



Target Language Use and Performance in Project-Based Language Learning (PBL)

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Introduction

An appealing element of project-based learning (PBL) pedagogies is that they offer ample scope for student-centered exploration, with participants developing cognitive abilities and deepening subject knowledge as they endeavor to solve problems and create comprehensive solutions in the form of reports and presentations. EFL educators have employed these instructional methods with promising results when suitable conditions have been met (Beckett & Slater, 2005). However, relatively few researchers have investigated whether such project-based settings lead to use of the target language and how this along with other motivational and team factors affect performance. This article examines the use of a project-based language learning (PBL) simulation designed for EFL students and delivered via a collaborative learning environment. The goals of the project were to: i) use the target language in team communications to complete a simulation, and ii) deliver an effective group presentation. The project is briefly described and the outcomes of the two stated objectives are reported. The results of an in-class self-rated questionnaire measuring teamwork, communication, project and learning experience elements of the collaborative project showed that the amount of English spoken was associated with age, team encouragement and self-value as a team member, while the score achieved for the presentation was connected with age and ease of understanding the structure of the assignment.

PBL in EFL

PBL is often exploratory in nature, requiring participants to make decisions, negotiate meaning, undertake research and analyze information as they work toward completion of their assignments (Deveci & Nunn, 2016; Prince & Felder, 2006). Instructors often act as facilitators offering peer guidance during the activity (Mascolo, 2009; Mergendoller & Thomas, 2000), and the learning effect inherent in the process of creating the final output is likely to be as important as the acquisition of the artifact itself (Prince & Felder, 2006). Evaluations of PBL approaches to instruction have revealed benefits, including: improving knowledge of the research process and the ensuing positive externalities extending to students' other classes (Moulton & Holmes, 2000); self-improvement, blending other skills with English language skills and applying English to practical situations (Li, 2010); and the engaging nature of projects and advancement of linguistic (e.g., vocabulary and speaking) and non-linguistic (e.g., understanding target language culture, meeting people and teamwork) competencies (Gibbes & Carson, 2013).

In another study, Beckett and Slater (2005) formulated a “Project Framework” to aid EFL students in understanding the linguistic, content, and proficiency development resulting from project work (p. 110). Following inclusion of the framework, the data they collected showed that their students not only successfully completed the assigned projects but gained knowledge and skills to express themselves regarding their selected topics. Moreover, their interview responses expressed appreciation of the inquiry-based method of ESL instruction.

From a contrasting perspective, some studies have also presented contrary results, such as: concerns over the inclusion of tasks not related specifically to language learning (Moulton & Holmes, 2000); a lack of time for speaking the target language, and difficulty comprehending instruction (Li, 2010). Furthermore, Gibbes and Carson (2013) identify and explore a number of contradictions arising due to perceptions of inequitable division of tasks among group members, difficulty of project work, scarcity of language improvement, and reluctance to use target languages.

Collaborative Learning in EFL

The appeal of collaborative learning stems from a belief that learning through interaction with peers stimulates meaningful language output and social construction of knowledge (Prince & Felder, 2006). Educators realize that such frameworks not only lead to insightful and rewarding educational environments but also replicate real-world working conditions (Aydin & Yildiz, 2014; Kessler, 2013). Furthermore, collaborative learning environments are often multifaceted, with combinations of elements such as planning, coordination, teamwork, problem solving, negotiation and simulation (Stahl et al., 2006). This instructional method is believed to foster learner agency as language students direct their own learning and develop self and social identities through the educational process. Research in the EFL domain has acknowledged diverse benefits resulting from collaborative learning (Gokahale, 1995; Kowal & Swain, 1994; Storch, 1999), with specific advantages for second language learners pertaining to higher quality writing (Storch, 2005) and improved motivation (Swain & Lapkin, 1998).

Research Questions

Limited research has investigated whether PBL settings lead to use of the target language and which factors affect target language usage and project performance. Therefore, this research aims to investigate the following research questions:

1. How much will the target language be used while conducting the project?
2. Which factors will influence target language usage and project performance measured via a group presentation?

