Digital Vocabulary Competition as Motivator for Learning in CFL Classrooms
(数字化词汇比赛作为外语汉语教室中的学习动力)

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Abstract: Existing literature indicates that there is an urgent need both for second language acquisition (SLA) theory informed research in game-based learning (Reinders, 2012) and for vocabulary instruction research with real students in real classrooms rather than in short-term experimental settings (Spada, 2005). Under the framework of motivational dynamics in language learning (Waninge, de Bot, & Dornyei, 2014) and designing a course as a multiplayer classroom (Sheldon, 2012), the researcher investigated an innovative pedagogy in a college level beginners Chinese course by using Quizlet[1], a web 2.0 flashcards website. The results demonstrate that vocabulary game competitions promote engaging vocabulary learning. The research proven pedagogy draws attention to strategies in tutorial CALL vocabulary instruction research and praxis for motivation and learning in an intact classroom. The findings shed light on the Directed Motivational Current (DMC) model by Dornyei, Muir and Ibrahim (2014) that stimulates second language learners to perform to full potential.

摘要：现有文献表明目前有两个领域急需研究：一是在二语习得理论指导下的游戏式学习研究(Reinders, 2012)；二是以真实教室真实学生为研究载体，而非在短期试验性环境中进行的词汇教学研究(Spada, 2005)。基于语言学习动机多样性的理论框架(Waninge, de Bot, & Dornyei, 2014) 和多人游戏式教室的课程设计理念(Sheldon, 2012)，本研究利用目前流行的电脑辅助语言学习网络工具 Quizlet 为教学媒体，探索大学初级汉语词汇教学法。教学研究结果表明词汇游戏比赛能促进学生自主学习词汇。本教学研究对使用电脑辅助语言学习工具的词汇教学策略和在正规教室中促进学习动机的教学实践有借鉴作用。其研究结果与学习动机控制理论（Directed Motivational Current, Dornyei, Muir, & Ibrahim, 2014）相符，旨在刺激二语学习者发挥最大的学习潜力。

[1] Quizlet (https://quizlet.com/) is an online flashcard platform that offers free study tools and apps for students and educators. The varieties of study modes and vocabulary games meet diverse needs and/or learning styles of students in class

Keywords: Web 2.0 tool, CALL, Chinese vocabulary instruction, language learning games, learning motivation

关键词: 网络 2.0 工具，电脑辅助语言学习，中文词汇教学，语言学习游戏, 学习动机

1. Introduction

New technologies have changed the way we teach foreign languages in the 21st century. With the accessibility of language learning technologies, opportunities for language learning outside of the classroom have become an increasingly integral part of instruction (Stauffer, 2014; Xu, 2015). Such integration is, nevertheless, the result of implementing computer assisted language learning (CALL) in language classrooms. A general definition of CALL is "any process in which a learner uses a computer and, as a result, improves his or her language" (Beatty, 2003, p.7) or what Egbert simply (2005) puts, "learners learning language in any context, with, through, and around computer technologies" (p.4). The growth of educational games has largely impacted the procedures of learning (Shin, Sutherland, Norris, & Soloway, 2012).

Researchers pointed out the urgent need both for second language acquisition (SLA) theory informed research in game-based learning (e.g., Reinders, 2012; Peterson, 2013) and for vocabulary instruction research in intact classrooms (Laufer, 1986). Vocabulary acquisition research was neglected in the SLA research literature before 1980s (Meara, 1980), then developed as child steps (Laufer, 1986), and revived in recent years in game-based vocabulary learning (e.g., deHaan, 2005, deHaan, Reed, & Kuwada, 2010; Zheng, Bischof, & Gilliland, 2015). Researchers like Yamamoto (2014) and Vandercruysse, Vandewaetere, Cornillie, and Clarebout (2013), however, have noted that limited qualitative research exists about learner perspectives on the use of foreign language learning games. Few studies have researched how CALL is practically and instructionally employed in Chinese as foreign language (CFL) instruction (Xie & Yao, 2008; Xu, 2015).

To better understand how games can promote vocabulary learning inside and outside the classroom, this article explores qualitatively how web-based competitions pedagogy in a college level beginners CFL course can (1) inform routine vocabulary instruction, and (2) motivate learners to learn vocabulary through gameplay. Through course reflection, learner feedback, vocabulary competitions, and tests. In the last, the author reports results of pedagogical explorations and concrete examples of utilizing Quizlet vocabulary games in CFL day-to-day vocabulary instruction.

2. Literature Review

2.1 Gamification: Promoting Competition and Motivation

Researchers have identified that gamification provides players (learners) with "the sense of engagement, immediate feedback, feeling of accomplishment, and success of striving against a challenge and overcoming it" (Kapp, 2012, p.xxii). Thus, the social dimension of competition-driven educational games motivates students to participate in learning activities, through peer competition (Chen, 2014). Recent research indicated that game competition, especially competitive situation in gamification, motivates students to learn and helps maintain student interest and becomes an important force in learning (Giota, 2010). Vandercruysse et al. (2013) insightfully pointed out that game competition provides an additional challenge that results in greater attention and excitement, or improved motivation to learn.

Although constructive competition can be an effective pedagogical means to motivate students to go beyond their own expected abilities, the scope offered by the learning environment and the opportunities teachers have to facilitate competition are purposefully arranged (Sheridan & Williams, 2011). While games have become more affordable and the above research reveals the motivational aspects of games, it has been suggested that current research should focus on how these approaches can be incorporated in SLA classroom instruction (Tobias, Fletcher, Dai & Wind, 2011). Researchers such as Vandercruysse et al. (2013) discovered that there is a major lack of research and evidence of effectiveness regarding the added value of game-based learning as well as regarding the students' learning outcomes and motivation. Even rarer is research regarding learner perspectives on the uses of foreign language learning games, particularly pedagogical evidence of how such games can influence instruction in a formal language program.

