

DOES WEB 2.0-SUPPORTED PROJECT-BASED INSTRUCTION IMPROVE JORDANIAN EFL LEARNERS' SPEAKING PERFORMANCE?¹

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Abstract

This study examines the potential effectiveness of Web 2.0-supported project-based learning in Jordanian EFL eleventh-grade students' speaking fluency and accuracy of grammar and vocabulary. The participants of the study were 43 female students who were purposefully selected from two schools at Al-Koura Directorate of Education (Jordan) in the first semester of the academic year 2018/2019. Using a quasi-experimental, pre-/post-test design, the participants were divided into the experimental group (n=21) who was instructed using computerized project-based instruction and the control group (n= 22) who was taught per the guidelines of the prescribed Teacher Book, Action Pack 11. Descriptive statistics and One-Way ANCOVA were used to analyze the students' scores on the speaking pre-/post-tests. The results showed that the participants instructed through the computerized project-based treatment outperformed those who were conventionally instructed in both speaking fluency and accuracy of vocabulary and grammar. A number of pedagogical implications and recommendations are put forth.

Keywords: accuracy; EFL; fluency; Jordan; project-based learning; speaking; Web 2.0

1. Introduction and background of the study

When speaking, one expresses thoughts, feelings, and ideas through “a complex mental process combining various cognitive skills virtually simultaneously, and drawing on working memory of words and concepts, while self-monitoring” (Burns & Hill, 2013, p. 232). Speaking is also described as a dynamic, laborious (Goh, 2007), and purposeful (Richards, 2009) process.

A good body of research (Brown, 2000; Burns, 2012; Omaggio Hadley, 2000) suggests that speaking fluency and accuracy of vocabulary and grammar are requisites for successful

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communication. Accuracy is defined as the learners' ability to produce grammatically correct sentences, as learners should not only know grammatical rules but also be able to speak and write accurately. Fluency, on the other hand, refers to the learner's ability to produce written and spoken utterances with ease and efficiency and without pauses or breakdowns in communication (Srivastava, 2014). For many foreign language practitioners, speaking accurately and fluently is one of the ultimate goals of language learning (Thornbury, 2000). Thus, success in learning speaking culminates not only in speaking fluently but also in producing fewer errors in grammar and vocabulary (Brown, 2000; Kumar, 2013).

There has been a near-consensus among researchers that speaking is a challenging skill (Bahrani & Soltani, 2012; Wallace, Stariha, & Walberg, 2004). Communication problems often appear when learners are unable to express themselves adequately in a foreign language or to understand other people's messages (Fitriani, Apriliawati, & Wardah, 2015).

Two major types of difficulties are noted in learning speaking in the EFL classroom: linguistic and psychological (Fitriani et al., 2015). Speaking is generally challenging not only because of the differences between languages (Bani Abdo & Breen, 2010), inadequate command, and lack of practice but also of affective factors such as anxiety and fear to be judged by others (Fitriani et al., 2015).

For Jordanian EFL learners, learning English is doubly challenging not only because of the linguistic differences between Arabic and English (Bani Abdo & Breen, 2010) but also because of the lack of adequate opportunities to practice, as English is taught as a school subject with an average of four 45-minute periods a week.

Thus, in the Jordanian EFL context, there seems to be a near consensus among researchers (despite a relative dearth of research on the difficulties faced by Jordanian learners in speaking) that Jordanian learners suffer serious problems in oral communication (Al-Jamal, 2007; Bataineh, Al-Bzour, & Baniabdelrahman, 2017; Yaseen, 2018). Research suggests that it is imperative to allow learners adequate opportunities to develop their speaking skills. For instance, Bailey (2005) reported that communicative activities in the foreign language classroom are catalysts for learners' engagement in the speaking lessons, especially with message-oriented and learner-centered activities which promote active learning, cooperation and empathy (Klippel, 1984; Kumar, 2013). However, teaching EFL speaking in Jordan is both traditional and teacher-centered, as learners have little opportunity to speak in authentic communicative contexts or for authentic purposes within the school context.

Project-based learning (PBL) underlies Dewey's theory of experience which essentially relates the school, as a meaningful and authentic context for learning, to life to provide the

learner opportunities to acquire knowledge and skills (Ulrich, 2016). It is also rooted in the constructivist theory of learning which posits that learners can make sense of their learning and construct new knowledge only if they actively engage in learning (Krajcik & Blumenfeld, 2006). Cognitive (Smith, 2015) and social sciences have also contributed to PBL, as both promote social interaction in the learning process (Du & Han, 2016).