Method

The project required a combination of discussion, teamwork, research, analysis, presentation and reflection skills to successfully complete, as students were required to collaboratively complete an investment simulation project and prepare a group presentation based on the assigned simulation. Table 1 refers to the time schedule of the four stages and activities integrated into the project.

TABLE 1
Weekly Project Schedule

Week	Weekly Project Schedule
1	Introduce project and investment principles (risk-return, diversification etc.), products and vocabulary (mutual fund, commodities fund, balanced fund, sovereign bond, call account, term deposit, etc.).
2	Group discussion and risk profile assessment; Explanation of elements constituting a good presentation; Set the scene: reading the situation and background surrounding the simulation and assignment; Begin research, analysis and portfolio selection; Groups required to develop investment strategy and advocate a rationale for their portfolio selection. Instructor acts as facilitator.
3	Teams research, analyze and select investments for their portfolios; Prepare presentation to present their portfolio in class. This stage requires the use of a spreadsheet to make a table of investments, record fund allocation, and calculate expected returns for each investment and total return for the portfolio. Further, a pie chart of asset allocation can be drawn, and a graph showing expected returns. Instructor acts as facilitator.
4	Teams deliver presentations (each member speaks for approximately 2-3 min.) which represent the major production outcome of the project; Peer grading other teams' presentations; Run the stock market simulation and calculate how each team's portfolio performed; Complete the activity through team self-reflection and discussion of which investments performed well or did not, and why teams succeeded or did not.

Note. Each week consisted of 2x50-minute classes.

Participants

Participants were 63 undergraduate students from two classes taking the same business English course offered as part of an ESP program at a public university in Taiwan. There were 6 teams of 4 to 5 students ($n=28$) in the first class and 7 teams of 4 to 6 students ($n=35$) in the second. Twenty-eight students (44.4%) were freshmen, 7 (11.1%) sophomores, 10 (15.9%) juniors, and 18 (28.6%) seniors. Participants came from law and humanities ($n=4$), social sciences ($n=15$), business ($n=32$) and public administration and finance ($n=12$). TOEIC scores ranged from 635 to 960 ($M=806$, $SD = 72.4$), indicating an advanced level of learners. Twenty years and one month was the average age (ranging from 18 years to 23 years and 8 months). For analysis purposes, age categories were established: Group 1 with 21 (36.2%) students aged ≥ 18 and < 19 years; Group 2 with 10 (17.2%) students ≥ 19 and < 20 years; Group 3 with 9 (15.5%) students ≥ 20 and < 21 years; and Group 4 with 18 (31%) students aged ≥ 21 years.

Measures and Data Collection

The two dependent variables (DVs) of interest were the percentage of time the target language – English – was spoken (Percent) by team members while doing the project, and the score (Score) they received for the major outcome of the project – a group presentation. Percent was gauged via a self-rated scale. Score related to the instructor and student ratings of the presentations on a scale from 1 to 100 with points awarded for PowerPoint (30%), Content (30%), Delivery (30%) and Q&A (10%). A questionnaire based on relevant items adapted from Chow and Law (2005) and Clark and Baker (2006) considered four constructs: Teamwork; Language & Communication; Project Work; and Learning Experience. It was distributed during class prior to the teams delivering their presentations. Students completed the questionnaire willingly and were aware that they were under no obligation to participate.

Results

The percentage of time the target language English was spoken ($M=58.93$, $SD=24.12$) was at the higher end of the 30% to 60% estimated by the instructor based on classroom observations. The self-rating nature of this variable may raise questions regarding its reliability, given the propensity for participants to overrate themselves. Agreement of ratings within teams was estimated by calculating the mean for each

team and counting the number of team members who rated the percent of English spoken within 10 points on either side of the average for the team (i.e., Mean \pm 10). Overall, 71% (39/55) of the students rated the percentage of the target language spoken within 10 points on either side of the mean for their team, with the figure being 76% (19/25) for the first class and 67% (20/30) for the second. Furthermore, evidence suggests samples from East Asian cultures may underestimate themselves (Falk, Heine, Yuki & Takemura, 2009). Students' scores for the presentations ($M=80.22$, $SD=4.6$) related to a reasonably high quality of performance. Inter-rater agreement for the first class was 0.71 and 0.83 for the second class.

