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Effects of Adjunct Model of Instruction on EAP Learners' Reading Comprehension Skill

Abstract

With the quick transition to online teaching during the COVID-19 pandemic, it is vital to take the recent development in language teaching methodology into consideration, especially the pedagogical utility of new models of English for Academic purposes (EAP). Accordingly, the main objective of the present study was to investigate the efficacy of the adjunct model in improving the overall reading comprehension skills of Iranian architecture students in online EAP courses. To this end, from the population of students studying architecture at the Isfahan University of Art, three intact classes, each with 35 sophomore students were selected. While the first class was taught by a language teacher (the Language-driven Group) and the second class received instruction from a content teacher (the Content-driven Group), the third class was taught by applying the adjunct model involving both content and language teachers. At the end of the semester, a reading comprehension test was administered to all students. The analysis of the data through running a one-way ANOVA and post hoc analysis revealed that the students in the adjunct class outperformed their peers in the other two classes on the reading comprehension test.

Keywords: Adjunct Model, EAP Classes, Online Courses, Reading Comprehension

COVID-19 has resulted in a dramatic change in education, with the distinctive rise of e-learning. In Iran, like in other parts of the globe, universities offer an online module for their students including learners of English for Academic Purposes (EAP). EAP courses focus on teaching English specifically to facilitate learners academic achievements through the medium of English (Flowerdew & Peacock, 2001). It is reasonable to view EAP as an eclectic and pragmatic discipline in which a wide range of linguistics,

applied linguistics, and educational topics are integrated into coursework (Hamp-Lyons, 2001).

Some linguists (Brinton & Snow, 1988; Richards & Rodgers, 2001) postulated the adjunct model as two coordinated courses: a content/subject course and a language course. In this model, the content/subject instructors stress academic topics and the language teachers emphasize language skills such as reading and writing (Brinton & Snow, 1988). The model can compensate for the lack of collaboration between content and language teachers and provide an explicit reflexive relationship between content, language, and learning (Barwell, 2013; Tan, 2011). Integration of a foreign language as a tool in the learning of a non-language subject in which both language and the subject have a joint role could facilitate the reading comprehension skill.

The ability to read English efficiently in EAP courses is a critical skill. Reading comprehension involves abilities to recognize words, process sentences to build comprehension, engage a range of strategic processes, interpret meaning in relation to schematic knowledge, evaluate texts, and process texts over an extended period of time (Grabe, 2009). Successful reading comprehension is an interaction among various variables, including background knowledge, lexical repertoire, knowledge of syntax, and metacognitive awareness (Chuang, Joshi, & Dixon, 2012).

The need analysis as a major stage of EAP (Kumaravadivelu, 2012; Tomlinson, 2011) can reveal students' various needs. For instance, the reading comprehension of Iranian undergraduate students is widely echoed through their need assessment (Tahriran & Sadri, 2013; Zarifi & Asadpour, 2017). In order to satisfy EAP learners' needs, instructors mostly read the texts aloud and translate them into Persian in a hasty manner (Zarifi & Asadpour, 2017) and this is due to their poor pedagogic content knowledge that ultimately hinders comprehensibility of texts.

Despite an ever-growing EAP as a branch of EFL in Iran, there is confusion with respect to the actual implementation of EAP courses. Many Iranian EAP instructors implement the course as presupposed by the curriculum developers who have no consideration and concern for collaboration between ELT and subject-matter departments. In the absence of this collaboration, the whole process places a considerable burden on the teachers involved in EAP classes because they should possess the necessary educational and professional background. Haphazard instructions by unqualified teachers who are in favor of uniform choices of materials based on unverified assumptions might ultimately lead to dissatisfaction amongst the learners (Tavakoli & Tavakol, 2018). Moreover, EAP learners often experience difficulties in the skill of reading comprehension.

Although implementing an adjunct model of instruction requires a willing interaction among teachers and it may be difficult to arrange, the rise of on-

line learning during the COVID-19 pandemic paves the way for a cooperative atmosphere in which professionals experience togetherness. In sum, the study might offer some insights into online collaborative teamwork of EFL teachers and content instructors for EAP courses. It also contributes to employing the adjunct model to enable EAP architecture students to access academic knowledge while they are acquiring English proficiency. In fact, the integration of language and content help students develop the reading strategies needed to comprehend academic texts.