2.2 Vocabulary Language Gains with Digital Gaming

Vocabulary instruction has been a major objective of computer-based instruction since computer use expanded in education in the 1980s (Beatty, 2010; Ma & Kelly, 2006). The reason might be that it is challenging to teach all vocabulary through classroom instruction alone, considering the quantity of words students needed to learn and the limited instructional time available (Kamil & Taigague, 2011). With the emerging development of CALL, many technology- or game-incorporated vocabulary learning systems are designed to make vocabulary learning more interesting, more effective, and easier to remember (Chiu, 2013; Smith et al., 2013; Yip & Kwan 2006). Researchers found that learners gain significantly more vocabulary (Sundqvist & Wikstrom, 2015) or retain it longer/better (Neville, Shelton, McInnis, 2009) with technology enhanced learning or games in formal settings (Cobb & Horst, 2011; Fehr et al., 2012; Sundqvist & Wilstrom, 2015), incidental environment (Thornes, Fischer, & Lu, 2012), or through commercial computer games (Cobb & Horst, 2011).

Researchers also reported that multimodal exposures of vocabulary play an important role in facilitating vocabulary learning at lower levels (Bisson, van Hueven,

Conklin, & Tunney, 2013). Online vocabulary games not only strengthen students' intention in autonomous learning (Yip & Kwan, 2006) but also enhance learner's perceived perception, concentration, immersion, and knowledge improvement (Syahrir & Yusri, 2012). The gamified features in vocabulary learning that are self-paced, self-directed, and self-controlled keep students aware of their proficiency, making them agents of their own progress, and motivating them to engage in sustained play (Abrams & Walsh, 2014).

While technology- and game- enhanced vocabulary learning are effective to a certain extent, researchers (Ranalli, 2008; Rankin, Gold, & Gooch, 2006; Reinders & Wattana, 2012) identified that game plays are not effective for lower level language learners and inexperience gamers, when considering learner profiles. Competition may have negative impact on novice learners' performance and self-efficacy, and reduced performance (Vandercruysse et al., 2013).

2.3 Lack of Authentic Second Language Classroom Research

Many second language (L2) classroom researchers prefer large-scale, cognitive-interactionist, (quasi)experimental research using classroom observations, questionnaires/interviews, and language measures (Nunan, 1991; Spada, 2005). Spada defined this trend in L2 research as laboratory SLA research. Such instructed SLA research collect data from outside of real classrooms in laboratory, simulated, and naturalistic settings. In genuine classroom-based research, an intact classroom setting suggests that "striving for generalizability…may not be a reasonable or appropriate goal for L2 classroom research" (Spada, 2005, p.334). Laboratory methodologies, according to Spada, are difficult, if not impossible, for teachers to duplicate in real classroom settings. Emphasis on lab settings and generalizability precludes teachers as researchers.

Unfortunately, laboratory SLA research is particularly evident in game-based language learning research. For instance, Zheng, Bischof, and Gilliland (2015) designed a two-hour vocabulary learning session during a quest-play game mediated in English between a Japanese student and a native speaker of English to investigate the affordance and effect of language games. Neville, Shelton, and McInnis (2009) conducted a three-day study for learner vocabulary retention, transfer, and attitudes toward the text-based game, reading a German short story and vocabulary homework based on the story. deHaan, Reed, and Kuwada (2010) utilized a music video game to study the effectiveness of interactivity on second language vocabulary recall. Aghlara and Tamjid (2011) conducted a longer laboratory SLA research in a 45-day experimental study among primary school learners with or without a digital game. Although all this research indicated positive vocabulary gains, game-based, exploratory vocabulary learning research supports game-design, not classroom instruction. It is hard for teachers to adopt or to implement it in a real language curriculum that supports their daily instructions. As such, "far more of classroom-based, as opposed to classroom-oriented studies" (Nunan, 1991, p.130) are needed in game-based L2 learning.

On reviewing instructed SLA research with technologies, Hubbard and Bradin Siskin (2004) argued that teachers should not neglect the benefits of tutorial CALL in L2 classrooms. According to them, the tutor role and/or tool role of tutorial CALL is "the implementation of computer programs…that include an identifiable teaching presence specifically for improving some aspect of language proficiency" (p.457). Instead of dismissing the tutorial CALL, Hubbard and Bradin Siskin (2002; 2004) called for bringing the marginalized tutorial CALL back to the mainstream of language education. Another important point they made is that, researchers and practitioners should change the dichotomous views of tutor/tool role of CALL and move from evaluation of tutorial CALL to teaching presence that includes evaluation along with other teacher roles in assessments. Researchers or practitioners should ensure that "CALL is an integral rather than separate component of the total program of instruction" (Robinson, 1989, p.132). Instead of describing the affordance of games and motivating functions, more research should be conducted to demonstrate what the games are used to achieve instructional goals (Tobias, Fletcher, Dai & Wind, 2011).

2.4 Promoting CALL in Vocabulary Instruction

Learning vocabulary is a task of the upmost importance for all foreign language learners. The National Reading Panel (2000) recognized the importance and effectiveness of using computers in vocabulary instruction and suggested examining the ability of computer technology to deliver vocabulary instruction.

