Science Arena Publications
Specialty Journal of Language Studies and Literature
Available online at www.sciarena.com
2020, Vol, 4 (2): 1-13

On Digital Games and Their Promise for the Development of Knowledge of English Phrasal Verbs

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Abstract: *The main purpose of the present study was to compare the effects of four digital games (i.e. Catapult, Volley, Moonshot, and Rally) with those of a conventional method (i.e. teacher-fronted instruction) on the development of knowledge of English phrasal verbs among Iranian intermediate EFL learners. To conduct the research, a Solutions Placement Test was run among 90 EFL learners of Shokouh English Institute, and 60 intermediate language learners who scored 47 and beyond were selected as the main participants of the study. Then, they were divided into two equivalent groups of experimental and control through simple random sampling method. After that, the pretest of phrasal verbs was administered to the participants to assess their knowledge of English phrasal verbs. Next, the students in the experimental group received a type of mobile game instruction, while the control group received the conventional treatment method in their attempt to learn how to use phrasal verbs in a form of class activities and researcher' explanations. Finally, another test of phrasal verbs was administered to both groups at the end of the study to assess possible difference of performance of these two groups. The collected data were then processed through statistical analysis by the use of t-test and two-way ANOVA through SPSS23 software. Statistical analysis of the results provided evidence in support of the positive effects of modality of instruction and participants' gender on the development of knowledge of English phrasal verbs among Iranian intermediate EFL learners. Although, the interaction between gender and instructional modality did not produce a differential impact and the last hypothesis was rejected.*

Keywords: *digital games, phrasal verbs, modality of instruction, gender*

INTRODUCTION

A phrasal verb is a construction that consists of a verb proper and a morphologically invariable particle. Together the verb and the particle function as a lexical and syntactical unit (Liao & Fukuya, 2004). An example of an English phrasal verb would be 'to let down'. A correct use of phrasal verbs, both in quantitative and qualitative terms, is very important for learners of English, as it makes them seem more native-like (Waibel, 2007). In addition, Barekat and Baniasady's (2014) findings suggested that there is a close relationship between phrasal verb avoidance and writing proficiency; phrasal verb avoidance negatively affected the writing performance of their participants.

Phrasal verbs present a wide range of variability both in terms of syntax and semantics. Thus, they are challenging for students learning English as a second language. A verb followed by a particle (see [my cousin] off, eat [up to five bananas]) may show syntactic ambiguity (Fletcher, 2005). This affects how they are to be

clarified, interpreted, and translated appropriately. He also pointed out that phrasal verbs can also be used in all types of written text, even in formal ones, when they are useful to deliver the message of the author.

Bronshteyn and Gustafson (2015) mentioned that it is difficult for EFL learners to master English phrasal verbs, because phrasal verbs are unpredictable, polysemous, frequent and non-universal. They observe that phrasal verbs may be polysemic not only by having both an idiomatic and non-idiomatic use, but in addition, both the idiomatic and non-idiomatic uses may each have more than one meaning. Phrasal verbs thus create problems for learners, partly because the combination of verb and particle often seems completely random and partly because there are so many of them (Barekat & Baniasady, 2014).

Although native speakers of English use phrasal verbs preferentially over their more simplistic single-verb expressions, non-native speakers do not seem to share this preference. Non-native speakers of English produce very few phrasal verbs in their spontaneous speech (and will more often than not, make errors when they do), generally avoiding using phrasal verbs, opting for more semantically transparent combinations over their obscurer counterparts. Phrasal verbs are an important component of native-like spoken discourse and not using them can make non-natives sound stilted and unnatural in speech (Siyanova & Schmitt, 2007).