Literature Review

EAP Courses

Hutchinson and Waters (1987) consider English for Specific Purposes (ESP) as a generic name encompassing many other types of English teaching that can be broken down into three types: (a) English for Science and Technology (EST), (b) English for Business and Economics (EBE), and (c) English for Social Studies (ESS) which is further divided into two subcategories: English for Academic Purposes (EAP) and English for Occupational Purposes (EOP). Accordingly, EAP is a subcategory of ESP and its major aim is equipping students with English in their professional and academic lives (Gillet, 2016).

According to Diane (2009), EAP must be tailored to the needs of the learners, which means EAP courses should begin with an analysis of the students' linguistic background, what they already know and what they desire to know. Various scholars (Diane, 2009; Dudley-Evans & St. John, 1998; Robinson, 1991) recommend the following procedures for EAP courses: (a) recognizing what learners' needs are, (b) developing or adapting materials tailored to the student's needs, and (c) acquiring knowledgeable instructors teaching according to their learners' needs.

EAP is an indispensable part of some university curricula designed for all disciplines and majors. EAP courses are usually restricted to only one or two of the four skills (Wette, 2018), specifically acquainting learners with academic readings and technical vocabularies have been highlighted. EAP instructors direct their learners' attention to the text structure, reading skills like skimming and scanning, deducing meanings of words and structures, distinguishing between major and minor ideas, and the functions of discourse markers and cohesive ties (Sharndama, Samaila, & Tsojon, 2014).

In the early 1960s, EAP courses started in Iran as a result of a collaboration between Iranian universities and western academic centers (Cowan, 1974).

Since then, a large number of university students have enrolled in EAP as a compulsory course, and many course books published by SAMT, one of the most popular publications. Despite a prolific number of EAP books, there is a consensus among EAP researchers (Atai, 2002; Shahmirzadi, 2018; Tayebipour, 2005) that no significant improvement has been observed in EAP classes.

The lack of salient improvement can be attributed to the textbooks following rigid structures, focusing on reading comprehension skills, micro-linguistic aspects of reading skills. Iranian EAP practitioners can hardly find any published documents on the current patterns of methodological preferences. Hence, poorly designed materials lead to little or no cooperation between ELT and subject matter instructors (Atai, Babaii, & Tahekhani, 2017).

Having unsystematic plans, lack of authenticity, and too much emphasis on translation rather than communication are some other challenges. It is worth mentioning that most Iranian EAP learners are taught only by one general language teacher who does not have the chance to cooperate and consult with major specialists. In other words, there is no situation that two or more professionals jointly deliver substantive instruction (Khaless Haghghi & Abdolahi, 2014).

L2 Reading Comprehension

Reading is an important skill for language learners, specifically EAP students. It is the process of “constructing meaning by coordinating a number of complex processes including word reading, word and world knowledge, and fluency” (Klinger, Vaughn, & Boardman, 2007, p. 2). According to Bos and Vaughn (2009), L2 readers activate their background knowledge in three ways: (a) the first approach belongs to what is textually explicit. Hence, comprehension is facilitated by some explicit information presented in the text and readers do not need to deeply rely on their background knowledge; (b) the second one refers to textually implicit texts. In this reading type, readers partially make use of their background knowledge to find out the information of the text, and (c) the last type refers to scripturally implicit texts. The high levels of complexity in this type make learners deeply activate their background knowledge.

Academic reading demands the readers’ considerable and deep engagement with the text and author. In other words, learners need to be critical readers to find out what the text is about, what the author’s message is, and realize which part of the text is useful for reflecting upon the text (Martiarini, 2018). Therefore, an EAP reading curriculum should account for multiple purposes, including searching information, comprehending general ideas, learning new information, and synthesizing and evaluating information.

The complicated nature of academic readings is highlighted by various researchers (Lei, Rhinehart, Howard, & Cho, 2010; Perin, 2013). The challenges

that learners may have are related to vocabulary knowledge, choosing an appropriate reading approach, becoming aware of the main aim of the author, and determining the global idea of the text. They have to learn not only a foreign language but also develop their scientific knowledge. To cope efficiently with these challenges, an adjunct model of instruction can be employed.

