagement in association with learning experiences. Also, M.D. Dixon (2010) believes that the use of connected channels in the process of training will probably increase the academic engagement. Finally, U. Noytim (2010), believes that interaction and establishing social relationships through access to new spaces; also, the role of digital media as a challenging opportunity in teaching the present era, it has led to a significant increase in the outcomes associated with learning such as academic engagement in learners. On the other hand, C. Windham (2005) believes that in order to engage learners in the learning process, new activities and educational programs should involve interaction, exploration and education based on the role of digital media. Now, the question arises whether the connectivism theory can be increased academic engagement through the integrated attention to the features such as knowledge and learning management by students, interaction and attention to the role of digital media?

As previously mentioned, C. Windham (2005) believes that interaction, exploration and education based on the role of digital media have led to a significant increase in academic engagement. Also, due to what has been said about the factors influencing the academic engagement; the supporting and facilitator role of the teacher, the management of the learning process by the learners, and active learning through formation of peer groups and relationships are among the factors of creating more academic engagement (Zepke, & Leach, 2010). On the other hand, the attention to the above features seems to be among the key principles of connectivism. So that, G. Siemens (2005; 2012) believes learning is available knowledge management that occurs through the formation of real or virtual human networks. Also, against GTM in connectivism students are active and participate in their learning process. For example students decide about choosing of learning experiences and design the contents of lesson by connected networks, so that teacher is a facilitator. Finally, it seems that when students acquire the necessary opportunity to acquire the required knowledge and then formulate the concept based on their interests and backgrounds, they will experience as much improving in academic engagement. Therefore, the connectives theory of learning should most likely have the capacity to help learners to create more academic engagement in comparison with GTM, and it is expected that the use of connectivism theory in current study will improve the academic engagement for learners in comparison to GTM.

Research hypotheses

- 1- The effect of connectivism approach on the academic engagement is more than the GTM in EFL.
- 2- There is a difference between males and females in terms of the effectiveness of the connectivism approach on academic engagement in EFL.

Research methodology

This research is a quasi-experimental design using pre-test and post-test. The statistical population of this study included all male and female students of the third grade high schools from Ramhormoz city in Iran, who were studying in 2016-2017. Participants were students in four classes who were selected by available sampling. Then each of the classes was assigned to one of the two groups using the random division. After administration of pre-test, the training packages related to independent variable levels were performed over a period of 9 sessions of 90 minutes. Finally, to investigate the possible effects of educational approaches a post-test on academic engagement of English language was implemented.

The instrument used in the present study was Academic Engagement Questionnaire that prepared by J. Reeve (2013). This questionnaire is including 13 items for three subscale; behavioral (4), cognitive (4), agentic (5). The participant's responses scored using a 5-point Likert type scale, from 1(not at all true of me) to 5 (very true of me). In the behavioral subscale, students respond to questions such as «When I'm in English class listen carefully» Also in the cognitive subscale, students respond to questions such as «In English class, I keep track of how much I understand the work, not just if I am getting the right answers». Finally, in agentic subscale, students respond to questions such as «During English class, I express my preferences and opinions».

All questions are graded directly for three subscales. The reliability of this scale was reported by J. Reeve (2013) using Cronbach's alpha for behavioral subscale ($r=0.75$), cognitive subscale ($r=0.86$) and agentic subscale ($r=0.88$). Also, they used a converge validity to evaluate the construct validity, which resulted that the score of the academic engagement has a positive and significant correlation with the academic engagement score (0.49).

In the present study, for the purpose of reliability analysis, Cronbach's alpha was used. The coefficients for behavioral, cognitive and agentic subscales were 0.73, 0.67 and 0.81 respectively, which are reliable coefficients. Also in order to study the construct validity of the academic engagement questionnaire a confirmatory factor analysis was used. For this purpose, the main components analysis method was used. The KMO coefficient was 0.769, which indicates the adequacy of the sample for performing factor analysis. The value of Bartlett's sphericity test was 653.765 and also significant at $P<0.0001$. Then, according to the value of the specific that was above one, and also the charts and using the irregular rotation method, the varimax method was two subscales, which explained 58.60% of the total variance of the scores. All of the items, according to J. Reeve (2013), were related to their own.