Project-Based Learning has been hailed as a viable alternative to traditional teaching (Bell, 2010; Larmer & Mergendoller, 2015; Solomon, 2003), as it promotes independent learning, learner responsibility, and social and democratic behavior (Knoll, 1997). It is essentially an instructional approach that requires teachers and students to work collaboratively to solve authentic problems (Harris, 2014), as learners select, plan, investigate and produce something to answer real-world questions or respond to an authentic challenge (Holm, 2011).

Project-Based Learning has been reported to promote language teaching and learning through the provision of authentic and meaningful contexts of learning (Bell, 2010; Brown, 2016; Thomas, 2000) often making use of technology (Solomon, 2003). It has benefited from the advances in technology which potentially catalyzes language learners' engagement, communication, thinking and research skills (Ravitz, Hixson, English, & Mergendoller, 2012), offers an engaging context of learning, and contributes to learners' creativity (Donnelly, 2005). It is a lot more than just *doing projects* or *engaging in simple real-life experiential activities* to allow learners opportunities to acquire a set of *habits of mind* (Markham, 2011), such as critical and creative thinking, flexibility, decision making, and ability to work in groups (Bell, 2010; Boss, 2012; Larmer & Mergendoller, 2015; Solomon, 2003), as the teacher is challenged to shift roles from lecturer and deliverer of content to guide and facilitator.

Research has also established connections between PBL and 21st century skills. Some studies describe PBL as the better deliverer of these skills (Alsop-Cotton, 2009; Bell, 2010; Gunter, 2007), as both are central, rather than peripheral, to the curriculum (Markham & Ravitz, 2003). They promote inquiry (Barell, 2003; Bender, 2012), creativity and innovation (Bender, 2012), critical thinking and collaborative problems solving, authentic use of technology (Larmer & Mergendoller, 2015), rapport among diverse learners (Markham & Ravitz, 2003), intrinsic motivation (Markham, 2011), and life and career readiness skills (America Achieves Educator Networks, 2018).

Web 2.0 encompasses a range of applications (e.g. blogs, wikis, multimedia sharing, audio blogging, podcasting, syndication) which involve user-generated content, content sharing, and the collaborative use of the web as a platform for generating, re-purposing and consuming content (Franklin & van Harmelen, 2007; Redecker, 2009).

Other research (Figuerola-Flores, 2015; Luo, 2013; Wang & Vásquez, 2012) suggests that the integration of Web 2.0 applications into language education has not only revolutionized the field but also been advantageous for teachers and learners alike through the provision of real-life learning scenarios which promote communication, collaborative learning, and deeper levels of understanding of learning (Bartolomé, 2008; Boss, 2012; Markham, 2011).

Despite the dearth of research on the integration of Web 2.0 and PBL, this integration has a lot of promise, as both potentially construct a learning environment which fosters the language learners' knowledge and skills. The combination of Web 2.0 and PBL has made it possible for learners not only to study alone, but also to share their experience and work collaboratively in real-time, individually, or in groups.

To the researchers' best knowledge, the research on the effectiveness of Web 2.0-supported PBL in language learning is scarce in both the international and Jordanian contexts (Chang, 2014; Elam & Nesbit, 2012). Thus, this research aims to gain better insights into the effectiveness of Web 2.0-supported PBL in improving Jordanian EFL learners' speaking skills, which is an important goal of teaching English in Jordan (Bataineh et al., 2017).

2. The study

2.1. Problem, purpose, and research questions

The authors, EFL practitioners for over two decades, have observed first-hand how challenging speaking is for Jordanian EFL learners, an observation which may be universal rather than peculiar to Jordan. Fitriani et al. (2015), for example, claim that speaking is a challenge for EFL/ESL learners because it requires not only knowing the grammar of a language but also using that language in authentic contexts.

A plethora of research has reported that Jordanian EFL learners face difficulties in oral communication in English (Bani Abdo & Bereen, 2010; Bataineh et al., 2017; Yaseen, 2018), probably because these learners have relatively little opportunity to speak English in a context where it is taught as a school subject with no or little contact with English outside the language classroom.

A more learner-oriented approach rather than the current teacher-centered approach may offer Jordanian learners better opportunities to speak for meaningful purposes. Coupled with the support of Web 2.0, PBL may allow these learners an opportunity to engage in a learning environment in which authentic communication, collaboration, and active learning may take place.

Thus, this research examines the potential effectiveness of Web 2.0-supported project-based learning in developing Jordanian EFL learners' speaking fluency and accuracy of grammar and vocabulary. More specifically, it seeks to answer the following question: To what extent, if any, does Web 2.0-supported project-based learning affect Jordanian EFL learners' speaking fluency and accuracy of grammar and vocabulary?