Adjunct Model of Instruction and Its Rationale

The rationale for EAP courses is content-based instruction (CBI) which is traced to Mohan's (1986) *Language and Content*. Mohan believes that language should not be taught in isolation from the content. In the light of CBI's theories, Brinton, Snow, and Wesche (2003) proposed three models of CBI as follows: (a) *theme-based instruction* whose goal is L2 competence within specific topic areas. In this model, each theme is elaborated over several weeks to provide adequate input, and learners are assessed primarily by their L2 skills; (b) *sheltered instruction* whose aim is mastery of content and students are evaluated on content mastery; (c) *adjunct instruction* is primarily based on an interplay between content and language and collaborative teamwork of two separate instructors. In other words, there is collaboration combined with the content and language integrated learning (CLIL) approach (Carrio Pastor, 2009).

The theoretical assumption underlying the adjunct model of instruction is CLIL which is commonly described as an additional language which is used for learning and teaching of both language and content (Coyle, Hood, & Marsh, 2010). CLIL should be distinguished from other forms of bilingual education, such as immersion education or content-based instruction (Kampen, Admiraal, & Berry, 2018). Dalton-Puffer (2011) mentions the distinguished features of CLIL as follows: CLIL refers to using a foreign language that is not regularly used outside the classroom; learners receive CLIL teaching when they have already acquired their mother tongue; CLIL teachers are mostly subject specialists who are not competent at the target language; and CLIL subjects are usually timetabled within the institutions' curriculums.

Experimental Studies

The collaboration between subject experts and language specialists might be challenging because of established boundaries or “jurisdiction” (Abbott, 1999) existing among the members of a professional society. In other words, collaboration across disciplines is hard work and demands interdisciplinary programs that are difficult to sustain over long periods (Wilkinson, 2018). However, regarding the adjunct model, some researchers have proven its efficacy by its implementation for teaching biology in the Middle East (Flowerdew, 1993) and history and sociology at George Fox University (Iancu, 1997). In the same vein, many researchers (Coyle, 2005; Marsh, 2008; Morton, 2019; Wolff, 2009) believe that an academic subject should be taught as a single subject with close cooperation between content teachers and language teachers. In their view, both content and language teachers should have equal importance and allow different aspects of a subject to be focused on.

In an experimental study conducted by Cario Pastor and Perry (2010), an adjunct model of instruction was implemented at the Universidad Politecnica de Valencia. Their main purpose was to facilitate the teaching of pilot domain-specific materials to students of industrial engineering. Through an online forum, content and language teachers collaboratively worked to teach the materials. In doing so, content teachers proposed vocabularies and content questions while the language teachers designed groups for writing activities, listening and oral tasks, and some grammar exercises. They concluded that the integration stimulated interpersonal communication, motivated students, and took into accounts the needs of students.

Khales Haghghi and Abdollahi (2014) recruited 52 students from Ilam University, Iran, aged from 20 to 28 years old, majoring in business management. They employed a quasi-experimental, pre-test–post-test design and compared students’ achievements in two experimental and a control group. The experimental groups were taught by two types of adjunct model of teaching: team teaching and station teaching. The students of the first group were taught by a couple of teachers delivering instruction to the learners simultaneously. The students of the second group were also taught by two teachers; however, they received instructions at three different stages or stations. Their findings revealed that both experimental groups outperformed their peers in the control group regarding the reading comprehension skill.

Vosoughi, Ghahremani Ghajar, and Navarchi’s study (2019) mentioned that although Iranian ELT practitioners believed in collaborative practice, they found it so burdensome to create such a situation due to some reasons related to mismatching psychological characteristics of content and language instructors as well as some flawed educational arrangements in the country.

Conversely, Mehrabi, and Boshrabadi (2016) posit that scaffolding Iranian law students through team teaching has a considerable impact on their reading comprehension.

Although a large and growing body of literature has been published on the efficacy of the adjunct model of instruction on EAP learners' improvement, there have been few controlled studies that accentuate the significance of co-operation, collaboration, and team-teaching simultaneously in the age of online learning during the pandemic. Moreover, many studies (Huang, 2006; Phakiti, 2006; Pritchard & Nasr, 2004) reveal difficulties of reading comprehension, but too little attention has been paid to the possible impacts of the adjunct model on EAP learners' reading comprehension. This lack is the main objective of the present study which aims to investigate how the application of the adjunct model can improve Iranian architecture students' reading comprehension skill. Thus the study sought to answer the following question:

What is the effect of the adjunct model of instruction on Iranian EAP learners' reading comprehension skill?

