〔共同研究：CALL と多読プログラムにおける英語能力の向上の評価〕

EFL Students' Perceptions on the Use of Online Fantasy Sports

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ABSTRACT

This article presents survey data from an English for Specific Purposes course using an online fantasy sports league as the main component. The goals of the study were to determine students' perceptions of (a) how well fantasy sports facilitated communication, (b) the overall experience of playing fantasy sports, and (c) how the use of CALL benefited playing fantasy sports. Upon completion of the course, students answered a 26 item, four-point Likert survey which reflected the goals of the study. Each response category was assigned a numerical value which allowed for quantified results to be obtained showing to what degree the students agreed with each item. Responses showed that students agreed most to items which stated that elements of CALL were beneficial to playing fantasy sports. Students also agreed to a considerable extent that fantasy sports helped to promote interactive communication. There was, however, moderate to strong disagreement among students regarding the usefulness of fantasy sports and overall enjoyment of the game. It was concluded that while an online fantasy sports league does contain elements which can benefit language learning, issues of complexity and relevance to general language use need to be addressed.

INTRODUCTION

Fantasy games are those which take real-world activities and incorporate a set of rules which help to conceptualize actual events (Shipman, 2009). These games allow people to experience activities without the risks that normally accompany them. Popular variations include playing the stock market or running a business. Fantasy sports, however, are perhaps the most prominent. Fantasy sports formally began in the early 1960s with the creation of the Greater Oakland Professional Pigskin Prognosticators League, when eight businessmen devised a way to simulate what it would be like to own and manage a professional American football team (Saraceno, 2006). The game quickly found an audience and has since expanded into nearly every professional sport

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played today. As of 2015, an estimated 56.8 million people participated in some type of fantasy sport (Fantasy Sports Trade Association, 2015).

Teachers have long recognized games as an important teaching tool for L2 learning. Games help to alleviate the difficult process of language learning and provide experience in meaningful communication (Wright, Betteridge, & Buckby, 2006). Studies show that games can have significant effects on students both in the cognitive and affective domains (Nemerow, 1996; Hake, 1998; Kelly & Green, 1998) and promote interaction among participants (Schwartzman, 1997). Developments in technology have opened new doors for Computer Assisted Language Learning (CALL). Where teachers once relied on software specifically designed for language learning, they are now finding ways to adapt existing computer and Internet resources which are intended for other purposes (Salaberry, 2001; Coleman, 2002; Ranalli, 2008). To date, there is no literature examining the use of fantasy sports in L2 learning. The purpose of this study was to find some connection between the existing literature and the use of an online fantasy sports league in an EFL classroom by posing the following research questions:

- ☐ *Did students regard fantasy sports as helpful in facilitating communication?*
- ☐ *What were the students' perceptions about playing fantasy sports?*
- ☐ *What benefits did CALL offer to the fantasy sports project?*

What are fantasy sports?

A fantasy sport is a combination role-playing/simulation game where students act as managers of fictional teams, using real professional players from the sport being played. These teams then form a league and compete against each other based on the statistics of the real life players in authentic games. The statistics are then converted into points which decide the winner of each matchup. For example, eight people decide to participate in a fantasy baseball league using players from Major League Baseball (MLB). One person acts as the "commissioner" for the league, setting the rules and scoring categories. Any dispute between team managers throughout the season is mediated by the commissioner. After the league is set, team managers take turns drafting real players from the 30 MLB teams. Once a player has been drafted by a team, no other team can draft that player. This draft process continues until all teams have a full team roster. When baseball season begins, each fantasy team competes with another team from that league every day for one week (Table 1). Managers pick and choose which players will play for their teams on which days. At the end of the week, whichever team performs better in any given category set by the commissioner gets one point (win) for that category. If a team is outperformed in a category, it is calculated as a loss.

In Table 1, the Blues performed better for the week than the Reds in three categories (hits,

Table 1: Weekly matchup statistics between two teams in fantasy basebal

Team	Hits	Home Runs	Walks	Stolen Bases	Batting Avg.	Total
Reds	34	6	12	12	.248	2
Blues	42	8	8	7	.302	3

home runs, and batting average), while the Reds performed better in two categories (walks and stolen bases). Therefore, the Blues would finish the week with three wins and two losses, while the Reds would have a record of two wins and three losses. Each team would then play a different team the following week, with the category stats reset to zero and the statistics for that week recorded as the week progressed. Wins and losses are added to a team's record throughout the season. At the end of the season, teams enter into playoff games, and the top two teams play for league champion. Throughout the season, team managers track how well players are performing and make changes accordingly (e.g. trade players with other teams or from the pool of remaining players in the league.) Performing well in the fantasy league requires managers to be aware of what teams and players are playing on any given day in the real world, as well as keep track of real-life injuries to players that might prevent them playing. In fantasy sports, statistical categories and roster design differ from sport to sport, but the overall play style remains fairly consistent.