This research is one of the first to examine the effectiveness of Web 2.0-supported PBL in improving speaking, a potentially challenging skill for all EFL learners. Because research on the effectiveness of Web 2.0-supported PBL in improving speaking is rather scarce, it could be beneficial to highlight research both on the effectiveness of PBL and that of Web 2.0 applications, besides any found on Web 2.0-supported PBL.

There has been a good body of research which supports the potential effectiveness of PBL in improving EFL speaking (e.g., Al-Masadeh & Al-Omari, 2014; Anuyahong & Road, 2015; Castaneda, 2016; Dewi, 2016; Essien, 2018; Farouck, 2016; Maulany, 2013; Rochmahwati, 2015; Vaca Torres & Gómez Rodríguez, 2017; Zhang, 2015). Research suggests that Web 2.0 (e.g. *YouTube* - Bataineh & Al-Refa'i, 2019; Kuswara, 2015; Riswandi, 2016, as well as social network sites - Chang, 2014; Popescu, 2014) are potentially effective in enhancing speaking. However, even though the research on the effectiveness of a Web 2.0-supported PBL is scarce, what little is there suggests that the integration of Web 2.0 and PBL is a viable solution.

More related to this research, Elam and Nesbit (2012) reported that a combination of PBL and Web 2.0 tools is an effective means to the acquisition of language skills, but, to the best of these researchers' knowledge, no research exists on their role in improving EFL speaking. As this research could bring about insights into the effectiveness of Web 2.0-supported PBL in improving speaking fluency and accuracy of vocabulary and grammar, the instructional treatment involves the purposeful utilization of multiple Web 2.0 applications (e.g. *YouTube, Facebook Messenger, Weebly, Wikipedia*) throughout each project.

However, it is worth noting that most of the skills inherent in project-based learning lend themselves better to knowledge-building than rote memorization, which may explain the conflicting reports that PBL is not the most effective approach when standardized testing is involved (Quigley, 2010; Thomas, 2000). However, it yields superior results when long-term knowledge retention and application of concepts are sought (Geier, Blumenfeld, Marx, Krajcik, Fishman, Soloway, & Clay-Chambers, 2008; Strobel & van Barneveld, 2009).

2.2. Method, sampling and instrumentation

This study uses a quasi-experimental design, as a purposeful sample of 43 EFL eleventh-grade students are divided into an experimental group (n=21) and a control group (n=22) from Al-Koura Directorate of Education (Jordan) in the academic year 2018/2019. The experimental group was taught through Web 2.0-supported PBL whereas the control group was taught per the guidelines of the prescribed Teacher Book.

A speaking pre-/post-test and a scoring rubric were used to collect the data from the participants. The test was designed in light of the speaking activities in the first three modules of the prescribed textbook, *Action Pack II*. The pre-test assessed the participants' speaking performance before the treatment whereas the post-test measured the potential effect of Web 2.0-supported PBL instruction on their speaking fluency and accuracy of grammar and vocabulary.

The test, which was administered individually to each student for about 25 minutes, consisted of four parts: an interview (seven items), a talk about a topic, a talk about a situation, and expressing personal opinion about a given topic. The scoring rubric, adapted from Harris (1969), uses an analytical five-point scale to measure the levels of improvement in speaking fluency, accuracy of grammar, and accuracy of vocabulary.

The validity of the test was established by a jury of EFL specialists whose feedback was used to amend the test. To establish the reliability of the test, a pilot study of 18 students, who were tested and retested, was conducted with a two-week interval. Pearson's reliability coefficients for the speaking fluency, vocabulary accuracy, and grammar accuracy amounted to 97.6, 97.5, and 97.6 respectively, with an overall coefficient of 98.8 which was deemed appropriate for the purposes of the research.

The content of the project section of the textbook was taught to both the experimental and control groups. However, while the former was taught through Web 2.0-supported PBL, the latter was taught per the guidelines of the Teacher Book. The instructional treatment comprised redesigning the speaking content in the project section of the first three modules of *Action Pack II* (viz. Free-time, Plan a Celebration, and Search a Sport) per the PBL model. The redesigned content was further supported by the purposeful use of several Web 2.0 applications (viz. a *Weebly* website, a teacher website, *Facebook Messenger* group, *YouTube*, blog, *Wikipedia*).

The speaking content in the project section of the first three modules in the textbook was incorporated into a free website. The participants, who were distributed into four (three five- and one six-member) groups, were introduced to PBL, Web 2.0 applications, and *Weebly* website, as the teacher/first researcher modelled using *Weebly*, creating pages, and adding

content personally and using *YouTube* videos. The importance of student collaboration was also addressed as a catalyst for success.