Method

Research Design and Context

Since it was not possible to randomize individuals or groups to treatment and control groups, the quasi-experimental, nonequivalent control group post-test only design was utilized. To be more precise, the researchers attempted to measure the effects of the adjunct model of instruction on reading comprehension of online EAP learners majoring in architecture in the experimental group and compared that measure with two non-equivalent/comparison groups that did not receive the treatment by a post-test implementation.

The COVID-19 pandemic has affected Iran like other parts of the globe and led to the closure of face-to-face courses. Therefore, the study was conducted within the context of virtual synchronized online settings through which the instructors and students could interact in a specific virtual space at a set time. Active discussion, immediate feedback, and personal interactions with peers and instructors were some of the advantages of online synchronous learning.

Participants

In winter 2020, when the pandemic made all classes held in an online module, from the population of sophomore undergraduate students studying architectural engineering at Isfahan University of Art (IUA), three intact classes were assigned to two control groups and an experimental group. Their age ranged from 18 to 24. To equalize the samples, the first class was taken as a reference and the additional subjects in other classes were randomly excluded so that the number of participants in each class was considered to be the same and equal to 35.

The three classes reflected homogenous groups in terms of their proficiency in English as the department offered the EAP course to those pupils who could pass the general English exam with scores ranging from 16–20 in the first semester. However, to ensure homogeneity of the participants' language proficiency level, Oxford Quick Placement Test (OQPT, 2001) was assigned. Based on their scores, five participants were discarded from the study because their scores were sharply (-2 SDs) lower than other students' scores. Also, the participants passed the same basic courses, such as History and Theory of Architecture, Descriptive Geometry, Land development, and Structural Engineering in their first semesters. This meant they learned almost the same content knowledge while attending their EAP classes.

Furthermore, the involvement of three university professors paved the way for an adjunct model of instruction. The researchers who were university lecturers in TEFL (Teaching English as a Foreign Language) and an associate professor in architectural engineering were assigned co-teaching roles.

Instruments

The OQPT (version 1) was used to measure the proficiency level of the students. The test, designed by the Oxford University Press, is comprised of 60 questions in vocabulary, grammar, reading, and cloze test. Geranpayeh (2006) pretested the test on 6,000 participants and validated it in 60 countries. According to Allen (2004), the OQPT has been calibrated against the proficiency levels based on the Common European Framework of Reference for Languages (CEF), the Cambridge TESOL Examinations, and other international tests such as TOEFL. Moreover, according to various researchers (Allen, 2004; Jabbari, 2014; Tahriri & Yamini, 2010), the cut-off points considered for proficiency levels are reliable indicators. The scoring criteria are as follows:

Table 1
Scoring Criteria for Proficiency Levels

Proficiency levels	Cut-off points
Beginner	0–29
Breakthrough	30–39
Elementary	40–49
Lower-Intermediate	50–59
Upper-Intermediate	60–69
Advanced	70–79
Very Advanced	80–100

The main teaching resource was *the English for Students of Architecture*, volume two, written by Rastegarpour (2012). The book has been designed for the Iranian architecture students who have to take the specialized English course in the second or third semester. It consists of 15 lessons with specialized content in the field of architecture, including: the purpose of architecture, cultural origins of architecture, architectural planning, the art of building, form in architecture, architectural methods, materials, energy and building, natural elements, concepts in architecture, types of concepts, building economics, Islamic architecture, and Muslim architectures. At the end of each text, standard exercises were provided to consolidate the learning of the essential concepts related to the same text.

Since the pandemic has forced in-person teaching to shut over the globe, many universities and institutions mandated the teachers to shift to virtual classrooms. Among the available software, Adobe Connect was the virtual platform used in this study. It enabled the instructors to interactively work together and provide an immersive experience to their students.