Therefore, it is not easy, and sometimes impossible, to interpret the meaning of the verb by combining the meaning of each parts i.e. these phrasal verbs are said to be idiomatic, for example, chew out, tune out, catch up, and put off. Also one reason of phrasal verbs difficulties is the phenomenon of polysemy (Wyss, 2002). Elsewhere, another example of a phrasal verb having more than one meaning is provided by Imrose (2013). The phrasal verb 'turn down' carries the familiar meaning to decrease the volume as in "He turned down the radio," but it can be interpreted as to reject as in "He turned her down". In addition, to reduce students' confusion, she suggests that teachers should teach the meaning of the verb as it appears saliently in the text, without giving the other possible meanings.

It becomes obvious that for input to be processed efficiently, the input needs to be given in context. As with phrasal verb, the words in a sentence do not consist of a list of unrelated pieces; instead, these words hold a structural and meaningful connection that lead to one or sometimes various interpretations. This can be why phrasal verb should be used in a context that gives learners the possibility to process them within the context of a sentence, rather than just by the definition of their meaning.

On the other hands, According to Ilter (2015), during the recent century, there is a growing interest in the need to use technology at different ages. A digital game is a form of entertainment and media use with learning possibilities, which is played on digital devices (Ilomaki & Kankaanranta, 2009). Ilter also argues that using technology in different social and cultural contexts can improve children's language and cultural awareness. In addition to giving fun, digital games can be a part of learners' learning process (Chuang & Chen, 2007). Games can also provide a learner-centered environment and good opportunities for socialization when well organized and can awake the will to win and the competitive desire inside people (Uzun & Sarioğlu, 2009).

A number of researchers have shown that games can also enhance learners' problem solving skills and increase players' self-esteem and self-confidence. Games can also promote genuine collaboration between users (Liu et al., 2011; Sánchez & Olivares, 2011). Digital games provide a competitive learning environment in which learners cooperate with each other and can work together (Derakhshan & Davoodi Khatir, 2015); thus, it provides a context for them to speak and use new foreign or second language vocabularies. Huyen and Nga (2003) contend that vocabulary games provide an opportunity for learners' use of target language in a flexible and communicative way by converting language class to a real world context.

Kalaycioglu (2011) also contends that digital games are learner-centered, so they can be adjusted in line with the educational objectives and also the age and level of the children. Digital games can provide a multimedia context in which EFL learners are engaged in vocabulary, key sentences, and short conversation repetitions; therefore, they interact with each other and as a result, the acquisition of language vocabulary is encouraged (Segal-Drori, et al., 2010).

Gunawardhana and Palaniappan (2015), however, also argue that playing digital games continuously can cause physical disadvantages, such as Nintendo thumb, epileptic seizures, and joint, muscles, and skin problems. It can also produce addictive behavior in children; therefore, it can have negative effects on academic performance when playing the game for a long period of time (Hauge & Gentile, 2003).

Yet, if digital games are used properly, they are acknowledged to have several educational advantages (Prensky, 2002; Tsai, et al., 2012). According to Reinders and Wattana (2014), digital games provide engaging context; therefore, they enhance learning engagement that have recently been explored for their educational potentials. Digital game-based learning can maintain the motivation for learning better. Tsai et al. (2012) also asserted that digital game-based learning enables players' verbal exchange capabilities and social interaction skills with different players all over the world.

Technology provides young language learners with an opportunity to learn language skills outside the classroom when they interact actively (Wang, et al., 2008). As Ilter (2015) points out, children can improve their language and cultural awareness by using technology in different social and cultural contexts, and language awareness can be faster through intercultural communication; in fact, technology gives unlimited resources. Therefore, a study on the digital game-based learning' issues can influence how teachers interact with this educational method and create a positive atmosphere in the use of digital technologies to improve the quality of teaching. On the other hand, the examination of such issues can determine the strengths and weaknesses of educational games and help designers of such games to change their ideas in designing and making such games.

In this study, the researcher used four digital games, namely Phrasal Verbs Catapult, Phrasal Verbs Volley, Phrasal Verbs Moonshot, and Phrasal Verbs Rally. These games are excellent choices for classroom teaching. Teachers can engage students in a classroom vocabulary or grammar review, especially in terms of using phrasal verbs. It is suitable for intermediate and advanced EFL learners. It can be used to energize a dull class, to review work that was done or simply as a reward for good classroom work. Thus, teachers and students are the main beneficiaries of these games, because they could have enjoyable time with each other and teaching and learning phrasal verbs as a piece of cake.