The above reviewed research indicates a dearth in vocabulary instruction research in CALL. In this current study, there are several considerations to exploring the pedagogical gains in CFL vocabulary instruction with tutorial CALL, namely, Quizlet.

(1) Vocabulary learning is a necessary component of language acquisition yet is the least studied area in the SLA research (Laufer, 1986). If we want to promote learner-centered L2 teaching and learning, "… vocabulary instruction and consequent research into vocabulary learning are bound to gain importance" (Laufer, 1986, p.73).

(2) Vocabulary research literature notably lacks the qualitative understandings of what learners think when learning vocabulary (Yamamoto, 2014). […] "learner perceptions of games have hardly been addressed and remain empirically underexamined" in game-based learning (Vandercruysse et al., 2013, p.930). Yamamoto's (2014) research on learner perceptions proved that explicit, systematic routine of monitoring and reviewing vocabulary lists benefit both beginners and advanced language learners. Engaging users in games for vocabulary review and competition through CALL practice can promote that type of explicit yet engaging learning.

(3) Research about gaming has been marginally addressed in the SLA literature (Peterson, 2013). There is urgent need for SLA theory informed research in game-based language learning (Reinders, 2012). While CALL is appealing to practitioners in the SLA field (Hubbard & Bradid Siskin, 2004) and has pedagogical benefits, there is a lack of empirical research to support the gaming experience or "gains on standard proficiency measures of L2 development" (Cornillie, Thorne, & Desmet, 2012). Unfortunately, much

of the data from game-based research is collected outside of the classroom. Far more data are needed from intact classrooms (Spada, 2005) or classroom-based studies, instead of classroom-oriented studies (Nunan, 1991). Moreover, L2 classroom researchers should strive for helping teachers find connections and research findings that coincide with their day-to-day instruction (Spada, 2005).

3. Challenges of Teaching Chinese Language Vocabulary

Vocabulary instruction has posed a big challenge for Chinese instructors because CFL vocabulary instruction involves three aspects of learning: the shape (structure & stroke orders) of the characters, the sound (initial, final, and tone), and the meaning (Shen, 2004). Figure1[2] demonstrates the many facets of vocabulary (Chu, 2005; Xu & Padilla, 2013) a Chinese language learner needs to navigate when learning a new word:

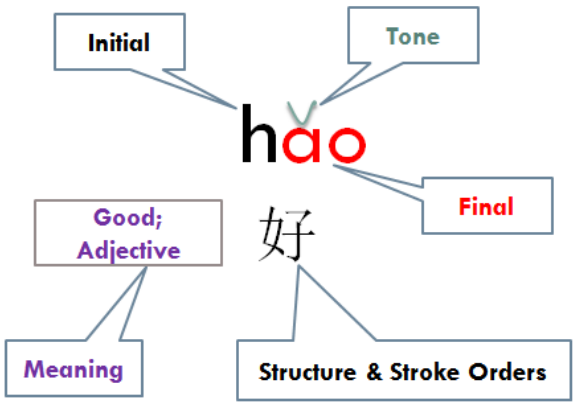

Figure 1: Elements of Learning a New Chinese Word

In addition, the particularities (e.g., the tone and the drawing of the stroke orders) in the new word are most CFL learners have never encountered in their native language systems. The multi-facetted requirements in Chinese vocabulary learning have delayed many students' mastery of reading and writing in Chinese language. It is therefore an ongoing challenge for all CFL instructors to find effective methods for vocabulary instruction (Xu, Chang, Zhang, & Perfetti, 2013; Xu & Padilla, 2013).

In the 21st century, even more challenging to CFL instructors is the profile of Chinese learners who are digital natives (Prensky, 2001). These learners view vocabulary learning as boring (Yip & Kwan, 2006). They expect their instructors to use technology for more engaging and meaningful learning activities (Arnold & Ducate, 2011; Tapscott, 1998). Figure 2 visualizes the challenges of teaching Chinese vocabulary in the 21st century digital age along with urgent needs every CFL teacher should consider:

[2] Figure 1 is created based on the concepts of Chu (2005), Shen (2004), and Xu & Padilla (2013).

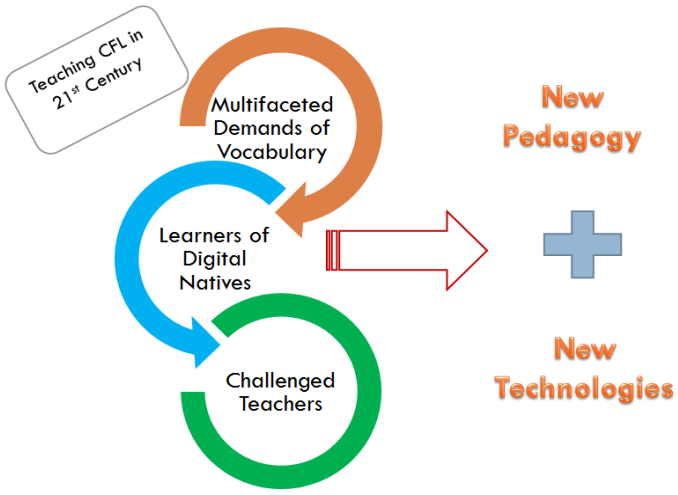

Figure 2: Challenges of Teaching Chinese Vocabulary Instruction in 21st the Century

The multiple facets of Chinese language learning, namely, complexity of the language system, new generation of learners, and accessibilities of new technologies, have imposed challenges to CFL teachers. Researchers and practitioners agree that to teach the 21st century CFL learners, teachers need to find an efficient method to use computer/new technology to assist, promote, and/or extend learning beyond classrooms (Xu, 2015). The tutorial CALL features of Quizlet and the varieties of Quizlet games encouraged this researcher to explore the pedagogical effects of competition and to understand her student's perspectives of using CALL games in CFL vocabulary instruction. The following sections first discuss the theories that shape the pedagogical design, then the methodology of investigation and the results. The final section discusses the benefits of utilizing digital vocabulary game as a motivator in vocabulary instruction and the importance of continued investigations into vocabulary learning in instructed SLA and in the tutorial CALL.