At the end of the semester, the researchers developed a Reading Comprehension Test (RCT) with five reading passages and ten questions for each passage ($N = 50$). While the first eight questions were in multiple-choice format, the last two questions required the participants to make an overall evaluation of the text and to complete diagrams with matching items. Designing questions were facilitated by using the comprehension framework proposed by Day and Park (2005).

Accordingly, the questions assessed six types of comprehension: (a) *literal comprehension*: involving understanding explicit information presented in the reading, such as vocabularies, dates, and facts; (b) *reorganization*: comprehending the text beyond literal understanding; (c) *inference*: requiring learners to identify meanings that are not explicitly stated; (d) *prediction*: involving students using both their understanding of the passage and their own knowledge of the topic, (e) *evaluation*: requiring the learners to give

a comprehensive opinion about various aspects of the text, and (f) *personal response*: requiring readers to respond with relying on their own feelings for the text and subject.

The validity of the test was measured based on two EFL associate professors' opinions. Its reliability was also checked through a pilot study on 100 sophomore students of engineering studying at the IAU. The reliability of the test was .86 ($\alpha = .86$), which can be considered satisfactory.

Data Collection Procedure

First, following obtaining an ethical approval from the head of two faculties, architecture and foreign languages, and the university's vice-chancellor, a Letter of Information and Consent Form (see Appendix A) was emailed to three associate professors of architecture. They were requested to approve of collaborating with two English instructors. One of the professors showed a tendency and was chosen as the co-teacher in the study. Then, in order to make sampling fairly homogenous, the researchers selected those sophomore students who passed their general English with a score range of 16–20. Also, the OQPT was run at the outset of the study to ensure the level of homogeneity. Next, 105 homogeneous students were divided into three groups:

- The Adjunct Group (experimental group) received an adjunct model of instruction through a collaboration among the language teachers and a subject-matter instructor.
- The Language-driven Group (control group) was taught by the language instructors whose priority was language teaching.
- The Content-driven Group (control group) was taught by a subject-matter specialist whose priority was content teaching.

All the three groups were required to take sixteen 90-minute sessions of an online EAP course. Two main administrative problems that could impede the experiment were the timetabling and lack of consistency needed for successful cooperation. However, to tackle these problems, two instructors who were Ph.D. holders of TEFL (Teaching English for Foreign Languages) and a subject-matter professor who was a full-time faculty member of the Architecture Department of the Isfahan University of Art arranged a pre-teaching discussion to achieve two goals: (a) designing a curriculum and lesson plan that specified the lessons' objectives, classroom activities, and the role of each instructor, and (b) designing a collaborative teaching strategy through which each lesson was taught in a balanced way. Tale 2 and 3 summarize the syllabi employed in the study.

Table 2

Language-driven Syllabus

Goal	Understanding key ideas and details
Objectives	<p>Students will be able to:</p> <ul style="list-style-type: none"> • skim and scan texts for main ideas; • summarizing and paraphrasing texts; • using contextual clues to facilitate comprehension; • demonstrating comprehension of texts; • understanding vocabulary items, including general, semi-technical, and technical terms embedded in the texts; • understanding grammatical structures embedded in the texts, including tenses, modal verbs, tag questions, clauses, reflexive pronouns, reported speech, and quantifiers).
Strategies	<p><i>Reading comprehension</i></p> <p>The bottom-up approach</p> <ul style="list-style-type: none"> • recognizing words and decoding meanings; • recognizing structures of phrases and sentences. <p>The top-down approach</p> <ul style="list-style-type: none"> • activating background knowledge; • stimulating making predictions about new information. <p><i>General words and technical terms</i></p> <ul style="list-style-type: none"> • giving definition or synonyms; • asking students for the definitions; • discussing the underlying meaning of the words; • drawing or displaying the picture of the words; • looking up the word in an online dictionary. <p><i>Grammar Structures</i></p> <ul style="list-style-type: none"> • raising students' consciousness about the structure; • combination of explicit and implicit teaching.

The subject-matter instructor had the duty to provide a rigorous comprehensive explanation about the lesson topics, including architectural design, architectural environmental design, interior architecture, and landscape architecture in Persian.