LITERATURE REVIEW

Using Games in the EFL Classroom

The literature examining the relationship between games, simulations, and other interdependent activities and language learning is sizeable and provides valuable insight into their use (Kumar & Lightner, 2007). As Reuben (1999) points out, games create an environment where students can work together and interaction is encouraged. Using games in the classroom provides not only enjoyment, but also allows students to practice and use the target language in creative and new ways (Yolageldili & Arikan, 2011). Additionally, as McCallum (1980) states, games serve a multitude of purposes including focusing attention on specific language structures, allowing for healthy competition, and serving as a means to emphasize and review what has been learned. One risk is that games may be utilized simply as time-fillers or as a fun activity to help increase motivation. The concern here is that by employing them to that extent only, they may not fulfill the goals and objectives of the class. Therefore, as suggested by Gaudart (1999), when deciding to incorporate games into an existing syllabus, teachers should consider how relevant they are to purpose of the class.

Technological advancements and the frequency with which schools are incorporating CALL

programs into their curriculum may be responsible for the rise in the number of studies regarding digital game-based learning. Peterson (2010) notes that current economical production costs and Internet expansion have made it possible for creators to develop a wide range of simulators and games for language learning. As the selection becomes more abundant, Tobias & Fletcher (2012) point to a number of areas in need of address as many educators make the decision to use computer simulators and games in the classroom:

- ☐ *transfer- skill transfer from game to real-life*
- ☐ *guidance- direction needed for competent gameplay*
- ☐ *cost benefit analysis- whether the outcome is worth the time or effort involved*

While the use of games can add an element of fun and excitement, an examination of the above areas can strengthen the justification for using simulations and games in the EFL classroom.

Willingness to Communicate (WTC)

Teachers in the EFL classroom often face the problem of dealing with students who, for whatever reason, choose not to speak. Since target language use has been found to be critical for L2 acquisition (Seliger, 1977; Swain, 1998), it becomes extremely problematic when students do not use the L2 in class. Past research has produced a number of influences which are thought to affect WTC.

McCroskey & Baer (1985) state that while situational context plays an important role in willingness to communicate, an individual's speaking behavior (e.g. frequency and quantity of speech acts) tends to be consistent regardless of the situation, implying that WTC is an individual variable. This may explain why some people are more willing to communicate than others. It does not, however, identify the variables that account for the differences in levels of WTC among individuals.

In their model of WTC (Figure 1), MacIntyre, Dornyei, Clement, & Noels (1998) create a hierarchical construct of individual variables or influences which affect the decision to engage in L2 communication. The model, represented as a pyramid, is composed of six layers, with each layer containing influences that lead to higher layers, eventually leading to a willingness to communicate and ultimately use of the L2. The top three layers (I-III) represent influences that are situationally bound, occurring at a distinct moment in time. As shown in the figure, this is when:

- ☐ *a person has the desire to communicate with a specific individual and feels confident enough to do so within that particular situation* (*Layer III*).
- ☐ *a willingness to communicate is reached* (*Layer II*).
- ☐ *L2 use actually occurs* (*Layer I*).

The influences presented in the bottom three layers (IV–VI) differ from the top three in that they are fairly consistent within the individual, and have persistent effects on the process leading to a willingness to communicate. These lower layers encompass:

- ☐ *social and individual contexts in regard to intergroup climate and the personality of the individual* (*Layer VI*).
- ☐ *affective and cognitive contexts, including intergroup attitudes, the social situation, and overall communicative competence* (*Layer V*).
- ☐ *motivational propensities, such as interpersonal and intergroup motivation, as well as L2 self-confidence* (*Layer IV*).

Continued research indicates that variables within the cognitive and affective domains do have some bearing on WTC (MacIntyre, Baker, Clement, & Conrad, 2001; Yashima, 2002) and teachers should be mindful as to what they can do in order to facilitate a student's willingness to communicate (Friermuth & Jarrell, 2006).