4. Theoretical Framework

The theory that guides this vocabulary instruction research with CALL is the motivational dynamics in language learning (Waninge, de Bot, & Dornyei, 2014). Under this framework, motivation is no longer seen as a stable variable in individual language learners, but continuously dynamic and changeable in the process of language development. Within a certain context, language learners may demonstrate an intense motivational drive to pursue a language learning task (e.g., learning vocabulary). Dornyei, Muir, and Ibrahim (2014) define such motivational drives as Directed Motivational Current (DMC) "which depicts unique periods of intensive motivational involvement both in pursuit of and fueled by a highly valued goal/vision" (p.9).

According to DMC, L2 motivation in the 21st century is a factor that changes over time at both the individual and the environmental level. The dynamic, emerging changes make it possible for the teacher researcher to direct the motivational current in instruction (Waninge, de Bot, & Dornyei, 2014). The heightened motivational state of individuals or

groups involved in a DMC is maintained through the deployment of a salient facilitative structure. When applied in L2 context, DMC stimulates learners to perform at the full potential in both short-term and long-term learning (Doiz, Lasagabaster, & Sierra, 2014; Dornyei, Muir, & Ibrahim, 2014):

> [I]f the correct conditions can be engineered to allow motivational pathways to be created, a motivational jet stream will emerge that is capable of transporting individuals forward, even in situations where any hope of progress had been fading. Once a DMC is in place, through its self-propelling nature learners become caught up in this powerful flow of motivation and are played forwards towards to achieve their goals. (Dornyei, Muir, & Ibrahim, 2014, p.11)

An approach that also influenced this CALL study is the multiplayer game as classroom (Sheldon, 2012). Sheldon designed his course as a multiplayer game. Students play games in the real time, real world of the classroom, and the teacher as game master charters the game. The game competition (the quest) is wide open. The students (as players) have any number of decisions to make regarding time commitment, level of playing, and quests. In the multiplayer classroom, all students start from level one (letter grade F) in terms of learning. Through questing and crafting (i.e. the required learning tasks), students climb up to level twelve to get an A. The scaled experience points of the game are in accordance with letter grade scales throughout the semester. To win, students must acquire knowledge and demonstrate their learning in their final level of game play. Sheldon (2012) claims that the multiplayer classroom course design enhances student motivation, student attitude, and student performance. While learning as questers or game players, students engage with several times more learning content than they do in traditional classrooms. The competitive motivation and determination students demonstrated in the multiplayer classroom are ideal for vocabulary learning entailed in the Quizlet flashcard games.

5. Methodology

5.1 Research Questions

When designing an innovative vocabulary instruction qualitative research utilizing the Quizlet flashcard website, the research questions (RQ) are as follows: RQ1. To what extent did students like the Quizlet game competition and how did they perform in the vocabulary test? RQ2. What are students' perspectives regarding digital game competition in learning Chinese vocabulary?

The central idea for this innovation is to (1) turn routine vocabulary instruction into multiplayer game competitions, and (2) empower Chinese language learners who are digital natives to be constructivists in vocabulary learning. The focus of vocabulary instruction was explicit textbook vocabulary list learning by using the Quizlet flashcard

website. This investigative pedagogy spanned three semesters (from spring 2014 – spring 2015) in the same course Chinese I, consisting of different cohort of students.

5.2 Background of Study

Forty-six (N=46) college students who took Chinese I in three different semesters (N=13, spring'14; N=19, fall'14; N=14 spring'15) at a northeast private technological institute participated in this study. The purpose was to explore how tutorial CALL tools (namely, Quizlet games) can be utilized to promote day-to-day vocabulary instruction and participant L2 vocabulary acquisition. There were no repeating students in any of the three semesters. Most of the students did not have prior knowledge or formal instruction of the Chinese language. Each student was required to purchase a laptop upon admission to the institute. The instructional pacing was one new lesson per week. Students were expected to learn 15-24 new words in each lesson and recognize Pinyin, Hanzi, and English meanings of each word.

5.3 Data Collection

The data for this qualitative classroom research were collected from the same course, Chinese 1, taught in the three different semesters. Vocabulary instruction was driven by the facilitations of the teacher through the following pedagogical means in an integrated, cohesive flow over the week: (1) guided learning via mini lectures identical to all traditional vocabulary instruction for word meaning, pronunciation, and usage; (2) self-paced, self-regulated learning through Quizlet website before and after each class; and (3) competing with oneself and with other peers through the Quizlet vocabulary games asynchronously and in real class time. Assessments were dictations and Quizlet vocabulary game competitions when each lesson is complete. Additionally, four Likert scale questions and three open-ended questions were included at the end of each semester course survey to gauge what students thought about learning vocabulary digitally through CALL. The survey questions were:

1. The Quizlet website is useful for Chinese language vocabulary learning (1=strongly disagree; 5=strong agree).
2. I like Quizlet game competition (1=strongly disagree; 5=strongly agree).
3. I neither like nor dislike Quizlet game competition (1=strongly disagree; 5=strongly agree).
4. I do not like Quizlet game competition (1=strongly disagree; 5=strongly agree).
5. What did you gain from Quizlet self-paced study and class competitions?
6. What were you aware of when competing with yourself and with others?
7. What were your motivations to break the records of yourself and others?