Table 3

Content-driven Syllabus

Goal	Assisting students in being critical of knowledge itself
Objectives	<p>Students will be able to:</p> <ul style="list-style-type: none"> • master the subject matter; • increase self-interest and familiarity with the content areas; • follow the lesson content with more confidence and enhance their background knowledge about the topic.
Strategies	<p>Reading comprehension</p> <ul style="list-style-type: none"> • teaching the subject matter in simplified English tailored to students' levels; • using students' L1 to cope with comprehension difficulties; • using English not to talk about the language itself but to accelerate students' understanding of the subject matter; • evaluating students on their content mastery rather than L2.

The most outstanding feature which made the Adjunct Group different from the other groups was team-teaching. Through collaborative work, the language and content teachers took the initiative to prepare the students for particular target goals. The English teachers handled the skills associated with the common core aspects of the language. By contrast, the subject teacher focused mainly on the technicalities of the course by clarifying the content which was unfamiliar to the language teacher. At the end of the treatment, which was a full semester, all groups participated in a Reading Comprehension Test (RCT) as their final exam.

Data analysis Procedure

The research question in this study asked whether the adjunct model of instruction that fosters cooperation, collaboration, and teamwork between language and content teachers was effective for improving the reading comprehension skill of the Iranian architectural engineering students. To answer the question, the scores on the final exam served as the data in this study. The related data analysis was carried out by the SPSS software. First, to provide descriptions of the population, descriptive analysis was used. Then, Levene's Test was used to test the assumption of homogeneity of variance. Next, in order to determine whether there are any statistically significant differences between the means of the three groups, the one-way ANOVA was administered. Since the differences among groups were significant, a post hoc test was run to locate those specific differences. The one-way ANOVA which compared the means of reading comprehension test scores indicated that the groups were significantly different from each other. Post hoc tests and pairwise multiple comparisons also determined the learners in the experimental group who received the adjunct model of instruction significantly outperformed their peers in the other two classes.

Results

Table 4 provides simple summaries about the data collected on the post-test. It shows that the students in the adjunct class outperformed the other two groups taught by the independent teachers. In fact, the average performance profile of students in the adjunct group was remarkably higher than their peers.

Table 4

Descriptive Statistics

Groups	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Content-driven	35	14.1143	1.64086	.27736	13.5506	14.6779	10.00	18.00
Language-driven	35	15.6000	1.26491	.21381	15.1655	16.0345	13.00	18.00
Adjunct	35	17.4286	1.57715	.26659	16.8868	17.9703	15.00	20.00
Total	105	15.7143	2.01778	.19691	15.3238	16.1048	10.00	20.00

As Table 4 shows, the mean of the Content-driven Group ($M = 14.11$, $SD = .27$) and Language-driven Group ($M = 15.6$, $SD = .21$) were close to each other. However, the total differences in mean scores of three groups indicate that the highest level of performance is observed in the Adjunct Group ($M = 17.42$, $SD = .26$). In order to determine whether there were statistically significant differences among the means of post-test, the one-way ANOVA was run. Before it, the homogeneity assumption needed for the one-way ANOVA was assessed through Levene's test. Table 5 presents the results.

Table 5

Levene's Test

	Levene's Statistic	df1	df2	Sig.	
Mark	Based on Mean	1.196	2	102	.307
	Based on Median	.569	2	102	.568
	Based on Median and with adjusted Df	.569	2	100.701	.568
	Based on trimmed mean	1.201	2	102	.305

According to the results of the Levene's test, the groups were homogenous in terms of variances ($p > .05$). Hence, there is no violation of the assumption needed for running the one-way ANOVA.

Table 6

The One-Way Analysis of Variance (ANOVA)

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	192.914	2	96.457	42.681	.000
Within Groups	230.514	102	2.260		
Total	423.429	104			

As can be seen in Table 6, there exists a significant difference among three groups. In fact, the F value is remarkably higher than the critical F value and we can safely conclude that the adjunct method was more effective. To ensure the credibility of the results, a post hoc analysis was applied. Table 7 illustrates the multiple comparisons of pairs of means. It is seen that pairwise comparisons of means statistically substantiated the meaningful variation existing between the Adjunct, Content-driven, and Language driven groups.