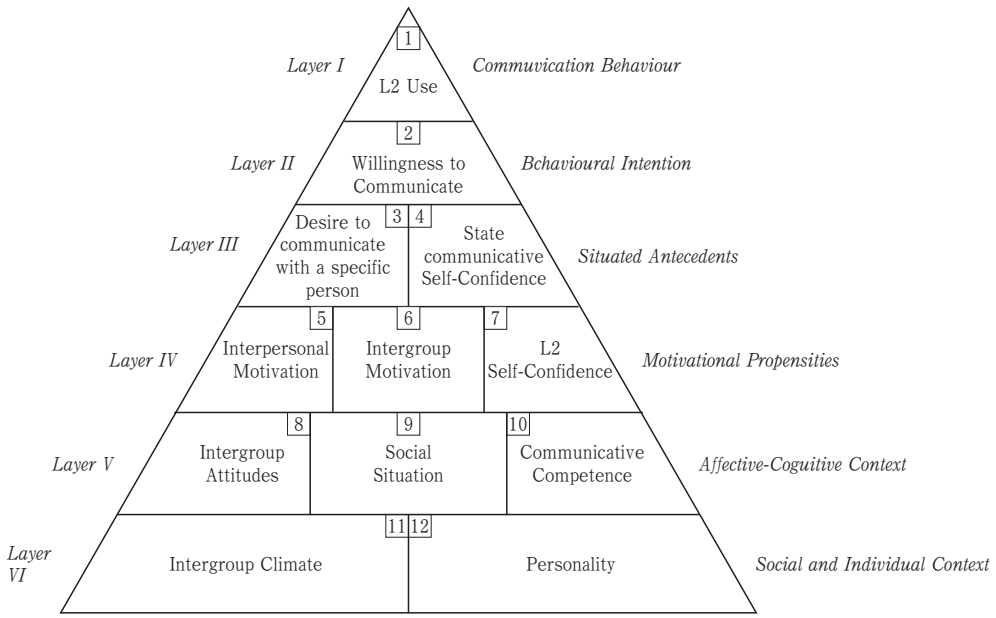


Figure 1: Model of influences related to willingness to communicate. Reprinted from "Conceptualizing Willingness to Communicate in a L2: A Situational Model of L2 Confidence and Affiliation" by MacIntyre, et al., 1998, The Modern Language Journal, 82, iv, p. 547. Copyright 1998 by The Modern Language Journal.

Motivation

Studies involving intrinsic motivation helped to form what we now call self-determination theory (Deci, 1971). Self-determination theory focuses on the choices people make in terms of the

degree to which the choice is self-motivated. How self-determined a choice or action is depends on its placement along a continuum between intrinsic motivation and amotivation. Intrinsic motivation is present when a person makes the choice to engage in a particular activity solely for the pleasure or enjoyment of that activity. In contrast, amotivation is characterized by an absence of desire or intent to partake in a particular activity, often tinted with feelings of inability or doubt regarding the effectiveness of the activity at hand. Running along the continuum between these two ends is extrinsic motivation. Here, people feel motivated to perform an activity based on some kind of outcome not connected to the actual activity (e.g. some kind of reward or avoidance of punishment). While not driven by internalized forces, behaviors which are the result of extrinsic rewards can be internalized if the person feels some meaningfulness to the behavior (Ryan, Stiller, & Lynch, 1994). To expand on this, Deci & Ryan (2000) found that, activities which facilitate autonomy (sense of control), competence (sense of ability or achievement), and relatedness (sense of social connections or unity) can raise the level of self-determined actions. It would seem then, that intrinsic motivation can be developed and strengthened.

Studies in motivation have tended to focus on the positive motivational influences which can increase action, rather than the negative influences which can effectively decrease motivation (Kouritzin, 2009). While the literature investigating student demotivation has increased in the last decade, the area remains a complicated one within the realm of motivation research in terms of recognizing what elements carry the power to demotivate, or even the definition of demotivation itself. What does it mean for a student to be demotivated? In the case here, we will use Dornyei's (2001) definition of demotivation as "specific external forces that reduce or diminish the motivational basis of a behavioral intention or an ongoing action" (p. 143). It would therefore seem that demotivation takes place in a situation where there is some level of established motivation, and this level is reduced by some sort of influence. These influences, as studies by Gorham & Christophel (1992), Oxford (1998), & Ushioda (1998) show are external, often institutional factors, usually concerned with a student's negative perception of the teacher. These negative perceptions could be based on any number of aspects (e.g. teacher enthusiasm for the content, grading style, choice of classroom activities, organizational management, etc.). In interviews with secondary school students, Dornyei (1998) found that in addition to teacher-based issues, students listed inadequate school facilities, having a negative attitude toward the target language, and a general antipathy toward the compulsory nature of such language programs as influences leading to their demotivation to study a foreign language.

Computer Assisted Language Learning (CALL)

The benefits that CALL offers has made it a desirable option for many institutions, and re-

search into how technology can improve language learning and teaching continues to grow. The association students make between computers and enjoyment increases motivation and leads to more involved engagement (Lee, 2000). Gillespie (2006) attests that CALL has the power not only to engage learners, but also to establish an information network which allows students to study and learn outside the classroom. This is especially important in cases where students may only have one or two sessions of in-class study per week. Allowing students the convenience to access learning materials away from school increases the chances for learning, as Al-Jarf (2004) found when a comparison of two groups showed that students who were given both in-class and at-home online instruction performed better than those students who were given in-class instruction only. One final advantage to using CALL is the opportunity for teachers to adapt technology not meant for language learning. The use of chat rooms, discussion forums, podcasting, and video sharing are just a few ways teachers are taking advantage of CALL resources (Freiermuth & Jarrell, 2006; Duffy, 2008; Brown, 2002).

Benefits notwithstanding, there are often a number of obstacles that may impede successful incorporation of CALL. Access to proper facilities along with adequate teacher training can make or break a CALL program (Egbert, Paulus, & Nakamichi, 2002; Lam, 2000; Shin & Son, 2007). These limitations may stem from a number of underlying issues (e.g. financial restrictions, institutional constraints, personal beliefs, etc.). Even if resources allow for the pursuit of a CALL program, there is still the issue of how students will ultimately respond to such a learning environment. Although studies such as those mentioned above assert the positive influences that CALL can have on students, others (Huang, 1998; Roskams, 1998; Chen, 2001) have found that students often feel such instruction to be ineffectual and even obstructive in their learning.

METHODS

Participants

The participants in this study were twenty-three first-year male Japanese university students at a medium-sized university in Japan. The class met once a week for ninety minutes. The content of this class, at the request of the university, consisted of sports-related themes, topics, and language, placing it within the sphere of English for Specific Purposes. Any student wishing to take this class had to be involved in a sanctioned sports program at the university. The students in these classes have a reputation for demonstrating low levels of proficiency. Having taught this kind of class in previous years, the writer was well aware of the difficulties to be faced. Low-level language ability accompanied by (or possibly due to) a lack of motivation and an unwillingness to communicate made for a challenging and often arduous teaching situation.