In the connectivism-based training group the use of knowledge management in nodes, human resources and inhumanity, the identification and use of networks related to the learning unit, the use of real and virtual networking and the formation of groups was emphasized. Also, in the GTM group was emphasized on teaching of vocabulary related to the lesson title that they were written independently and out of context at the beginning or end of each learning unit, as well as the translation of the vocabulary in Persian and then solving the exercise related to the vocabulary section. For instance, in table1 a brief description of the first session of each of the experimental groups is presented.

Table 1. A brief description of the first session with topic «What is your job? »

First session	content
GTM	teaching of vocabulary related to the lesson title (What is your job?) that they were written independently and out of context at the beginning or end of each

	learning unit, as well as the translation of the vocabulary in Persian and then solving the exercise related to the vocabulary section.
Connectivism-based approach	Pre-class learners collected words related to the new lesson using the information of available human and inhuman nodes and networks such as sites, real and virtual dictionaries, virtual language learning groups, language partners and virtual networks related to English language training. Accordingly, the teacher asked the groups to introduce the 20 jobs. Also, sort these jobs based on degree of hardness. Then the students will introduce jobs based on job diversity, such as entertainments jobs, services job.

Results

In the present study, the effect of educational approaches including connectivism and GMT on academic engagement was studied in male and female students. First, descriptive statistics including mean and standard deviation of the pre-test and post-test scores for dependent variables are presented in table 2.

Table 2. Mean and standard deviation of academic engagement male and female students

Variable	test	GTM group N= 30				Connectivism group N= 34			
		Mean		Standard deviation		Mean		Standard deviation	
		Male	female	male	female	Male	female	male	female
Behavioral	Pre-test	14.07	15.67	3.83	2.05	13.47	16.59	3.71	3.16
	Post-test	14.73	15.67	4.73	2.25	17.29	17.35	1.53	1.57
Cognitive	Pre-test	14.40	14.40	2.74	2.92	11.67	14.29	4.57	2.64
	Post-test	14.80	15.60	2.74	2.19	17.29	17.82	1.79	1.59
Agentic	Pre-test	17.53	18.07	4.03	3.24	17.27	18.40	2.96	3.04
	Post-test	16.06	14.47	3.90	4.42	21.76	22.12	1.78	2.58

The results of table 2 show that the mean scores of students in connectivism and GTM groups are very different in the post-test. For example, the post-test scores of females in academic engagement are 22.16 and 14.47 for connectivism and GTM groups, respectively. Also, the standard deviation of male's post-test scores in academic engagement is 2.58 and 4.42 for connectivism and GTM groups, respectively.

The necessary assumptions for multivariate covariance analysis were considered. For example, the dependent variables followed a normal distribution for each group. Because based on the Shapiro-Wilk test, none of the dependent variables are significant at any level of the independent variable. Also, to ensure the assumptions of homogeneity of variance/covariance matrices and homogeneity of variance between groups were checked through the Box's M and Levine's tests, respectively. Insignificant of these two was considered as prescriptive observation (BOX' M =21.84, F=1.10, P=.342). Ensuring the assumptions allows the use of multivariate covariance analysis method. Accordingly, the multivariate tests are presented in tables 3.

Table 3. Multivariate tests for academic engagement in educational approaches

Effect	tests	value	F	sig	PES
Pre-test	Wilks' Lambda	.78	5.07	.004	.21
Group	Wilks' Lambda	.45	22.73	.001	.54
sex	Wilks' Lambda	.99	0.10	.95	.00
Sex*group	Wilks' Lambda	.956	0.87	.46	.04

Based on the results of table 3, Wilks' Lambda test showed that the effect of educational approaches on academic engagement was significant ($F = 36.14, P < 0.001$). So that, considering the effect of pre-test, about 54% of the variance of academic engagement was due to teaching methods. Since, the results of multivariate tests was significant, a separate assessment of each of the dependent variables can be made. Thus, in table 4 the results of univariate tests are presented, to examine the effect of the independent variables on each of the dependent variables. Table 4. Tests of between subject effects for investigating of effect of educational approaches on academic engagement in male and female students