Correlation coefficients displayed in Table 2 show that the DVs Percent and Score were correlated with Grade and Age. Furthermore, the percentage of English used by the teams was significantly correlated with the score they received for the presentation ($r=0.39$, $p<0.01$).

TABLE 2
Student Demographics and DV Correlations

	Major <i>n</i> =63	Gender <i>n</i> =61	Age <i>n</i> =58	TOEIC <i>n</i> =45	Percent <i>n</i> =55	Score <i>n</i> =63
Major	1					
Gender	-.08	1				
Age	.10	.15	1			
TOEIC	-.12	-.13	.21	1		
Percent	-.01	.11	.39**	-.01	1	
Score	-.09	-.07	.31*	.08	.39**	1

Note. * $p < 0.05$, ** $p < 0.01$. Correlations are Spearman's rho coefficients.

Table 3 shows the results of the questionnaire. Cronbach's alpha statistics ranging from 0.62 to 0.73 indicate a reasonable level of internal consistency for the items in each construct. The items correlated with Percent were 5, 7, 11, 16, 18, 20, and 24, and reveal the importance of the Teamwork and Learning Experience constructs. Additionally, with Items 1, 5, 9, 10, 11, 16, 23, 24, 25 and 26 receiving significant correlation coefficients, the importance of the Teamwork, Project and Learning Experience constructs stand out as being relevant to Score.

TABLE 3
Item Means, Standard Deviations, and Correlations with DVs Percent and Score

Item	<i>n</i>	<i>M</i>	<i>SD</i>	Percent	Score
Teamwork (Cronbach's $\alpha=0.73$)					
1. I enjoyed working in my team.	63	4.56	0.53		0.28*
3. Learning to work as part of a team is important.	63	4.7	0.46		
8. I have worked in teams in other classes.	63	4.16	1.00		
10. Working in teams is not worthwhile.	63	4.37	0.81		0.25*
11. I was happy with the effort of my team members.	63	4.46	0.60	0.27*	0.29*
12. Team members evenly shared the workload.	61	4.18	0.76		
16. Team members encouraged each other.	60	4.08	0.79	0.34*	0.30*
18. I prefer working in a team with both sexes.	60	4.25	0.77	0.29*	
21. I prefer choosing my own team members.	60	3.08	0.94		
25. I would be happy to work as part of my team in future activities.	60	4.43	0.67		0.28*
Language & Communication (Cronbach's $\alpha=0.62$)					
4. The members in my team all communicated well.	63	4.41	0.59		
5. My team communicated in English.	63	3.49	0.72	0.68**	0.29*
13. The English ability of members in my team was similar.	63	3.62	0.81		
14. It was easy to express my opinions in the team.	63	4.11	0.79		
15. English ability was a problem for communication in my team.	60	3.80	0.95		
19. My team easily dealt with differences of opinion.	59	4.05	0.71		
Project (Cronbach's $\alpha=0.72$)					
17. I understood the reason this project was performed in teams.	60	4.08	0.79		
22. I was happy with the outcome my team produced.	60	4.28	0.64		
24. The collaborative learning task was structured logically and easy to follow.	60	3.97	0.64	0.32*	0.45**
26. I think it's unfair for the team to receive the same score for the project.	60	4.02	0.70		0.37**
Learning Experience (Cronbach's $\alpha=0.70$)					
2. I learn more when I work in teams than alone.	63	4.43	0.62		
6. Working in teams is a good way to learn.	63	4.51	0.54		
7. Working in teams is a good way to learn to communicate in English.	63	4.11	0.76	0.32*	
9. Working as part of a team will be important in my future.	60	4.50	0.75		0.27*
20. I felt like a valuable team member.	60	3.93	0.73	0.34*	
23. My team found it difficult to communicate outside of class to finish the project.	60	3.43	0.95		0.34*

Note. Only significant correlations are reported. * $p < 0.05$, ** $p < 0.01$. Scores for Items 10, 15, 23 and 26 were reverse coded for analysis. Correlations are Spearman's rho coefficients.