Procedures

Course overview and rationale

An online fantasy sports league served as the main component of this class. Content mainly reflected whichever sport was chosen for the fantasy league, and a majority of class time was spent on activities associated with the simulation. A functional syllabus that would incorporate practical uses of English (e.g. giving opinions, agreeing and disagreeing, asking for repetition, etc.) was implemented to help students improve communicative ability, thus promoting more realistic gameplay. Because the game would be employing authentic language and subject matter, the use of audio and video broadcasts, magazine articles, sports websites, and other similar materials provided relevant information and enhancement to the game.

Pre-semester

Before the semester began, several administrative tasks needed to be addressed:

Selection of a fantasy sport: A fantasy sport can only be played during the time in which the actual sport is being played. For example, fantasy basketball may only be played from October to April, when National Basketball Association (N.B.A.) games are played. In this case, the class was to be held during Spring semester (April-July), which fit well with Major League Baseball (M.L.B.) season. Therefore, the teacher decided that a fantasy baseball league would be the best choice.

Selection of an online fantasy sports website: In the past, playing fantasy sports required players to keep track of all statistical information using only paper, pencil, and the sports section of a newspaper. Personal computers allowed for better organization, but it was the Internet that really simplified things and helped to make fantasy sports the popular pastime that it is today. There are dozens of free and paid online services which allow users to form fantasy leagues, keep track of statistical information, and receive the latest news on the status of players. Having had experience with the site and an appreciation for the simplicity of its interface, the teacher decided to conduct the league through Yahoo! Fantasy Sports.

Setting up student account information: All students needed to have Yahoo! accounts in order to join the league. To simplify matters, the teacher created eight Yahoo! accounts (one account per team) and passwords which the students would use to access the system and their teams. The decision to admit eight teams into the league was based on the number of students in class. If the maximum enrollment of thirty students was met, each team could be managed by a group of three or four students. Working in groups would create communicative situations as managers discussed various aspects of their team.

Setting league parameters: The teacher assumed the role of league commissioner, taking on the

responsibilities of setting the rules. The site allows for full modification of all features of league play (e.g. trade deadlines, number of trades allowed per week, etc.). Many of the game features would not affect the project, so default settings were used for everything but draft type, start date, roster positions, and statistical categories (Table 2).

Table 2: League settings for Yahoo! Fantasy Baseball.

Draft Type:	Autodraft
Start Date:	Week 4
Roster Positions:	Catcher (1), First base (1), Second base (1), Third base (1), Shortstop (1), Outfield (3), Utility player (2), Starting pitcher (2), Relief pitcher (2), Reserve pitcher (4), Bench player (5)
Batter Statistics Categories:	Runs (R), Home Runs (HR), Runs Batted In (RBI), Stolen bases (SB), Batting Average (AVG)
Pitcher Statistics Categories:	Wins (W), Saves (SV), Strikeouts (K), Earned Run Average (ERA), Walks+Hits/Innings Pitched (WHIP)

The teacher set the league to automatically draft players for each team until all rosters were filled. Students would then receive teams with full rosters. The autodraft feature eliminated the complex task of drafting players for teams. Live drafts can take hours to complete, and time restrictions did not allow for this.

The start date for the fantasy league was set to begin in class week three. This would allow time for students to learn how to navigate the website and play the game. Although the Major League Baseball season would begin before classes even started, only those statistics acquired after the start of the fantasy league would be recorded in the simulation.