Technology-Enhanced Language Learning

Using Virtual Reality for teaching English is tantamount to playing an educational oriented game, and what learners gain from educational games is the sense that they are having fun and that learning becomes an implicit aspect, at least from their point of view. Games also create an emotional investment in the task at hand. If we can combine a learning task and an emotional investment, then we have a learner who will become invested in learning (Kapp, 2012). Another major aspect of the gamification of educational tools is motivation. Games are very efficient at engaging the user, by fostering a feeling of internal motivation, since they are rewarding the learners with a positive feeling of accomplishment (Shkrob et al., 2011). The immediacy of the sense of reward felt by accomplishing tasks in a game is another way to feed back into the motivation of wanting to continue improving. The learner becomes motivated to continue feeling rewarded (Dicheva, et al., 2015).

Through a positive-loop of emotional investment, reward, and motivation, gamification proves to be a powerful tool in any teacher's belt. A good educational tool makes the learners want to come back and continue to use it, not the other way around. The way the game used in the study is set up, avoid negative feedback or a sense of failure, because even when the participant is unsure of how to proceed, they are given the option of negotiating the miscommunication by interacting with the other person involved in the practice (Marco, et al, 2010). Metacognition plays an important role in this process, as learners are put in situations where they are faced with having to self-asses, they ability to complete the required task but are given easy ways to move forward from the obstacle by interacting in the target language, about the target form (Dimmitt & McCormick, 2012).

Lastly, the game can be used not just as a practice, but an assessment tool since it possesses many similarities with drill-based activities: quick turnaround, replicable in very similar conditions will all learners, can be used to both practice and assess understanding. However, games can be changed to suit different goals and needs, while drill-based can only follow a very narrow set of outputs. That was originally one of the appeals of drill-based activities, to be valid and reliable in assessment (Dicheva et al., 2015).
New technologies have the advantage of attracting investors who see a potential future return in their rapid development. Being a part of the entertainment industry is also a strength, because there is already a huge player base to build on, and therefore investing time and money in something that has guaranteed users will interest investors as well. Older technologies are sometimes based on antiquated ideas, or technology that is slowly being replaced by newer ones. What is asked of language learners is to be fully concentrated on the subject at hand, whether the instruction and forms are explicit or not, as the focus required to completing the task is paramount for the acquisition of the target form (Burkel, 2018).

Evaluation Criteria for Language Learning Apps

Several researchers emphasized the importance of evaluation criteria for mobile learning apps (Hoppe et al., 2003; Kukulska-Hulme & Traxler, 2007). Mobile apps with good qualities for language learning should involve social interaction and have pedagogical potential to inspire self-directed learning, engagement, motivation, and social communication. Kukulska-Hulme and Traxler (2007) emphasized that personalized app features satisfy users' individual needs. A well-designed learning app integrates multimedia elements purposefully in the learning activities (Schwebs, 2014).
Nisbet and Austin (2013, p. 6) adapted an instructional sequence which has a curriculum focus and pedagogical focus on connecting students' experience with the apps. They concluded that a useful learning app should have the following features:

a) elicit and draw on students' background knowledge;
b) show (rather than just tell) students how to use the app;
c) point out multiple benefits, features, and uses;
d) engage students in meaningful practice using the app;
e) have students complete an independent task using the app; and
f) provide an opportunity for students to report on the experience afterwards.

On the other hand, Sweeney and Moore (2012) recommended a framework with four major technical and pedagogical criteria to evaluate mobile language learning apps. These criteria are:

a. the mobile app contains the right sorts of interactivity;
b. the learning resources include appropriate multimedia contents;
c. the app is designed with high contextual relevance with a suitable level of utility and functionality;
d. the app supports autonomous and personalized learning (p. 14).