Table 7

Multiple Comparison of Measure for Control and Experimental Groups

(I) Class	(J) Class	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Content-driven	Language-driven	-1.48571*	.35936	.000	-2.1985	-.7729
	Adjunct	-3.31429*	.35936	.000	-4.0271	-2.6015
Language-driven	Content-driven	1.48571*	.35936	.000	.7729	2.1985
	Adjunct	-1.82857*	.35936	.000	-2.5414	-1.1158
Adjunct	Content-driven	3.31429*	.35936	.000	2.6015	4.0271
	Language-driven	1.82857*	.35936	.000	1.1158	2.5414

The findings presented in Table 7 revealed that the differences in the learners' reading comprehension skills were significant among three groups ($p < .05$). As we can see in Table 7, there is a significant difference between the Language and Content, Language and Adjunct, as well as Adjunct and Content groups. It can be concluded that both of the Language and Adjunct groups have made greater improvements in the participants' post-test scores. Diagram 1 depicts the average performance profile of group differences by illustrating the superior performance of students receiving instruction through teamwork and collaboration.

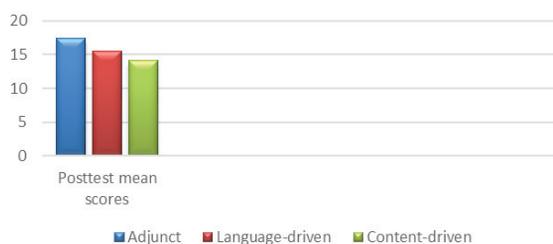


Figure 1. Mean analysis of post-test scores of three groups.

The line graph depicts the mean scores of two groups, the content-driven and language-driven, are lower than the mean scores of the Adjunct group that received the blended model of instruction. In other words, the Adjunct group performed better in terms of the reading comprehension skill.

Discussion

Through analyzing the data obtained from the reading comprehension test administrated as the final exam and comparing outcomes of the control and experimental groups, it was found that the adjunct model was pedagogically considered a superior way of teaching EAP courses because it produced certain meritorious features.

The finding of this study is consistent with the results of the study done by Cario Pastor and Perry (2010). They used an adjunct model of instruction at the Universidad Politecnica de Valencia and concluded that the collaboration between the content and language teachers enhanced interpersonal communication, encouraged students, and took into accounts the needs of the learners. It also accords with the earlier observations of Flowerdew (1993), Iancu (1997), Coyle (2005), Marsh (2009), Morton (2009), and Wolff (2009) who all believe that an academic subject should be taught as a single subject with close cooperation between content teachers and language teachers. In their view, both content and language teachers should have equal importance and allow different aspects of a subject to be focused on. It also further supports the idea of Mehrabi and Boshraubdi (2016) who insist on scaffolding Iranian EAP learners through team teaching to improve their reading comprehension.

The results of this study are also in accordance with Khales Haghghi and Abdollahi's (2014) research that was conducted on 52 students by employing a quasi-experimental, pre-test–post-test design. The experimental groups were taught by two types of adjunct model of teaching: team teaching and station teaching. Their findings revealed that both experimental groups outperformed their peers in the control group in terms of the reading comprehension skill.

However, the study does not support the findings of Vosoughi, Ghahremani Ghajar, and Navarchi's research (2019) that demonstrated that collaborative instruction is so complicated due to some reasons related to mismatching psychological characteristics of content and language instructors as well as some flawed educational arrangements in the country.

Conclusion

Evidently, the paper has tried to prove the efficacy of the adjunct model of instruction in EAP learners' reading comprehension skill. The main conclusions from our study can be summarized as follows:

- The reading comprehension skill of L2 learners who receive content-driven instruction cannot significantly improve in comparison with the reading skill of those learners who are provided with the language-driven and adjunct model of instruction.
- Language-driven instruction that mainly uses English for teaching the language itself with the secondary emphasis on the content could lead to better results in terms of reading comprehension in comparison with content-driven instruction.
- The adjunct model of instruction as a dual-focused educational approach in which English is used for teaching and learning the content and language can considerably enhance EAP learners' reading comprehension skill.

The finding could enhance our understanding of the unique nature of English for Academic Purposes (EAP) courses which require a somewhat different pedagogical approach compared with traditional approaches used for general English courses. Various EAP classes taught either the language teacher or the content teacher perform poorly on the final exam which is mainly composed of reading comprehension questions.