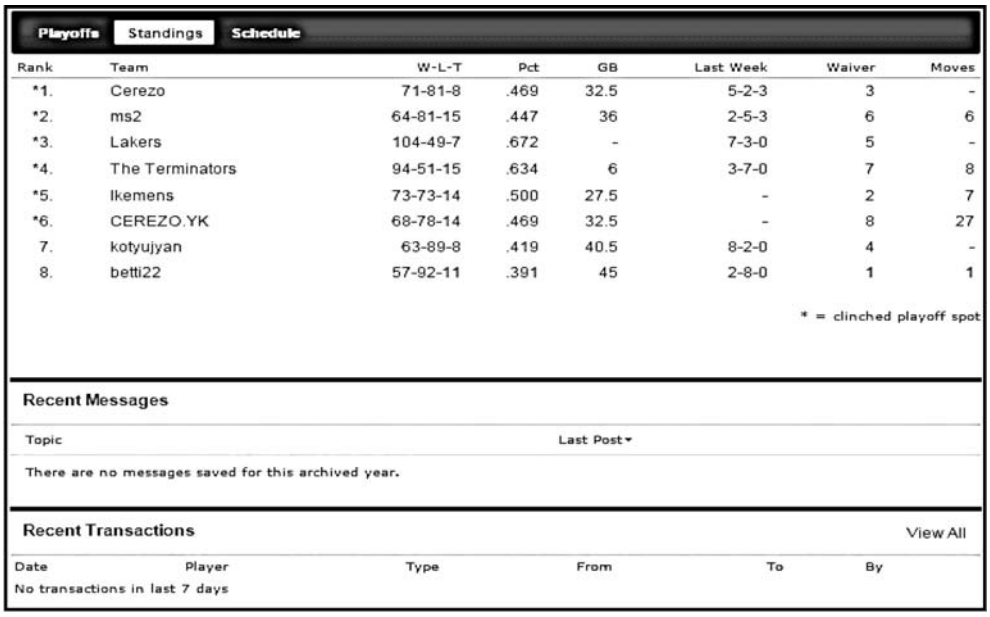
The first class

The first class was spent checking students' understanding of the sport of baseball, reviewing vocabulary specific to the sport, and learning the names of Major League Baseball teams. A considerable amount of English baseball terminology loans itself to Japanese, so many students were already familiar with much of the vocabulary involved. No time was spent on the actual fantasy league during the first class.

The second class

The second class began with a review of the material covered the previous week, followed by an introduction to the fantasy league. The twenty-nine students enrolled were put into eight groups of three or four. Each group then received the account information to access the website.

After logging into the website, students learned about the main pages they would use to play the game.



Playoffs | Standings | Schedule

Rank	Team	W-L-T	Pct	GB	Last Week	Waiver	Moves
*1.	Cerezo	71-81-8	.469	32.5	5-2-3	3	-
*2.	ms2	64-81-15	.447	36	2-5-3	6	6
*3.	Lakers	104-49-7	.672	-	7-3-0	5	-
*4.	The Terminators	94-51-15	.634	6	3-7-0	7	8
*5.	Ikemens	73-73-14	.500	27.5	-	2	7
*6.	CEREZO.YK	68-78-14	.469	32.5	-	8	27
7.	kotyujyan	63-89-8	.419	40.5	8-2-0	4	-
8.	betti22	57-92-11	.391	45	2-8-0	1	1

* = clinched playoff spot

Recent Messages

Topic | Last Post

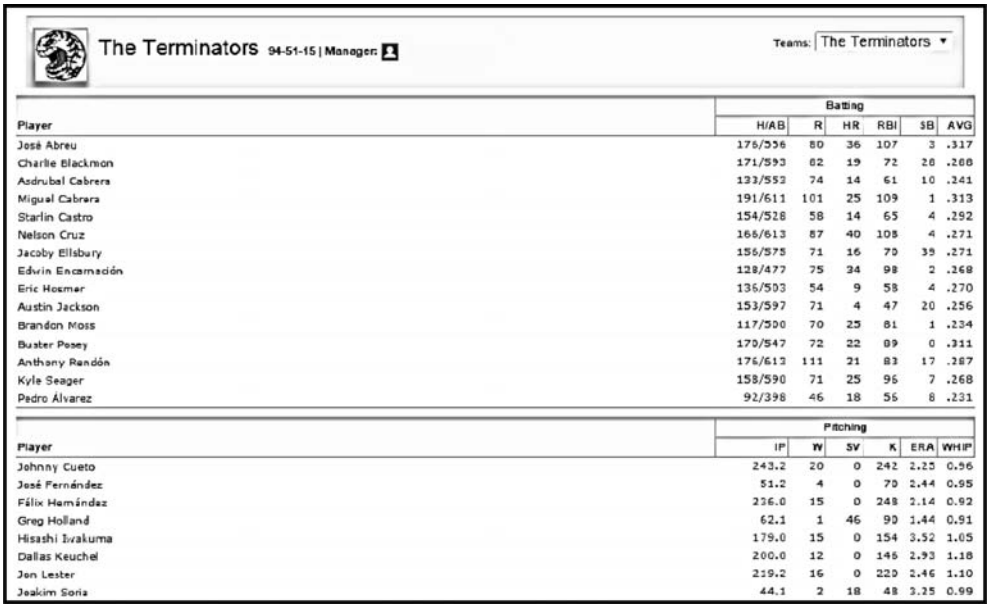
There are no messages saved for this archived year.

Recent Transactions View All

Date | Player | Type | From | To | By

No transactions in last 7 days

Figure 2: Yahoo! Fantasy Baseball league overview page.



The Terminators 94-51-15 | Manager: Teams: The Terminators

Player	Batting H/AB	R	HR	RBI	SB	AVG
José Abreu	176/556	80	36	107	3	.317
Charlie Blackmon	171/593	82	19	72	26	.288
Asdrubal Cabrera	133/552	74	14	61	10	.241
Miguel Cabrera	191/611	101	25	109	1	.313
Starlin Castro	154/528	58	14	65	4	.292
Nelson Cruz	166/613	87	40	108	4	.271
Jacoby Ellsbury	156/575	71	16	70	39	.271
Edwin Encarnación	128/477	75	34	98	2	.268
Eric Hosmer	136/503	54	9	58	4	.270
Austin Jackson	153/597	71	4	47	20	.256
Brandon Moss	117/500	70	25	81	1	.234
Buster Posey	170/547	72	22	89	0	.311
Anthony Rendón	176/613	111	21	83	17	.287
Kyle Seager	158/590	71	25	96	7	.268
Pedro Alvarez	92/398	46	18	56	8	.231

Player	Pitching IP	W	SV	K	ERA	WHIP
Johnny Cueto	243.2	20	0	242	2.25	0.96
José Fernández	51.2	4	0	70	2.44	0.95
Félix Hernández	236.0	15	0	248	2.14	0.92
Greg Holland	62.1	1	46	90	1.44	0.91
Hisashi Iwakuma	179.0	15	0	154	3.52	1.05
Dallas Keuchel	200.0	12	0	146	2.93	1.18
Jon Lester	219.2	16	0	220	2.46	1.10
Joakim Soria	44.1	2	18	48	3.25	0.99

Figure 3: Yahoo! Fantasy Baseball individual team page.