Stepwise regressions were employed to indicate potential variables for model selection. The variables indicated as having the highest associations with the DVs were Age, Item16, Item20 and Item24. Multivariate analysis of variance (MANOVA) examining the associations between DVs Percent and Score and IVs Age, Item16, Item20 and Item 24 provide the results: Age: Wilks's $\lambda = 0.781$, $F(2, 47) = 6.588$, $p = 0.003$, $\eta^2 = 0.219$; Item16: Wilks's $\lambda = 0.85$, $F(2, 52) = 4.577$, $p = 0.015$, $\eta^2 = 0.15$; Item20: Wilks's $\lambda = 0.808$, $F(2, 52) = 6.177$, $p = 0.004$, $\eta^2 = 0.192$; Item24: Wilks's $\lambda = 0.818$, $F(2, 46) = 9.921$, $p = 0.01$, $\eta^2 = 0.18$, indicating significant multivariate effects. Next, a series of one-way ANOVAs were applied, followed by post-hoc Tukey HSD tests. The univariate results are summarized in Tables 4 and 5.

The results of the ANOVA tests in Table 4 show us that Age, Item16 and Item20 provided significant univariate effects for the DV Percent. More specifically, the post-hoc tests show us that the percent of English spoken by students whose ages fell in groups 4 and 2 was significantly higher than those in group 1. A significant interaction was found for Age*Item20: Wilks's $\lambda = 0.527$, $F(6, 37) = 2.261$, $p = 0.017$, $\eta^2 = 0.274$. Other interactions lacked significance.

TABLE 4
Significant Univariate Effects for Percent

Independent Variables	Levels	Dependent Variable: Percent						Post-hoc
		df	Error df	F	M	95% CI		
						Upper	Lower	
Age	(1) 18 – 19	3	46	5.76**	43.05	33.38	52.72	4,2>1
	(2) 19 – 20				68.13	52.84	83.42	
	(3) 20 – 21				55.71	39.37	72.06	
	(4) > 21				71.33	60.17	82.5	
Item16	1	3	51	2.85*	30.0	-16.12	79.12	
	3				50.89	35.52	66.26	
	4				54.67	45.79	63.54	
	5				70.94	60.1	81.12	
Item20	2	3	51	5.36**	15.0	-15.72	45.72	5,4>3
	3				42.89	28.41	57.37	
	4				63.13	55.44	70.81	
	5				67.08	54.54	79.63	

* $p < 0.05$, ** $p < 0.01$; Post-hoc is Tukey HSD

ANOVA results for the DV Score in Table 5 show that the IV Age was a factor influencing student scores for the assignment, with those in the higher age group performing significantly better than those in the two lowest age groups. Item24 was also found to have a significant overall effect.

TABLE 5
Significant Univariate Effects for Score

Independent Variables	Levels	Dependent Variable: Score						Post-hoc
		df	Error df	F	M	95% CI		
						Upper	Lower	
Age	(1) 18 – 19	3	46	2.97*	79.4	77.31	81.49	4>2,1
	(2) 19 – 20				78.25	74.94	81.56	
	(3) 20 – 21				80	76.46	83.58	
	(4) > 21				83.4	80.98	85.82	
Item24	2	3	51	6.72**	73.0	64.71	81.29	5>2
	3				78.67	75.9	81.43	
	4				79.6	78.2	81.0	
	5				85.3	82.68	87.92	

* $p < 0.05$, ** $p < 0.01$; Post-hoc is Tukey HSD

Discussion and Implications

Target language use and performance on the assigned project were significantly correlated. Target language use was positively associated with the age of the students, as well as those who felt encouraged by their team peers and valued as team members. Successfully achieving a higher score on the assignment was related to age and having a sense of understanding of the required project.