Source	Dependent Variable	SS	df	MS	F	sig	PES
Corrected Model	Behavioral engagement	112.22	4	28.05	8.04	.001	.35
	Cognitive engagement	126.23	4	31.56	9.23	.001	.38
	Agentic engagement	321.19	4	80.29	13.46	.001	.47
Pretest	Behavioral engagement	33.79	1	33.79	9.68	.003	.14
	Cognitive engagement	30.38	1	30.38	8.89	.004	.13
	Agentic engagement	41.56	1	41.56	6.97	.001	.10
Group	Behavioral engagement	92.49	1	92.49	26.50	.001	.31
	Cognitive engagement	109.37	1	109.37	32.00	.001	.35
	Agentic engagement	304.94	1	304.94	51.14	.001	.46
Sex	Behavioral engagement	0.36	1	0.36	.01	.92	.001
	Cognitive engagement	0.84	1	0.84	0.24	.62	.004
	Agentic engagement	0.89	1	0.89	0.15	.70	.003
Sex*group	Behavioral engagement	7.17	1	7.17	2.05	.15	.034
	Cognitive engagement	2.07	1	2.07	0.607	.43	.010
	Agentic engagement	6.75	1	6.75	1.13	.29	0.019
Error	Behavioral engagement	205.88	59				
	Cognitive engagement	201.62	59				
	Agentic engagement	351.78	59				

The results of table 4 showed that the implementation of teaching methods has a significant effect on academic engagement. So that, after adjusting the pre-test, about 29% of the variance of academic engagement and about 45% of the variance of academic engagement is related to applying teaching methods. Also, according to table 4, the effect of gender variable and its interaction with groups on academic engagement in EFL has not been meaningful. Now that the results of table 4 indicated the significant impact of the implementation of educational approaches on academic self-efficacy, one can answer the question of which educational approach has a more effect on academic engagement? In order to answer the above question, table 4 presents a pairwise comparison of the effects of the experimental groups.

Table 5. Pairwise Comparison for academic engagement in GTM and connectivism groups

Dependent Variable	group	group	ME	SE	sig
Behavioral engagement	connectivism	GTM	2.48	.482	.001
Cognitive engagement	connectivism	GTM	2.69	.477	.001
Agentic engagement	connectivism	GTM	4.50	.630	.001

The results of table 5 showed that the male and female students in connectivism group was more successful than GTM group in terms of the effect on academic engagement ($P < 0.001$). This means that the null hypothesis is based on the insignificance of the difference is rejected, and the hypothesis that the students in the education group based on connectivism theory had a more effective performance than the students of the GTM group, were acceptable at a satisfactory level of significance.

Discussion and conclusion

The purpose of this study was to examine the effect of connectivism instructional method in comparison with GTM on the academic engagement of EFL among male and female students. The results of the testing the first hypothesis showed that the experimental group which was trained using connectivism approach showed the more scores in the post-test of academic engagement compared to GTM approach. Therefore, the first hypothesis of the study is confirmed. The recent finding is in accordance with other claims and findings (Fenoglio, 2006; Dixon, 2010; Noytim, 2010; Kop, 2011; Dessele, 2017). For example, P.J. Fenoglio (2006) believes that the connectivism theory as a dynamic theory in present era has the potential strength to increase learner's academic engagement in association with learning experiences and findings of this research have confirmed this claim. Also, M.D. Dixon (2010) believes that the use of connected chanelles in the process of training will probably increase the academic engagement in learners.