League overview page: The league overview page (Figure 2) shows team standings and other information to give managers a broad analysis of how all teams are performing.

Individual team page: Team pages (Figure 3) display all players and statistics for an specific team. Team pages are open for anyone to view, but any changes to a team page can only be made

Pos	Batters	Opp	Status
C	Yadier Molina (StL - C) NA	@Mil	8:10 pm
1B	Adrián González (Bos - 1B) NA	@Tor	7:07 pm
2B	Brandon Phillips (Cin - 2B) NA	@SF	10:15 pm
3B	Álex Rodríguez (NYY - 3B) NA	Cle	7:05 pm
SS	Elvis Andrus (Tex - SS) NA	@Min	8:10 pm
OF	Mike Stanton (Fla - OF) NA	Ari	7:10 pm
OF	Adam Jones (Bal - OF) NA	TB	7:05 pm
OF	Michael Morse (Was - 1B,OF) NA	@SD	10:05 pm
Util	David Ortiz (Bos - Util) NA	@Tor	7:07 pm
Util	Andre Ethier (LAD - OF) NA	@Col	8:40 pm

Figure 4: Yahoo! Fantasy Baseball daily lineup page.

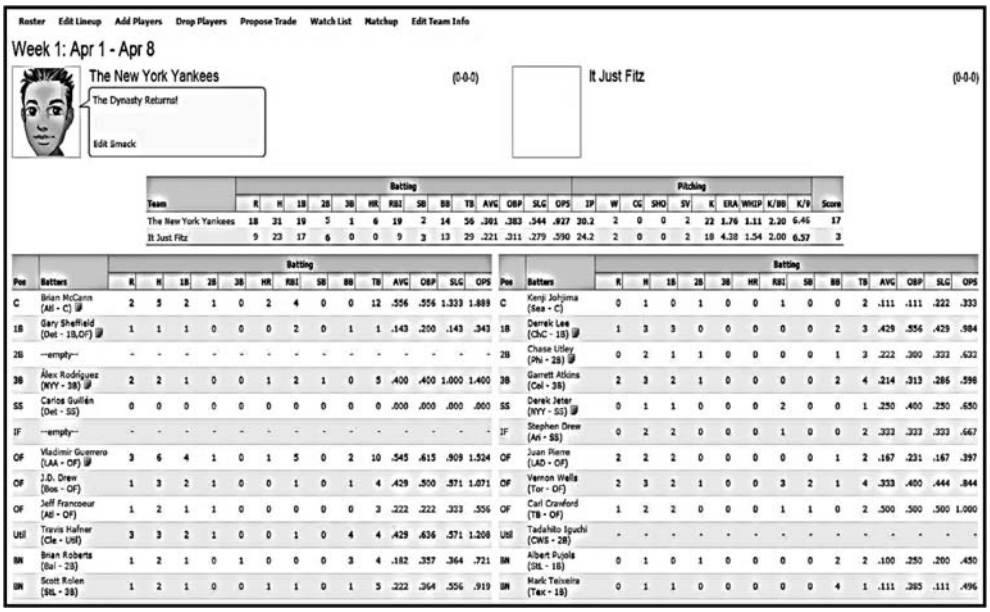


Figure 5: Yahoo! Fantasy Baseball weekly matchup page.

by that team's manager(s).

Daily lineup page: Team managers can adjust each day's lineup by dragging and dropping the desired players into their corresponding field positions. Players may only play in the positions for which they have been designated (e.g. a player designated as "outfield" cannot play the position of catcher) (Figure 4).

Weekly matchup page: The weekly matchup page shows how teams are performing against their opponents for that week. Statistics are shown for each category in real time (Figure 5).

The teacher took special care making sure that students could navigate to these pages,

understand the purpose of each page, and process the information contained within. As the fantasy league would not start until the following week, the pages only listed player names and no statistics.

The teacher explained about icons which gave valuable information about a player's status (e.g. injured, not playing, not starting, etc.) as well as how to set their lineups for the first week of games. Students created team names and made whatever changes they felt were needed to their lineups.

The third class

Students were able to see how their teams were performing in real time. Weekly fantasy matchups began every Monday and finished on Sunday in the United States. Due to the difference in time and date, playing in Japan meant that weekly matchups began on Tuesday and finished on Monday. Classes were held Tuesday mornings, the first day of each weekly matchup, with many games played live as class was in session.