5.4 Data Analysis

5.4.1 CALL/Quizlet Competitions

The Quizlet website has embedded four study modes: "Flashcards", "Learn", "Speller", and "Test" and two vocabulary game plays: "Scatter" and "Space Race (now Gravity)"[3]. The Flashcards allow the teacher to input bilingual glosses and Pinyin into the vocabulary list of each chapter. Each mode of study and/or game play can configure new words for students to study the sound, shape, or meaning alone or combinations of any of the three. The varieties of vocabulary learning features allow language teachers to direct vocabulary learning by their instructional goals. Mini vocabulary learning lectures, Quizlet vocabulary competition, and vocabulary dictations were cohesively paced out in weekly pedagogical practices throughout the semester. The scores on Quizlet game competition and regular dictation were counted towards final grades. The scoreboards of the Quizlet games enable students to view his/her own progress as well as the names of peers who have higher or lower scores than the student player. Figure 3 and Figure 4 demonstrate screenshots of students' Quizlet page and how the game competition mechanisms motivate students to quest for higher vocabulary test achievements.

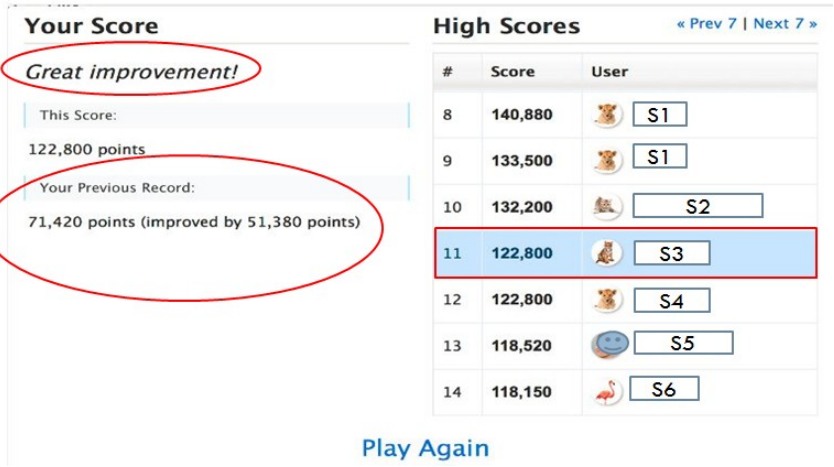

Figure 3: Self-Competition Scoreboard

Student 3 ("S3") is the owner of this scoreboard (Figure3). From this, he/she can see individual vocabulary play records as well as other students who have higher or lower scores in this vocabulary set.

[3] There are some changes for the title of the learning modes since 2016. For details and/or functions of each type of learning modes or game plays in Quizlet, visit this website https://quizlet.com/help/what-is-quizlet

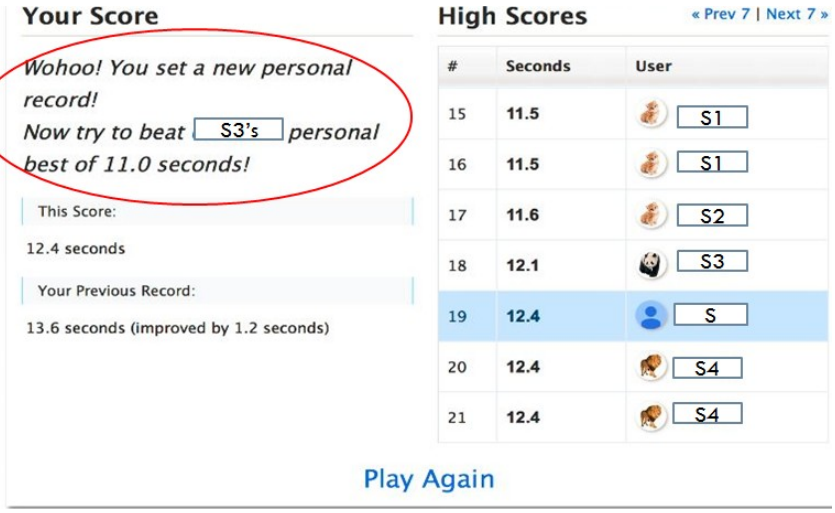

Figure 4: Multiplayer Group Competition Scoreboard

"S" is the owner of this scoreboard (Figure 4). "S" is encouraged by Quizlet instant messages to compete with one's personal record and is able to see other peers' best record.

In addition to being able to see one's own records and classmate competitors in his/her own Quizlet account, the students are informed of the top 10 players of the vocabulary competition on the Quizlet scoreboards (Figreu5):

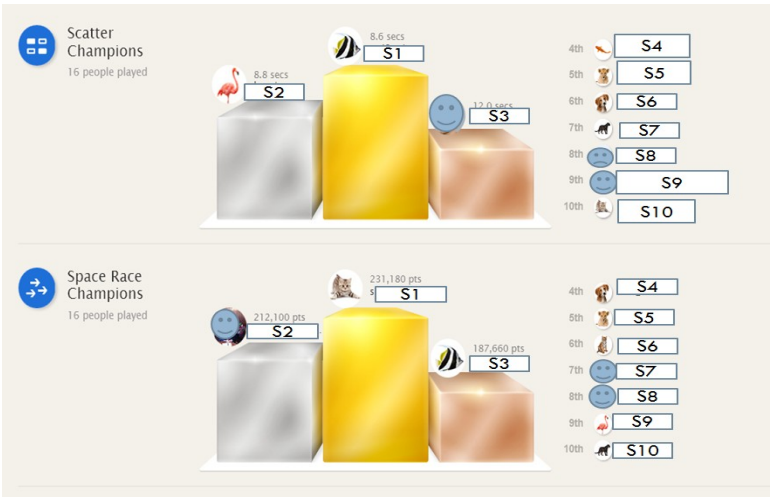

Figure 5: Quizlet Vocabulary Game Competition Rankings

Other than the competition results displayed on the Quizlet website, to give students a better sense of where each individual stands in the whole class regarding vocabulary learning, graded competitions administrated by the researcher were periodically conducted during class time and competition results were posted to the class course site (Figure 6):