Supervised by the teacher/first researcher, the members of each group elected a leader and collaborated to create their own website and add content under the three themes (viz. Free Time, Plan a Celebration, and Search a Sport), which culminated in four distinct websites. The teacher/first researcher created a group on *Facebook Messenger*, dubbed *Creative Builders*, to facilitate communication with and among the four groups at all times (e.g., sharing their website addresses, asking know-how questions, announcing adding new content, seeking teacher or peer assistance).

Through the *Facebook Messenger* group, *Creative Builders*, there were discussions of processes, reflections of students' opinions, exchange of ideas and information, and feedback on their progress and performance in the oral presentations (the teacher/ first researcher and the students agreed on time to be online via the messenger group).

Thus, Web 2.0 was utilized throughout the treatment not only as a source of information and a tool for developing oral presentation but also as a means for communication and follow-up of learners' performance. The websites also constituted a final product and a medium through which the participants exhibited their work.

The members of each group engaged in critical thinking, research practice, and decision-making as they worked on supplementing the content of their respective websites along the three themes. They delegated tasks amongst themselves, as each member researched the topics through various Web 2.0 applications. They also organized and analyzed the data they collected from Web 2.0 and agreed on the content to be used in their websites. They used *Weebly Builder* tools (<https://www.weebly.com/websites?lang=en>) to create and develop their websites. For two weeks, they experimented with Web 2.0 tools based on relevance and reader appeal. After developing each website, each group presented their products to the class, after which individual participants visited the websites and posted comments on their content.

After each session, there was a follow-up activity to communicate ideas, discuss topics, and keep record of student progress through the messenger group. Students also visited the teacher website and used Web 2.0 applications for independent learning.

Once done with building and collaborating in critiquing and developing the website, the participants alternated in presenting their work orally to the school principal, teachers of English, and other interested school personnel (13 people in total) in addition to their teacher and classmates. They also answered audience's queries and requests for further explanation.

The treatment lasted for eight weeks and was divided into seven stages. The first stage (one week) was to introduce the groups to the treatment, the idea of the project, its stages and procedures, and *Weebly*. The second stage was to establish the groups' websites using *Weebly*. The third, fourth, and fifth (two weeks each) stages were dedicated to developing the content of the group websites per the themes of the projects under study in *Action Pack II*. The sixth stage (one week) involved reviewing and revising each website to each group's satisfaction prior to the seventh stage (one week) in which the participants presented their developed websites to an audience.

The activities of the treatment comprised group-work, follow-up, and independent learning activities. The participants worked collaboratively in groups to discuss the themes of each website, exchange opinions, agree on sub-topics, look for and organize information, negotiate the most appropriate tools from the *Weebly Builder*, edit websites, and present orally to the other participants. Follow-up activities commenced after every lesson through *Creative Builders* through which the teacher/first researcher monitored the progress in developing the websites, provided feedback on performance, exchanged opinions about the themes, and sought reflections on the oral presentation.

2.3. Results and discussion

In order to answer the research question to what extent, if any, Web 2.0-supported PBL instruction affects Jordanian EFL learners' speaking fluency and accuracy of grammar and vocabulary, the means and standard deviations of the learners' scores on the speaking pre-/post-tests in vocabulary, grammar, and fluency were calculated, as shown in Table 1.

Table 1. Means and standard deviations of the participants' scores on the pre-/post-tests

Skill	Group*	Pre-Test		Post-Test		Adjusted Mean	Standard Error
		Mean	SD	Mean	SD		
Vocabulary	Control	9.40	2.97	11.04	3.22	10.83	0.31
	Experimental	8.95	2.78	14.76	2.98	14.98	0.32
Grammar	Control	8.63	3.07	10.50	3.23	10.37	0.39
	Experimental	8.38	2.72	11.38	3.65	11.51	0.40
Fluency	Control	8.27	2.56	10.00	2.77	9.98	0.31
	Experimental	8.23	2.64	13.90	3.33	13.92	0.31
Total	Control	26.31	8.14	31.54	8.88	31.15	0.74
	Experimental	25.57	7.79	40.04	9.56	40.45	0.76

* n (Experimental)=21, n (Control)=22

Table 1 shows observed differences between the mean scores of the experimental group and the control group on the post-test on all three skills and in favor of the latter. To determine whether or not these difference are statistically significant, One-Way ANOVA was used, as shown in Table 2.