The teacher displayed several matchups on the overhead projector and pointed out how scores changed periodically. Students tracked their teams' progress and made oral reports to the teacher as to how their teams were performing, as well as which players were the strongest and weakest performers. An existing paid subscription to *MLB.com* allowed the teacher to stream games live. Students watched portions of games and observed how the games affected their fantasy teams' performances in real time. Students were reminded to check team lineups daily, and make any changes they felt were necessary.

Subsequent classes

For the remainder of the semester, students would begin each class by assessing their teams' performances the previous week, and make reports to the teacher as to how their teams performed and how they felt they could improve their teams (e.g. playing certain players, trading players, etc.). Students were then given time to negotiate player trades with other teams and present them to the commissioner (teacher) for approval. Once trade talks were finished, the teacher would check for student understanding of pertinent vocabulary, introduce and demonstrate various features of the game, and make suggestions for successful team management.

The teacher spent the remainder of class on language functions (e.g. giving an opinion, negotiation of meaning, speculating, etc.). These functions helped students to manage their teams, navigate the website, and report on various aspects of the game. Magazine articles, web searches, and audio or video broadcasts of live MLB games were often used in conjunction with the teaching of language functions in order to create an atmosphere of authenticity.

The final class

The final class involved students reflecting on their experiences playing fantasy sports, writing a final experience report, and demonstrating their use of language functions in role-play situations. The teacher handed out certificate awards to all teams. The team in first place that week was declared league champion, and each manager of that team was presented with a championship ribbon.

Data Collection & Instruments

A paper-based survey questionnaire (Appendix A) translated from English into Japanese was administered to students during the final class. Of the twenty-nine students who participated in the fantasy league, twenty-three completed the survey. The survey instrument consisted of 26 items, asking students to rate each item based on their level of agreement. A four-point Likert scale measured responses ranging from "strongly disagree" to "strongly agree." Based on Rossett's (1982) and Patton's (1987) question types, the items functioned to identify students' opinions, feelings, and attitudes regarding the use of fantasy sports, and allow for self-assessment of ability and motivation.

Data Analysis

Raw scores for each item were entered into an Excel spreadsheet. This allowed for trends within the descriptive statistics to be analyzed and a cumulative sum of responses for each item to be obtained. Values were then assigned to each choice in order to assess the degree to which students agreed with the item (Strongly Disagree＝1; Disagree＝2; Agree＝3; Strongly Agree＝4). The higher the number, the more in agreement the students were with the item. For example, if an item had 2 "Strongly Disagree" responses, 12 "Disagree" responses, 8 "Agree" responses, and 1 "Strongly Agree" response, the adjusted score would be 54 (2x1＋12x2＋8x3＋1x4). Since 23 students completed the survey, the maximum score for any item would be 92, indicating complete agreement with the item. Items were then grouped based on their degree of agreement. Those items with a score of 80 or more were considered to represent a high degree of agreement. Items which scored 70-79 indicated a moderately high degree of agreement. A score of 60-69 implied a moderate degree of agreement, and items which scored between 50 and 59 signaled a moderately low degree of agreement. Any item that scored below 50 was designated as showing a low degree of agreement.

RESULTS

Results showed varying degrees of agreement for question items. Items 3, 6, 7, 16, and 17 all

showed a high degree of agreement, with scores of 80 or more (Table 3). Items 7 and 17 both scored the highest degree of agreement at 85 each.

Table 3: Items with high degree of agreement.

Item	Score
7) I think the teacher enjoys fantasy sports.	85
17) It would be too difficult to play a fantasy sport without the Internet.	85
3) Fantasy sports helped to improve my computer skills.	81
6) The teacher helped me if I didn't understand something about the game.	80
16) The website was convenient to use for playing the game.	80

Items 11, 20, 22, and 24 scored showed a moderately high degree of agreement with scores between 70 and 79 (Table 4).

Table 4: Items with moderately high degree of agreement.

Item	Score
22) I feel more confident in my ability to play fantasy sports now than when I started.	78
24) Fantasy baseball was difficult to learn.	75
11) I spoke more English when talking about the game (compared to other class activities).	71
20) There were times when I needed to talk to a specific person.	71

Items 4, 5, 9, 10, 12, 13, 18, 19, and 25 scored between 60 and 69, indicating a moderate degree of agreement (Table 5).

Table 5: Items with a moderate degree of agreement.

Item	Score
18) I felt nervous talking to other people about the game.	69
19) The English I studied in class helped me to communicate better when playing the game.	69
10) I liked the freedom I had in managing my team.	68
5) The teacher did a good job explaining how to play fantasy sports.	66
12) Fantasy sports gave me many chances to talk to other students.	65
13) Fantasy sports helped to increase my confidence to use English.	64
4) I did not like fantasy baseball because it was too difficult to learn.	63
9) I felt a fellowship with my co-managers.	63
25) The computer skills I learned playing fantasy sports can help me in other situations using a computer.	61

Items 1, 8, 14, 15, 23, and 26 scored between 50 and 59 showing a moderately low degree of agreement (Table 6).

Items 2 and 21 scored between 40 and 49. These items showed a low degree of agreement, with item 21 ranking the lowest in agreement among all items (Table 7).

Table 6: Items with a moderately low degree of agreement.