Overall, these studies highlighted three aspects of app evaluation criteria and instruments: curriculum, pedagogy, and design. Sweeney and Moore's framework highlighted criteria from the developer's perspective and for the purpose of app design as opposed to app selection. On the other hand, Namukasa et al. (2016) focused on the curriculum, technical, cognitive, interaction, and interactivity aspects of mathematics apps.
Many theories of learning have been advanced towards Mobile learning. In addition to pedagogical theories and strategies, mobile learning is perceived as a new theory of learning. According to Herrington and Herrington (2007), adopting more recent theories of learning has the potential to exploit the affordance of the technologies in more valuable ways. Thus, many researchers have explored the relationship between existing learning theories and mobile learning.

Moreover, Naismith, Lonsdale, Vavoula, and Sharples (2004) compared m-learning against learning theories such as behaviourist, constructivist, situated, collaborative, informal, lifelong learning and learning, and teaching support; and provided a number of activities for each theory, where he identifies the main theory, its theorist, its perspectives and some examples of mobile activities, that are illustrated in the table 1.

Table 1. An Activity-Based Categorisation of Mobile Technologies and Learning (Adapted from Naismith et al., 2004)

Theory	Theorist	Perspective	Examples of Mobile Activités
behaviourism	Skinner, Pavlov	Activities that promote learning as a change in observable actions.	• drill and feedback • classroom response systems
constructivist	Piaget, Bruner, Papert	Activities in which learners actively construct new ideas or concepts based on both their previous and current knowledge.	• participatory simulations
Situated	Lave, Brown	Activities that promote learning within an authentic context and culture.	• problem and case-based learning • context awareness
collaborative	Vygotsky	Activities that promote learning through social interaction.	• mobile computer- supported collaborative learning (MCSCL)
Informal and lifelong	Ernaut	Activities that support learning outside a dedicated learning environment and formal curriculum.	supporting intentional and accidental learning episodes

To sum up, different learning theories offer various perspectives and views to mobile learning according to many researchers like Naismith et al. (2004) who used the modals and theories for the goal of understanding, explaining and theorizing about mobile learning activities.

The present study

If there is an area that differs between L1 and L2 language acquisition, it is the learning context, the amount, and the quality of input. Whereas native speakers start acquiring their language from birth in a naturalistic environment and have years of rich input and interaction with other native speakers, L2 learners, tend to start learning a foreign language in their teens (if at all) preteen years, in a classroom context where input is often limited in use and not as authentic as in a naturalistic environment. As proposed by Long's (2014) Interaction Hypothesis, learners will only be able to communicate successfully if they engage in authentic interaction with other learners, or ideally native speakers of the target language. This interaction creates opportunities for them to assess their knowledge of the language and to put it into practice.

The present study aimed to compare the effects, if any, of four digital games, namely Phrasal Verbs Catapult, Phrasal Verbs Volley, Phrasal Verbs Moonshot, and Phrasal Verbs Rally with those of a conventional method (i.e. teacher-fronted instruction) on the development of knowledge of English phrasal verbs among Iranian male and female intermediate EFL learners. The overriding aim was to ascertain whether learning of phrasal verbs through interaction with computer games would privilege EFL learners any better than a mainstream approach. Of equal interest was investigation of the effect of gender on participants' learning and verification of the postulation that learning could be differentially impacted if the participants' gender interacted significantly with the modality of instruction. Considering the aforementioned objectives, the following questions were addressed in the present study:

RQ1: Does the modality of instruction (i.e. game-based and teacher-fronted), regardless of the participants' gender, produce a statistically significant effect on the development of knowledge of English phrasal verbs among Iranian intermediate EFL learners?

RQ2: Does the participants' gender, regardless of the modality of instruction, produce a statistically significant effect on the development of knowledge of English phrasal verbs among Iranian intermediate EFL learners?