Age appeared as a significant variable influencing both use of the target language and overall achievement regarding the project. The nature of the project-based assignment likely suited students with educational experiences more inclined to semi-structured learning environments as opposed to students who recently graduated from high school, where the focus of language learning is very structured and primarily directed at passing university entrance exams rather than communicative competence (Chen, Warden & Chang, 2005; Liu, 2005; Wu, 2011). Similarly, Devenci and Nunn (2016) state that “The transition from high school to university can be a formidable challenge for young people and can be detrimental to their academic success unless approached carefully” (p. 59). In addition, culture- and country-specific educational practices may come into play, such as those described in Cheng and Dörnyei (2007), in which teachers paid less attention to the promotion of concepts such as developing learner

autonomy, while preferring to concentrate on more traditional teacher-centered approaches to instruction.

This research leads to a number of implications for language instructors:

1. With senior students performing significantly better in PBL than those in the youngest age group, the importance of selecting groups with a mix of ages is worth consideration. As discussed in Leeming (2014), students generally prefer to form groups of their own accord; however, the results of this investigation may point to a role for instructors to play in ensuring a range of ages in team configuration.
2. Developing positive group dynamics is an essential element promoting team performance and use of the target language. There was a strong association between using the target language and perceptions of being encouraged by teammates (Item16) and feeling like a valued team member (Item20), suggesting social cohesion was a key factor among team members (Cohen, 1994; Slavin, 1996). To this end, it is suggested that instructors perform team building activities prior to the commencement of the project.
3. Providing clear and logical instructions for students to follow (Item24) was significantly correlated with achievement on the project. Clear instructions no doubt empower students to acquire the understanding and confidence required to undertake the preparation, research and analysis necessary for successful completion of the project, as they will be able to identify essential components and follow crucial processes. Explicitly setting goals has been advanced as one method of overcoming issues regarding the language instruction value of collaborative projects (Beckett & Slater, 2005). In addition, Savery (2006) advocates that instructors play a role in setting the limits of projects so that students understand the parameters within which they may be conducted.
4. Scaffolding may be supplied in the form of providing the skills and support required to research and analyze complex information and offering a framework for the expected components of an effective collaborative project and presentation (Beckett & Slater, 2005; Smith & Cook, 2012).

While this study sheds some light on target language use in PBL, it is subject to a number of limitations such as its relatively small sample and reliance on quantitative data analysis. Future research could consider overcoming these limitations to further illuminate the connections between target language use and achievement in PBL in Asian EFL contexts.