It seems that the pedagogical efficacy of collaboration and teamwork between language and content teachers in EAP courses may bring the linguistic input closer to the required needs of the EAP learners. In other words, the complimentary role of language and content teaches provides extra motivation because the subject concepts are described along with language skills.

The pedagogical implications from this research are hoped to be practical to the practitioners involved in EAP, in particular to those dealing with the teaching of the reading comprehension skill. Theoreticians may also find the results useful to implement further research. More specifically, the findings of this research can contribute to a better curricula planning for EAP courses.

Finally, some limitations need to be considered. First, due to the strict policies and rigid timetable of the university, we were not allowed to administer a pretest prior to the treatment. In addition, the study lacked the multiple qualitative instruments for data collection. For instance, an online attitude survey could reflect more about the participants' opinions on the adjunct model of instruction. Such studies should elicit opinions of instructors as well as the participants.

Based on the mentioned limitations, further investigation is needed to assess the efficacy of team teaching through online platforms, particularly during the COVID-19 outbreak when L2 learners need more scaffolding strategies. It is suggested that future studies be undertaken to examine the impacts of a collaborative form of teaching that is a content and language integration on other skills, such as writing and speaking. Furthermore, this study was limited to the students of architectural engineering; future researchers can replicate the current study in other universities and students of other majors. Finally, a further study based on a pre-test–post-test design is highly suggested.

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Mahzad Karimi, Elahe Ghorbanchian

Zum Einfluss des förderorientierten Unterrichts auf Leseverständnisfähigkeiten der EAP-Lernenden

Zusammenfassung

Angesichts eines raschen Übergangs zum Online-Unterricht während der COVID-19-Pandemie scheint es angebracht, die neueste Entwicklung in die Methodik des Sprachunterrichts

miteinzubeziehen, insbesondere den pädagogischen Nutzen der neuen Modelle von English für akademische Zwecke (EAP). Dementsprechend bestand das Hauptziel der vorliegenden Studie darin, die Wirksamkeit des im Unterricht eingesetzten Fördermodells hinsichtlich der Verbesserung von allgemeinen Leseverständnisfähigkeiten iranischer Architekturstudenten in Online-EAP-Kursen zu untersuchen. Als Probanden wurden die Architekturstudenten der Isfahan University of Art – drei komplette Gruppen mit jeweils 35 Studierenden im zweiten Studienjahr – ausgewählt. Die erste Gruppe wurde von einem Sprachlehrer (sprachorientierte Gruppe), die zweite von einem Fachlehrer (fachorientierte Gruppe) und die dritte nach dem Fördermodell, an dem sowohl Fach- als auch Sprachlehrer beteiligt waren, unterrichtet. Am Ende des Semesters wurde ein Leseverständnistest für alle Studierenden durchgeführt. Die Analyse der Ergebnisse mittels einer einseitigen ANOVA sowie die Post-hoc-Analyse zeigten, dass die Studenten der nach dem Fördermodell unterrichteten Gruppe bei dem Test besser abgeschnitten hatten als die der anderen beiden Gruppen.

Schlüsselwörter: Fördermodell, EAP-Unterricht, Online-Unterricht, Leseverständnis

Appendix A

Letter of Information

Dear Professor...

Our names are Mahzad Karimi and Elahe Ghorbanchian. We are English instructors, working at the *Foreign Language Department*. We are currently conducting research on the impact of the adjunct model of instruction on Iranian EAP learners' reading comprehension. We would like to invite you to participate in the study because your mastery of architectural subjects will be required. We truly believe that an online team-teaching during the COVID-19 pandemic when there are no in-person classes could assist engineering students to learn English.

If you agree to participate in this research study:

1. You may be contacted to participate in a debriefing session remotely through a telephone or virtual communication. It will take approximately 90 minutes to design a collaborative curriculum.
2. This semester will be scheduled in 90-minute sessions held in 16 weeks. The time and length of the instruction can be negotiated. However, ideally, each session should be split in half, half-time spent on teaching architectural subjects and the other half on teaching language-related topics, such as grammar and vocabularies.

Risks & Benefits

There are no known or anticipated risks or discomfort associated with participating in this study. You may benefit from the results of the study in terms of how engineering students can develop their L2 knowledge as well as the contents embedded in their course books.