Time Used: Seconds	Points Earned	
11.1	10	
11.4	10	
11.8	10	
11.8	10	
11.8	10	Mode: Scatter
11.8	10	Shortest Time: 11.1
12.6	10	Longest Time: 19.2
13.3	10	Average Time: 13.72
14.3	9	
14.6	9	
14.8	9	
14.9	9	
15.1	8	
17.3	8	
19.2	7	

Figure 6: Graded Game Competition

When doing real time graded vocabulary competitions, students were given a designated period of time to play with the required mode of Quizlet game. Based on instructional needs, the researcher sometimes asked the students to test on the vocabulary lists for individual lessons or a combined list for several lessons.

5.4.2 Survey Responses

This section reports the pedagogical results using Quizlet games for deliberate, explicit vocabulary instruction. Student perspectives toward the utilization of Quizlet vocabulary games from the three semesters about the same course, Chinese 1, are presented in the order of the research questions.

RQ1: To what extent did students like the Quizlet game competition and how did they perform in the vocabulary test?

The survey questions 1-4 answered research question one. Here are the percentages of students who replied to each of the four questions:

Table 1: Usefulness of Quizlet and Attitudes Towards Vocabulary Game Competitions

	Usefulness (%)	Quizlet Game Competition		
		Like (%)	Neutral (%)	Do not Like (%)
Spring 2014	71.4	44.7	6.2	49.1
Fall 2014	93.8	68.8		31.2
Spring 2015	88.9	77.8	10.0	12.2

The aforementioned multi-dimensional explicit vocabulary learning cycles of each lesson were cohesively repeated as weekly routines throughout the semester. While it is beyond this article's scope to discuss the engagement of students participating in classroom activities as a result of the prepared vocabulary knowledge, the end of semester, paper-pencil vocabulary test for the required vocabulary list (total N=240 words) indicated high percentage of correct vocabulary spelling and Hanzi recognition (Table 2):

Table 2: End of Semester Vocabulary Test for All the Required Words

	Percentage of Students Scoring 90 and Higher (out of 100pts)	Highest Score (out of 100pts)	Lowest Score (out of 100 pts)
Spring 2014	90% of the students	100	76
Fall 2014	98% of the students	100	82
Spring 2015	100% of the students	100	92

Table 1 indicates that the majority of the students thought the Tutorial CALL tool Quizlet is useful in learning Chinese vocabulary and more than half of the students (in fall 2014 and spring 2015) liked the Quizlet vocabulary games and competitions for Chinese vocabulary learning. Table 2 indicates the percentage of students who scored above 90% of the required vocabulary list of the semester is surprisingly high. Even though near half of the students in the first semester (spring 2014) did not like Quizlet competitions, 90% of the students scored 90 or higher out of 100 points and the lowest score was 76 out of 100. In the third semester (spring 2015), all students scored 90% or higher in the required vocabulary list test and the lowest score was 92 out of 100. The different percentage of test scores might result from different facilitations of game competition, i.e. how the instructor directed the motivational current (Waninge, de Bot, & Dornyei, 2014) in vocabulary learning, a suggested topic for future research.

RQ2. What are students' perspectives regarding digital game competition in learning Chinese vocabulary?

RQ2 is answered by the three open-ended questions in the survey: (1) What did you gain from Quizlet self-paced study and class competition? (2) What were you aware of when competing with yourself and with others? (3) What were your motivation to break the records of yourself and others?

By following Patten's (2002) protocols of coding qualitative data, four themes emerged from the open-ended questions: (1) benefits of Quizlet, (2) attitudes towards competition, and (3) motivation to compete. The notable benefits students mentioned in the survey include the accessibility of new vocabulary at their own pace. One student said, "*I could effectively study anywhere that I could hold my laptop in front of me*". Another student found Quizlet flashcards a good means to pass time: "*I mostly played the matching game whenever I was bored*". Most students used the Quizlet flashcards and/or

other modes of learning to study, review, or prepare for tests and quizzes. It was impressive for the frequency with which students mentioned that they used Quizlet games to study regularly for weekly dictations and to break their vocabulary learning records. Another benefit of Quizlet that students mentioned was typing and Hanzi recognition. A student said he typed faster in general after using Quizlet to study new vocabulary and compete. Here are some quotes highlighting the benefits of Quizlet for Hanzi recognition:

- *I used it to help me learn how to read characters.*
- *[I use it] to reinforce my memory of the vocabulary*
- *Helped me learn vocabulary faster and it was fun. It specifically helped me recognize hanzi better.*
- *The flashcards were very helpful in learning hanzi and matching them with pinyin.*
- *I did better on the tests because of Quizlet.*
- *The space race and scatter games help me to recognize and read characters very quickly even if I cannot write them*
- *Even when I cannot write words, at this point I can recognize pretty much everything without even thinking about it*
- *Quizlet helped me recognize characters better when I write Hanzi on the computer for any assignment where I have to write online*.