Table 2. One-way ANCOVA of the participants' scores on the speaking post-test

Skill	Sum of Squares	df	Mean Squares	f	Sig.	Partial Eta Squared
Fluency	166.83	1	166.83	78.83	0.000*	0.66
Vocabulary	184.10	1	184.10	85.95	0.000*	0.68
Grammar	13.84	1	13.84	3.99	0.050*	0.09
Speaking (overall)	927.78	1	927.78	76.15	0.000*	0.65

* significant at $\alpha = 0.05$

Table 2 shows statistically significant differences (at $\alpha = 0.05$) between the mean scores of the two groups on the individual skills of speaking fluency and accuracy of grammar and vocabulary and on speaking as whole, in favor of the experimental group.

As the participants engaged in extensive speaking practice, through the integration of Web 2.0 and PBL throughout the treatment, the researchers observed first-hand these participants' enthusiasm to learn and keenness to create websites representative of their respective personalities and aptitudes and, simultaneously, gain in fluency, accuracy, and confidence in their ability to speak.

The individual and group work activities, which culminated in the oral presentations to two distinct audiences, ran smoothly and fostered the quality of both the processes and products of the project. Each group collaborated to construct a website, through a structure of interrelated activities which entailed negotiating and agreeing on sub-topics, assigning roles to group members, determining the most appropriate Web 2.0 applications to use, analyzing and organizing ideas, negotiating and agreeing on appropriate *Weebly* builder tools to use, editing, refining, and developing website content per teacher and peer feedback, presenting the websites, and, eventually, reflecting on their own oral performance. These activities have afforded the participants a meaningful context for learning and, at the same time, improving their speaking.

The treatment was purposefully structured according to authentic learner-centered activities (e.g., individual and collaborative decision-making, sifting through and selecting

content to include in the websites, negotiation, and independent acquisition of knowledge and skills using Web 2.0 applications. This culminated in improved learner ownership of and responsibility for learning.

The treatment involved the authentic and meaningful use of the foreign language to communicate ideas and negotiate meaning, which has potentially created a context of learning at each stage of the project which served as a catalyst for learning and an occasion for reflection on strengths and areas which need further development.

The integration of Web 2.0 and PBL has also provided the participants with a non-threatening learning environment in which they were encouraged to use the foreign language with confidence and without fear of reprimand or ridicule. *Creative Builders* has also provided a haven from immediate criticism of performance, as the participants were messaged feedback as either text or audio-recording. Thus, deterrants of success, such as anxiety, shyness, and fear of judgement were kept to a minimum, if not avoided altogether.

The fact that the learners were also given ample opportunities to practice language in- and outside the classroom may have served as a catalyst for their improved performance. For instance, to develop a website on a particular theme, the learners needed to access Web 2.0 applications (e.g. blogs, *Wikipedia*, websites) to read about the topics, search for information in- and outside the boundaries of the classroom, analyze and organize ideas, express, discuss, and exchange ideas, negotiate, edit, and incorporate appropriate content into the websites, and present to an audience.

The treatment was designed to maintain a balance between the development of fluency and accuracy of grammar and vocabulary. Every lesson offered an opportunity to practice speaking, as the Teacher Website gave ample opportunities to learn language forms and functions which were then used in group discussions of topics. The follow-up practice through the *Facebook Messenger* group (aka, *Creative Builders*) addressed strong and weak areas of their performance, and they were given opportunities to reflect on their own and peer performance.

3. Conclusions, pedagogical implications and recommendations

The participants seem to have benefited from the Web 2.0-supported PBL, as gains in their speaking fluency and accuracy of grammar and vocabulary were noted. However, more research needs to be conducted before any definitive conclusion can be drawn.

Project-based learning constitutes a departure from traditional instruction, as teachers shift from micro-managing the teaching/learning process to facilitating student inquiry and

hands-on learning. This often requires more time and resources (Barell, 2010; Bender, 2012), but the return is well worth the investment, as PBL promotes innovative approaches to teaching and learning and improved classroom dynamics.

However, this is by no means to imply that direct instruction is without merit. On the contrary, there are many classroom scenarios where the teacher has to resort to direct instruction to address certain learner needs (Markham & Ravitz, 2003), especially in contexts where more attention is given to standardized testing (Strobel & van Barneveld, 2009; Thomas, 2000) than problem solving and skill application (Markham & Ravitz, 2003).

This highlights the need for professional development efforts to bring the teachers up to par with the dynamics of PBL instruction, as the restrictions in time and resources may impede the implementation of project-based learning into the EFL classroom. The establishment of professional learning communities may also catalyze both teacher agency and student learning (Thorpe & Burgess, 2012).

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