RQ3: Does gender interact with instructional modality in such a way as to produce a differential impact, considered to be statistically significant, on the development of knowledge of English phrasal verbs among Iranian intermediate EFL learners?

Method

Participants

The participants in the main study were 40 Iranian EFL learners who were selected from 90 participants after the adminitrsation of a proficiency test. The learners who participated in the study were 20 male and 20 female participants who ranged in age from 12 to 15 years old. The selected participants were assigned to two groups of experimental and control, with each consisitng of a balanced mixed of male and female subgroups of participants through simple random sampling method. All the participants were native speakers of Persian who were studying EFL at Shokouh English Institute, Lahijan Branch, Guilan, Iran. Most of them worked on Family & Friends book series and for several years (at least two years) were learning English language at this institute.

Materials

To select the qualified participants, a sample copy of the Solutions Placement Test (SPT) was first administered to the participants (N = 90) in the initial pool by the researcher to ensure that the same participants who had been identified as intermediate learners would also be identified so on an internationally recognized test of language proficiency. The test contained of 50 multiple choice questions which assess students' knowledge of key grammar and vocabulary from elementary to intermediate levels, and a reading text with 10 graded comprehension questions. Analysis of the participants' scores obtained on the proficiency test suggested that only 40 individuals could be identified as intermediate EFL learners (those who scored 47 and beyond) and could be regarded as qualified candidates from among 90 participants.
In this thesis, the experimental group were taught the L2 phrasal verbs through playing with four mobile games named Catapult, Rally, Moonshotis, and Volley. The following is an overview of these games that were employed in the present study.

1) Catapult. Catapult is a great tool for teaching phrasal verbs. The game is ideally used as a friendly competition-style game, but it can also be played by just one person or team. In this game, a sentence is presented with a missing portion of a phrasal verb. Students must read the sentence and choose from three options to fill in the blank. The graphics place the team in two towers, and their phrasal verb skills will help them catapult the other team out of its tower. Other games have the same procedures, but play in other game environments. Thus, EFL learners like this game because it's simple to understand and play, making it perfect for short periods of time. This game is great if learners have five or ten minutes left over at the end of class and need a time-filler. EFL learners can split their class into two teams, and have them line up down the center of the classroom. Give each classroom a sign or baton to use as a "buzzer," and have two students face off for every question. It's also great for quicker students in the classroom; put students who have finished any in-class work in pairs and allow them to quietly play a round of this game while other students finish their work.

2) Rally. Phrasal verbs Rally game is a great game to practice using phrasal verbs in sentences. Play with up to 4 teams and answer questions correctly to move forward in the race. Figure 3.2 shows the different modules of the game. Overally, this game has a similar structure like the previous game. With the difference that in this game, the correct answer to the questions will outstrip the group from the rival. In other words, by answering the questions correctly, the winner group can overtake their competitors' car and eventually win.

3) Moonshotis. Phrasal verbs Moonshotis also excellent for classroom teaching. Teachers can engage students in a classroom vocabulary or grammar review. It is suitable for intermediate and advanced EFL learners. It can be used to energize a dull class, to review work that was done or simply as a reward for good classroom work. A fun, interactive game to practice phrasal verbs.

4) Volley. In phrasal verbs game Volley, we encounter with phrasal verbs at sea! So, EFL learners can practice their phrasal verbs while they battle the other pirates! Read each sentence and select the correct phrasal verb.

Finally, to investigate participants' knowledge of phrasal verbs at the beginnig and end of the study, they were asked to answer 40 multiple-choice questions on the pretest and posttest of L2 phrasal verbs. Each question comprised a stem with a blank and four options from which the participants would choose the best answer. The allotted time for these tests was 30 minutes. The reliability coefficient of the test turned out to be 0.80 using Liao and Fukuya's (2004) Cronbach alpha coefficient. In addition, the content validity of the test was checked by the researcher and her supervisor to ensure that knowledge of a representative sample of the phrasal verbs taught over the experimental period would be measured by the test. The posttest consisted of the same questions with a different ordering of the questions to help avoid visual memory errors of the participants.