As mentioned earlier, the pedagogical design for this novel mode of vocabulary instruction is the concept of the multiplayer classroom. Apart from self-competition and self-paced vocabulary learning, the researcher purposefully required students to compete live as a whole class by using one of the Quizlet games and posted results, based on the pedagogical goals of each week (i.e. new or review lesson). These competitions were graded based on the aforementioned scales -- one variation of experience points in Sheldon's (2012) multiplayer classroom course design. Not surprisingly, the answers to the survey indicated two types of attitudes regarding competition with Quizlet vocabulary games:

Table 3: Attitudes Towards Quizlet Competition

Competition Is Good	Competition Is Not Good or Somewhat Good
• I agreed with its 'gamificiation' of the learning process • We should have more quizlet competitions. I think it would really benefit the class if you forced them to use it more often by having the graded competition • Competition between students was a very fun way to learn. • I think quizlet should be a weekly homework (the competition) • Quizlet is a great vocabulary learning tool. I think it is helpful to	• It was hard to navigate in some cases but I really like the overall concept. Some of the games were really buggy and it was irritating needing to be somewhere with a mouse to do some of the challenges. • Remove the competition aspect, as it can be very stressful for students and isn't fair when some students have prior knowledge • I didn't see much use in the competitions. the flash cards were

know how one compares to the rest of the class to see if they are lagging and need to catch up or if they are learning at a good pace. • I was able to know how I was doing relative to the rest of the class and whether I had to study more or not. • It made me think on my feet a lot more • The time limit was useful for making me work harder • From self study and competition, I learned about the areas that I'm weak in. It helped me a lot since I focused on those weak areas afterwards. When competing with others, I was aware that I needed to study more.	good though • The time limit was useful for making me work harder, but that coupled with competition for a grade made it somewhat stressful. • I didn't play many of the games, I just liked having the whole list on flash cards on an easily accessible website. • When it came to competitions, I tried to beat my own records more than my classmates because I felt like those were more realist • I did not like competitions, but individual learning was useful. • Competing with others did not make me aware of anything.

The third theme found from the answers to the survey questions was motivation to compete, either to compete with oneself or with peers. In this category, there are two types of motivations in display: intrinsic and extrinsic. The intrinsic motivation for doing well in competition was to challenge oneself or beat other peers. While some students enjoyed self-improvement more than group competition, some loved the multiplayer group competitions: "*I used quizlet [sic] every week partly to study but mostly to crush my opponents' - I mean... classmates' - records*. " and "*YES. I used quizlet [sic] to study so much. And I was very determined to break records in competition*".

As for extrinsic motivation to learn with Quizlet games and to have good scores in competition, most students explicitly expressed that their motivation to do well in Quizlet vocabulary competition was to get good grades. Some students were motivated both intrinsically and extrinsically. For example, one student said, "*My motivation to break records was not only to challenge myself on how well and fast I could match up the vocabulary but to also get a good grade*."

It can be seen from the above dada analysis that the competitive nature of the Quizlet vocabulary games has motivated students to put more time and effort to beat themselves or their peers. While almost every student thought the Quizlet flashcards and games were useful for their language learning due to personalities and preference of learning styles, not all students welcomed the competition aspect of vocabulary games as shown in Table 3.

It is worth noting, however, that even though some students did not like the concept of competition, the outcomes of vocabulary learning were still impressive, as seen from the high percentage of high scores (90 or higher out of 100 points) in the end of semester vocabulary test for all required words in Table 2. The following student's

reflection succinctly articulated his perspectives towards the Quizlet vocabulary learning games and competition:

> *I use often and I would spend a good 1-2 hours trying to improve my scatter score before I submitted it. Quizlet was helpful in reviewing vocabulary words in index card format without having to make the index cards. I used quizlet [sic] to review for the hw [sic], dictation and competitions. My motivation to break records was not only challenge myself on how well and fast I could match up the vocabulary but to also get a good grade*.

5.5 Discussions

The results presented in the last section indicate that the tutorial CALL Quizlet flashcards resulted in high performance scores during explicit vocabulary instruction in semester long foreign language course where required vocabulary list is set forth to follow the instructional pace of the textbook. They shed light on the research discussed in Section 2.2 in that, while complicated games are not effective for lower level language learners and novice gamers, mini-games embedded in tutorial CALL web 2.0 tools such as the ones used in current study are ideal for day-to-day language learning operation.

The multi-dimensional modes of learning embedded in the Quizlet games enable both students and teachers to learn/teach new vocabulary's English meaning, pronunciation, Hanzi recognition, and typing skills for the goals of day-to-day instruction. The different modes of learning/playing with Quizlet games such as flashcards, learn, speller, test, scatter, and space race assist students' learning vocabulary receptively and productively. It needs to be pointed out that competition can only be effective if there is room for students to improve their performance (Vandercruysse et al., 2013). Improvement is also a highly valued goal for learners to pursue and be fueled for intensive motivational involvement. Depending on which of the dimensions students needed to practice, the researcher of this study created specific competitive situations (i.e., the different Quizlet game competitions presented in Section 5.4.1). The vocabulary test scores verified Yamamoto's claim (2014) that a systematic routine of learning and reviewing vocabulary and structured approach of vocabulary instruction using Quizlet games are effective in vocabulary acquisition.