The explanation for this finding is that the students in the approach based on connectivism theory have opportunities to increase academic engagement through diversity and attention to the individual's interest in choosing content or tasks, the use of connected chanelles, constructive interaction with human and in human resources, managing all or part of the learning and knowledge available, and up-to-date through access to digital space (Siemens, 2005; Dixon, 2010). Also, the factors influencing the academic engagement is that new activities and educational programs should involve interaction, exploration and education based on the role of digital media (windham, 2005). Also, the supporting and facilitating role of the teacher, the management of learning processes by learners and the creation of active learning through the formation of peer groups and relationships are among the factors that create more academic engagement in learners (Zepke & Leach, 2010). Hence, the attention to the above features seems to be among the key principles of connoctivism, As Siemens believes; learning is available knowledge management that occurs through the formation of real or virtual human networks (Siemens, 2005). Therefore, the connectivism theory has been able to demonstrate more impact on academic engagement than the GTM. In this regard, G. Siemens (2005) and K. Vesselá (2013) believe that one of the key features of connectivism theory is to pay attention to the above principles. They believe learners are dynamic and active in connectivism educational approach unlike current approaches, and the main task of interacting, identifying nodes, networks, human resources and inhumanities associated with the learning unit, as well as identifying and creating new connections is learners' responsibility. As, this issue ultimately leads to increased academic engagement in learners. Also, the teacher acts as facilitator in the connectivism approach, and learners play a more active role in the learning process in compared with GTM. For instance, students actively find the words related to new learning

unit through nodes, networks and available resources, and share them for other students through digital or real environments. In fact, to accomplish such a goal, students need to know the nodes, networks and connections associated with English language learning and teaching units, besides that ultimately, themselves should be able to make new connections in this area. The item that is rarely found in the commonly used GTM.

The results of the research in order to study the second hypothesis showed that student's gender was not an effective factor in creating a significant difference between the post-test scores of English language academic engagement using education based on connectives theory. In other words, in the present study, the effectiveness of connectives approach on academic engagement was as same as about male and female students, and there was no significant difference between male and female post-test scores on education through this approach. However, it was expected that there was a significant difference in the effectiveness of the connectives approach on males and females. Because, according to (Windham, 2005) how interacting with individuals, teachers, content, and digital space, as well as the quality of digital education, are two important factors in increasing academic engagement. G. Siemens (2005) and S. Downs (2012), also argue that in connectivism theory; attention to the diversity of beliefs and opinions in identifying nodes, networks, resources, available knowledge management, and how to establish connections, interactions and new connections, especially through digital space are considered. Accordingly, the present study was expected that diversity and how to interact with the human as well as inhuman, nodes, resources and networks, such as the use of multimedia and digital media, will be influenced by gender, and the learner's gender can play a role in interacting with the concept of linking learning. As it was observed, the hypothesis in the present study was not confirmed. It seems that one of the factors influencing non-approval of the second hypothesis, the lack of familiarity of some learners with nodes and information resources such as multimedia education, sites, social networks, digital space and, consequently, the lack of enough skills in new interacting, connecting and communicating through the space mentioned. So that the provided trainings in the short time interval in the present study have not been able to show the interactive effect of the type of education and gender of students.

Also, the prevailing atmosphere of education and learning English language at previous and current classes is designed to challenge education through active approaches such as education based on connectivism theory. So that, both boys and girls are equally benefited in this training. Finally, some legal restrictions imposed by the educational system of Iran on the use of digital space, such as the challenge of having or not having a mobile phone at school, or preventing the entry of learners into social networks by filtering some social networks along with other unknown factors are among the factors that challenges the impact of gender in interacting with education through connectivism in this short period of time. Therefore, the researcher has been confronted with limitations in measuring gender differences due to the factors mentioned above. It is necessary in future researches, by providing adequate time and Follow up research, opportunities will be provided for the use of digital environment by learners in the field of education and learning English language ensure more certainty.

Based on the findings of this study, it is desirable Education will work towards using approaches that lead to higher academic engagement and ultimately, in this regard the approach based on connectivism theory has a special priority in comparison with GTM approach. In fact, the use of a connectivism-based approach considering the human and inhuman interactions, digital space and multimedia education will ultimately lead to higher level academic engagement as well in EFL.

This study was conducted in English classes, it is suggested that in future researches, the effectiveness of a connectivism-based approach to other lessons such as sociology, empirical sciences, life skills should be considered. In fact, connectivism theory seems to have a positive impact on the motivational beliefs of the lessons mentioned.

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