Data Collection and Analysis

The SPT was administered before the pretest to decide the prospective participants' overall English language proficiency and homogenize them for the study. To measure the background knowledge of the participants, a reliable test of English phrasal verbs including 40 multiple-choice items, was administered as the pretest at the outset of the semester. The allotted time was 30 minutes. Analysis of the pretest mean scores revealed that both groups were homoscedastic in terms of their knowledge of target phrasal verbs and that both delivered a lacklustre performance on the test.

Next, the students in the experimental group received a type of mobile game instruction that was chosen for the intermediate level. The researcher taught the procedure of the games in the first sessions. Then, the experimental group learners were given twenty questions in each sessions as a game-based learning. Thus, they should have taught 160 items in total. After playing games, the researcher explains the vocabulary presented in the games' questions and discusses how to use these vocabulary forms. This process is continued for eight sessions. On the other hand, the control group received the conventional treatment method in their attempt to learn how to use phrasal verbs in a form of class activities and researcher' explanations. Specifically, the researcher would first write the phrasal verbs on the blackboard, requiring the participants to brainstorm about their definitions and also write example sentences to show how they could be used in different socio-pragmatic contexts of use. Next, she would give their definitions to the students and also supply them with example structures demonstrating their appropriate use in the context.

Finally, and after eight sessions of treatment (each session consisted of 45 minutes), the researcher administered a posttest to compare the experimental and control group achievement scores on measures of phrasal verbs knowledge. Figure 3.5 diagrammatically shows the procedures of the present study in detail. Version 25 of the Statistical Package for Social Sciences (SPSS) was used to analyze the scores following the treatment. The time lapse between the pretest and the posttest was 8 weeks (each week consisted of one session). A two-way analysis of variance was employed to examine both the main and interaction effects of the independent variables in the study.

Results

First of all, in order to scrutinize the first research question and check whether there is relationship between the pretest scores of control and experimental groups, regardless of the participants' gender, Independent

Samples t-test has been used. Table 2 shows the result of Independent Samples t-test for the pretest scores of both of the groups.

Table 2. The Independent Samples T-test Between the Scores of Control and Experimental Groups in Pretest

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Pretest	Equal variances assumed	1.061	0.310	0.675	38	0.504	1.100	1.629	-2.199	4.399
	Equal variances not assumed			0.675	36.910	0.504	1.100	1.629	-2.202	4.402

The two tailed sig of the test above is '0.504' which is much higher that assumed *p* value which is '0.05', so it can be inferred that there is no significant difference between the groups. From another point of view one can refer to mean difference which is obtained '0'. An Independent Samples t-test was run between the scores of the posttest of two groups to show the differences between experimental and control groups at the end of the process. The result of Independent Samples t-test was presented in Table 3.

Table 3. The Independent Samples T-test Between the Scores of Control and Experimental Groups in Posttest

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Posttest	Equal variances assumed	0.621	0.436	-2.05	38	0.047	-3.300	1.604	-6.547	-0.053
	Equal variances not assumed			-2.05	37.01	0.047	-3.300	1.604	-6.550	-0.050

In the table above the amount of sig two tailed is '0.047' which is significantly less than the predetermined amount of *p* value which is 0.05. Therefore, it can be inferred that there is a significant difference between the groups. From another point of view, the amount of T is '-2.05' which is lower than critical value (-1.96). So, the null hypothesis of the study is rejected. It can be concluded that treatment has been effective.

Then, in order to examine the second research question and check whether there is relationship between the pretest scores of male and female groups, regardless of the modality of instruction, another Independent Samples t-test has been used. Table 4 shows the result of Independent Samples t-test for the pretest scores of both of the groups.