The positive perspectives of students regarding learning and game competition of Quizlet games have demystified some of what Hubbard and Bradin Siskin (2002) identified. Tutorial CALL such as the Quizlet vocabulary flashcards is no longer a passive behaviorist tool for passive learning. Students found it fun and engaging when competing with themselves and with peers. The game competitions empowered students to control their own learning and to construct the learning frequency and intensity of their own pace. If they want to win or score high, they must be active and productive in the vocabulary competition.

Machines cannot replace the role of teachers, however. Teachers should not be dismissed from game-based vocabulary learning in intact classrooms. The students' perspectives on learning Chinese vocabulary with Quizlet games in the current study reflect all six dimensions of "constructive competition", namely, "being neither winners nor losers, social comparison of competences, constructive motivation, reciprocal guidance, to win, and stretching beyond one's own expected potential" (Sheridan & Williams, 2011, p.152). Teachers can utilize constructive competitions to focus on the process of or the results of competition for pedagogical purposes. It is the teacher's responsibility to identify when to use what mode of learning to promote higher degree of student motivations in learning through tutorial CALL (i.e. digital vocabulary games in this case). It is important for teachers to design a salient facilitative structure (e.g., self-paced competition vs. real-time, graded competition) and competition grading scales in order to stimulate students to perform at the full potential in both individual and group level.

The various game competitions used in the current study comply with DMC that L2 motivation is dynamic in the 21st century language classroom. It is possible for teachers to take advantage of digital vocabulary games to direct the dynamic motivational currents in CFL classroom. The graded Quizlet game competition, as pointed out important by a student in the study, creates "a motivational jet stream" (Dornyei, Muir, & Ibrahim, 2014, p.11) that transforms individual student forwards towards higher goals. The DMC model stimulates learners to perform at the full potential in both short-term (e.g. weekly) and long-term learning (e.g., semester long). Student feedback indicated that constructive competitions of Quizlet games in this study motivate students to learn and to do better beyond their expectations.

5.6 Limitations of the Current Study

The current study shed light on the positive effect of tutorial CALL tools (e.g., Quizlet) in CFL vocabulary learning. However, it is inevitable to have limitations. The first is, as with all qualitative research, the research findings may not be generalizable to other settings, although there are informative for researchers and practitioners regarding procedures of utilizing game competition as motivator in foreign language classrooms. The second limitation is that the data were collected through natural classrooms whose participants were default by course registrations. It was beyond the researcher's control to balance learner background and learning styles in each of the three classes over time. A set of longitudinal data might have more accurate student achievement test scores and perspectives of game competitions in vocabulary learning. The third limitation is the lack of pre- and post- test for the motivation of students. Future studies can design a pre- and post- test to better understand the role of digital game competition in L2 vocabulary learning motivation as well as individual motivation change throughout the semester. The last but not least limitation of the current study is the narrative nature of data collection in instructed L2 classrooms. To enrich data analysis and triangulate data types, future studies could keep an instructional journal to record teacher observations or conduct follow-up student interviews for more in-depth understandings on motivation change or student perspectives of constructive competitions in vocabulary learning.

6. Conclusion

As discussed in Section 2, there is a dearth in qualitative SLA research on game-based vocabulary learning with real students in intact classrooms. This research provides pedagogical evidence and reports how the researcher utilized the Quizlet vocabulary game competition as motivator to achieve day-to-day instructional goals in a technical school's CFL classroom. The research findings indicate that the tool function of tutorial CALL web 2.0 tools (e.g., Quizlet) is valuable and easy to adopt into daily language instruction. From a pedagogical viewpoint, tutorial CALL web 2.0 tools are still appealing for classroom practitioners for its user-friendly quality and for its systemized operation in daily instructions. More research in this area will help connect theory and practice and will demonstrate *which games* should be used in *what manner* to achieve instructional goals.

The researcher intends to draw attention to strategies in tutorial CALL vocabulary instruction research and praxis for motivation and learning. Although games are designed to maintain student interests through fun activities and competitions, we cannot, however, ignore the important role of teachers. In the dynamics of foreign language classrooms, teachers who are familiar with the different functions of web 2.0 tools are decisive in directing the motivational current when guiding students to be more self-determined in terms of second language vocabulary acquisition.

Although it is not intended to generalize the pedagogical results and approach of the current study, students' Chinese vocabulary learning and satisfaction in using vocabulary game competitions indicate that the use of digital games in CFL vocabulary instruction is "the correct condition" that "allows motivational pathways to be created" (Dornyei, Muir, & Ibrahim, 2014, p.11). The fact that students wanted to spend time improving competition records at their own pace is actually a motivator to autonomous learning.

Based on this classroom research, the researcher believes that turning vocabulary instruction into a multiplayer game classroom has several advantages. They are (a) having greater learner autonomy; (b) facilitating vocabulary learning at student's own time and own pace; (c) providing student-centered, age appropriate vocabulary learning; (d) empowering students to have more responsibility for vocabulary learning, and (e) achieving better vocabulary attainment by the end of the semester.

While there are benefits of vocabulary learning through games (gamification), there needs to be continued investigations with real language curricula and more qualitative research because "instructed SLA research carried out in real classrooms with real learners and teachers has a greater potential to inform classroom practice than research carried out in a laboratory" (Spada, 2005, p.330). If we deemphasize the behaviorist concept of generating research findings through (quasi)experimental, quantitative research (Spada, 2005), qualitative studies such as this provide practitioners with evidence-based techniques for utilizing digital games (e.g., Quizlet) to promote autonomous vocabulary learning.

Acknowledgements: I would like to express my most gratitude to Dr. Donna Bain Butler and Dr. Lisa Winstead. Their constructive feedback and suggestions are instrumental in revising the early versions of this paper. All errors that remain in the paper are my own.

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