The Author

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References

- Aydin, Z., & Yildiz, S. (2014). Using wikis to promote collaborative EFL writing. *Language Learning and Technology*, 18(1), 160-180.
- Beckett, G. H., & Slater T. (2005). The project framework: A tool for language and content integration. *The English Language Teaching Journal*, 59(2), 108-116.
- Chen, J. F., Warden, C. A., & Chang, H. T. (2005). Motivators that do not motivate: The case of Chinese EFL learners and the influence of culture on motivation. *TESOL Quarterly*, 39(4), 609-633.
- Cheng, H. F., & Dörnyei, Z. (2007). The use of motivational strategies in language instruction: The case of EFL teaching in Taiwan. *Innovation in Language Learning and Teaching*, 1(1), 153-174.
- Chow, A., & Law, N. (2005, May). Measuring motivation in collaborative inquiry-based learning contexts. In *Proceedings of the 2005 conference on Computer support for collaborative learning: The next 10 years!* (pp. 68-75). International Society of the Learning Sciences.
- Clark, J., & Baker, T. (2006). Collaborative learning in diverse groups: A New Zealand experience. In *Proceedings of the 17th ISANA International Education Conference [CD ROM]: 5 – 8 December 2006, University of NSW, Sydney, Australia*. Sydney: Conference Organising Committee for the 17th ISANA International Education Conference.
- Cohen, E. G. (1994). Restructuring the classroom: Conditions for productive small groups. *Review of Educational Research*, 64(1), 1-35.
- Deveci, T., & Nunn, R. (2016). Development in freshman engineering students' emotional intelligence in project-based courses. *The Asian ESP Journal*, 12(2), 54-92.
- Falk, C. F., Heine, S. J., Yuki, M., & Takemura, K. (2009). Why do Westerners self-enhance more than East Asians? *European Journal of Personality*, 23(3), 183-203.
- Gibbes, M., & Carson, L. (2013). Project-based language learning: an activity theory analysis. *Innovation in Language Learning and Teaching*, 8(2), 171-189.
- Gokhale, A. A. (1995). Collaborative learning enhances critical thinking. *Journal of Technology Education*, 7(1), 22-30.
- Kessler, G. (2013). Collaborative language learning in co-constructed participatory culture. *CALICO Journal*, 30(3), 307-322.
- Kowal, M., & Swain, M. (1994). Using collaborative language production tasks to promote students' language awareness. *Language Awareness*, 3(2), 73-93.
- Leeming, P. (2014). Group formation and longevity in the foreign language classroom: Students' views. *The Journal of Asia TEFL*, 11(3), 105-132.
- Li, K. (2010). Project-based college English: an approach to teaching non-English majors. *Chinese Journal of Applied Linguistics*, 33(4), 99-112.
- Liu, G. Z. (2005). The trend and challenge for teaching EFL at Taiwanese universities. *RELC Journal*, 36(2), 211-221.
- Mascolo, M. F. (2009). Beyond student-centered and teacher-centered pedagogy: Teaching and learning as guided participation. *Pedagogy and the Human Sciences*, 1(1), 3-27.
- Mergendoller, J. R., & Thomas, J. W. (2000). Managing project based learning: Principles from the field. Retrieved from <http://bie.org/images/uploads/general/f6d0b4a5d9e37c0e0317acb7942d27b0.pdf>
- Moulton, M. R., & Holmes, V. L. (2000). An ESL capstone course: Integrating research tools, techniques, and technology. *TESOL Journal*, 9(2), 23-29.
- Prince, M. J., & Felder, R. M. (2006). Inductive teaching and learning methods: Definitions, comparisons, and research bases. *Journal of Engineering Education*, 95(2), 123-138.
- Savery, J. R. (2006). Overview of problem-based learning: Definitions and distinctions. *The Interdisciplinary Journal of Problem-based Learning*, 1(1), 9-20.
- Slavin, R. E. (1996). Research on cooperative learning and achievement: What we know, what we need to know. *Contemporary Educational Psychology*, 21(1), 43-69.
- Smith, M., & Cook, K. (2012). Attendance and achievement in problem-based learning: The value of

- scaffolding. *Interdisciplinary Journal of Problem-Based Learning*, 6(1), 129-152.
- Stahl, G., Koschmann, T., & Suthers, D. (2006). Computer-supported collaborative learning: an historical perspective. In R. K. Sawyer (Ed.), *Cambridge handbook of the learning sciences* (pp. 409–426). Cambridge: Cambridge University Press.
- Storch, N. (1999). Are two heads better than one? Pair work and grammatical accuracy. *System*, 27(3), 363-374.
- Storch, N. (2005). Collaborative writing: Product, process, and students' reflections. *Journal of Second Language Writing*, 14(3), 153-173.
- Swain, M., & Lapkin, S. (1998). Interaction and second language learning: Two adolescent French immersion students working together. *The Modern Language Journal*, 82(3), 320-337.
- Wu, K. H. (2011). Teaching and learning English at tertiary level: Revisiting communicative approach. *Theory and Practice in Language Studies*, 1(11), 1459-1470.