Table 4. The Independent Samples T-test Between the Scores of Male and Female Groups in Pretest

	Levene's Test for Equality of Variances		t-test for Equality of Means					
	F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Differenc	95% Confidence Interval of the Difference

								e	Lower	Upper
Pretest	Equal variances assumed	0.098	0.756	-2.13	38	0.040	-3.300	1.549	-6.437	-0.163
	Equal variances not assumed			-2.13	37.8	0.040	-3.300	1.549	-6.437	-0.163

The two tailed sig of the test above is '0.04 which is lower that assumed *p* value which is '0.05', so it can be inferred that there is a statistically significant difference between the groups. From another point of view, the amount of T is '-2.13' which is lower than critical value (-1.96). An Independent Samples t-test was run between the scores of the posttest of two groups to show the differences between male and female groups at the end of the process. The result of Independent Samples t-test was presented in Table 5.

Table 5. The Independent Samples T-test Between the Scores of Male and Female Groups in Posttest

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Posttest	Equal variances assumed	0.005	0.943	-3.73	38	0.001	-5.400	1.446	-8.328	-2.472
	Equal variances not assumed			-3.73	37.46	0.001	-5.400	1.446	-8.329	-2.471

In the table above the amount of sig two tailed is '0.001' which is significantly less than the predetermined amount of *p* value which is 0.05. Therefore, it can be inferred that there is a significant difference between the groups. From another point of view the amount of T is '-3.73' which is lower than critical value (-1.96). So, the second null hypothesis of the study is also rejected.

Then, in order to scrutinize the third question of the study, the researcher used two-way ANOVA. The two-way ANOVA compares the mean differences between groups that have been split on two independent variables (called factors). The primary purpose of a two-way ANOVA is to understand if there is an interaction between the two independent variables on the dependent variable. The interaction term in a two-way ANOVA informs you whether the effect of one of independent variables on the dependent variable is the same for all values of other independent variable (and vice versa). After checking the data for the three assumptions required to carry out a two-way ANOVA, the result of the two-way ANOVA is shown in Table 6.

Table 6. Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	pretest	143.500[a]	3	47.833	1.962	.137
	posttest	423.000[b]	3	141.000	7.651	.000
Intercept	pretest	24304.900	1	24304.900	997.010	.000
	posttest	32035.600	1	32035.600	1738.441	.000
gender	pretest	108.900	1	108.900	4.467	.042
	posttest	291.600	1	291.600	15.824	.000
modality of instruction	pretest	12.100	1	12.100	.496	.486
	posttest	108.900	1	108.900	5.910	.020
gender * modality of instruction	pretest	22.500	1	22.500	.923	.343
	posttest	22.500	1	22.500	1.221	.276

Error	pretest	877.600	36	24.378		
	posttest	663.400	36	18.428		
Total	pretest	25326.000	40			
	posttest	33122.000	40			
Corrected Total	pretest	1021.100	39			
	posttest	1086.400	39			

a. R Squared = .141 (Adjusted R Squared = .069)
b. R Squared = .389 (Adjusted R Squared = .338)

The particular rows we are interested in are the "gender", "modality of instruction" and "gender*modality of instruction" rows, and these are highlighted above. These rows inform us whether our independent variables (the "Gender" and "modality of instruction" rows) and their interaction (the "Gender*modality of instruction" row) have a statistically significant effect on the dependent variables, "pretest and posttest scores". It is important to first look at the "Gender*modality of instruction" interaction as it was determined how the results can be interpreted. It can be seen from the "Sig." column that there is a statistically significant interaction at the p = .276 level. So, it can be concluded that there was no statistically significant difference in mean interest in posttest scores between males and females (p = .207), and the third null hypothesis of the study is accepted. It means that, gender did not interact with instructional modality in such a way as to produce a differential impact, considered to be statistically significant, on the development of knowledge of English phrasal verbs among Iranian intermediate EFL learners.

Discussion

The main purpose of the present study was to compare the effects, if any, of four digital games, namely Phrasal Verbs Catapult, Phrasal Verbs Volley, Phrasal Verbs Moonshot, and Phrasal Verbs Rally with those of a conventional method (i.e. teacher-fronted instruction) on the development of knowledge of English phrasal verbs among Iranian male and female intermediate EFL learners. Therefore, three hypotheses were presented for this study in which the differences between students' scores on phrasal verbs test were examined in the two educational groups with four subgroups.

According to the results of the first question of the study, the modality of instruction (i.e. game-based and teacher-fronted), regardless of the participants' gender, produced a statistically significant effect on the development of knowledge of English phrasal verbs among Iranian intermediate EFL learners. Generally, these results seem to be consistent with other researches (Astane & Berimani, 2014; Parmadyani, 2013; Perkins & Saris, 2001) which found that digital game-based learning might extend understanding of content, provide diverse learning experiences, encourage collaboration and interaction across groups, and create acceptable academic team atmosphere. Moreover, these results are consistent with results obtained by other existing research which clearly reported the effect of using educational games to enhance language learning in different areas such as vocabulary learning.

More specifically, these results are in agreement with those obtained by Wang (2009), who reported that students who used digital games experienced increasing in learning to phrasal verbs, and to work collaboratively to achieve a common goal. Additionally, the study results are consistent with those of Lin (2010), Mengduo and Xiaoling (2010) who reported that the digital game-based learning has a vital role in supporting language learners to achieve offered learning tasks in the EFL classroom. Furthermore, the results are in agreement with other research results (Adhami & Marzban, 2014; Mohammadi & Davarbina, 2015) which indicated that using digital games was more influential at improving EFL learners' language abilities.

Actually, based on the cooperation of students in playing digital games, it was clear that each member of the group believed in his responsibility not only for learning but also for supporting other members. This

interpretation is related with that of Reese (2009) and Aslanabadi and Rasouli (2013). Furthermore, the students who used digital game-based learning were encouraged to use peer-correction. They were very enthusiastic about tackling their parts and showed individual and group responsibility to transform their experiences and knowledge to the other members of the group.

Regarding to the second question of the study, the findings revealed that the participants' gender, regardless of the modality of instruction, produced a statistically significant effect on the development of knowledge of English phrasal verbs among Iranian intermediate EFL learners. Actually, Females were more eager in using their attention and abilities to solve different questions. However, males were more eager to participate in digital games and pay enough attention to structures and vocabularies of the games. It is worth mentioning here that, the result of the current study was quite interesting as the female participants reported that they used more make effort to learn the language. Mazaji (2016) investigated the gender differences in vocabulary retention and access to translations for beginning language learners in Computer Assisted Language Learning. The analyses of the results revealed that when students were given bilingual multiple-choice tests, there were no significant differences between males and females on their short-term and long-term retention scores. Moreover, there were no significant differences in the amount of time males and females spent looking up translations. It was also reported that the findings of the survey suggested that males and females could equally benefit from a CALL environment. Jafarian and Shoari (2017) also reported that the number and kind of strategies used by females were similar to those used by males.

According to the third research question, it can be claimed that gender did not interact with instructional modality in such a way as to produce a differential impact, considered to be statistically significant, on the development of knowledge of English phrasal verbs among Iranian intermediate EFL learners. Based on the findings of this study, it can be said that digital game-based learning can be created and implemented using a range of materials and technologies. For example, teachers may incorporate authentic materials into their lessons by creating digital game-based learning atmospheres.

There are several important considerations for teachers who desire to use digital game-based learning in their lessons. First and foremost, teachers must evaluate whether the game truly requires learners to exchange information in order to improve their knowledge. Teachers will need to determine whether the task is appropriate for their learners' proficiency level and whether learners would be able to complete the game in the time available.

Actually, language teachers can benefit from these games in order to educate more active students who are at the same time better communicators. In this way, language teachers can save great amount of time, energy and money. In other words, instead of wasting their time and energy on a technique which has little practical value, they can concentrate and embark upon these types of games which are practically more powerful and useful and which are theoretically supported by many other disciplines, such as psychology, psycholinguistics, sociolinguistics, etc.

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