Item	Score
1) I enjoyed playing fantasy sports.	59
23) Playing fantasy sports improved my attitude toward studying English.	58
15) I would like to play a different fantasy sport (e.g. soccer, basketball, etc.).	55
26) Playing fantasy sports was worth the time and effort it took to learn.	55
8) Given a choice between playing fantasy sports and using a textbook, I would choose fantasy sports.	53
14) I would like to take another English class which uses fantasy sports.	50

Table 7: Items with a low degree of agreement.

Item	Score
2) I checked my team's status every day.	45
21) The English I used when playing fantasy sports can be used in other situations.	43

DISCUSSION

As the results show, students' responses showed varying degrees of agreement among items. In order to get a better understanding of the implications involved, the results need to be broken down and interpreted. Although all items on the survey were pertinent to the research questions, attention here is given mainly to those items which stand out in terms of how they agreed or disagreed with expectations or offered insight into students' perceptions.

High agreement: Item 7 [I think the teacher enjoys fantasy sports] scored the highest degree of agreement (85) among all items. The teacher played fantasy sports as a hobby and repeatedly talked about the enjoyment he got from the game, so it came as no surprise that this item scored as well as it did. Within that same realm of teacher influence, Item 6 [The teacher helped me if I didn't understand] scored very well (80), highlighting the students' recognition of teacher support.

On a few occasions during the semester, students were asked to keep track of player statistics without using the Internet. Although Major League Baseball is popular in Japan, the resources from which students can obtain player statistics (e.g. television and periodicals) are not as available or comprehensive as in the United States. The fact that Item 17 [It would be difficult to play fantasy sports without a computer] also scored at the top (85) supports the idea that students realize the value of using the Internet for fantasy sports. This is bolstered by responses to Item 16 [The website was convenient to use for playing the game]. Students went on to state that using computers for the fantasy league actually improved their computer skills, as reflected in Item 3.

Moderately high agreement: One rationale for using fantasy sports was to promote use of the L2.

Responses to Item 11 [I spoke more English when talking about the game (compared to other class activities)] and Item 20 [There were times when I needed to talk to a specific person] suggest that fantasy sports might create situations that lead to L2 use. Students also seemed to agree that while the game was difficult to learn, they felt more confident in their abilities to play fantasy sports than they did when they first started (as reflected in Items 24 and 22 respectively)

Moderate degree of agreement: Yolagadeli & Arikan (2011) express the importance of looking at game difficulty when considering the use of games as learning tool, saying that if a game is too easy or too difficult, it may affect the students' enjoyment. As shown above, students were in consensus that the game was difficult to learn. Item 4 [I did not like fantasy baseball because it was too difficult to learn], however, scored much lower in agreement, suggesting that the perceived difficulty did not seem to have a big negative impact on their thoughts about the game itself.

Items 9 [I felt a fellowship with my co-managers], 13 [Fantasy sports helped to increase my confidence to use English], 18 [I felt nervous talking to other people about the game], and 19 [The English I studied in class helped me to communicate better when playing the game] all have the power to affect willingness to communicate (see MacIntyre, et al., 1998). While students did tend to agree that they felt nervous when talking about the game, they equally felt that the English studied in class helped them to communicate better in those situations. This, combined with their perceived fellowship among co-managers, could be responsible for their feelings that fantasy sports increased their confidence to use English.

Students also responded here that the computer skills learned from playing fantasy sports could help them in other situations using a computer (Item 25). This is discordant with responses for Item 3 [Fantasy sports helped to improve my computer skills] in which students showed a high degree of agreement. It is possible that students felt only those skills specific to the game (e.g. site navigation) had improved, and that these skills did not transfer.

Moderately low degree of agreement: The most surprising results came from Item 1 [I enjoyed playing fantasy sports]. There was hope that students would show at least a moderate degree of agreement on this item. Other than the perceived difficulty of the game and student nervousness, it remains to be seen what exactly prompted this fairly low degree of agreement. As explained by Oxford (1998), a student may actually feel demotivated to participate in an activity if he feels the activity to be irrelevant. It is possible that students did not find any value for fantasy sports as a language learning activity. This could be the reason why Item 26 [Playing fantasy sports was worth the time and effort it took to learn] scored as low as it did. If this is the case, then the fact that students generally agreed that they spoke more English when talking about the game and felt that fantasy sports improved both their computer and communication skills did not carry enough weight to give a sense of value to the game.

Items 8 [Given a choice between playing fantasy sports and using a textbook, I would choose fantasy sports], 14 [I would like to take another English class which uses fantasy sports], and 15 [I would like to play a different fantasy sport (e.g. soccer, basketball, etc.)] all concern the students' future inclinations to engage in fantasy sports. This trend seems consistent with their responses regarding their enjoyment of the game, following the logic that if they did not enjoy the game, the chances of their wanting to play it again would likely be low.

Low degree of agreement: Only two items scored in this range. Item 2 [I checked my team's status every day] indicates that students did not meet the level of involvement required for a successful fantasy sports league. Most students did not manage their teams on a daily basis, thus compromising the game. The lack of involvement could be the key to the resulting responses to many of the other items. Item 21 [The English I used when playing fantasy sports can be used in other situations] seems to mirror the results regarding the transfer of computer skills. As explained above, while students largely agreed that fantasy sports helped to improve their computer skills, they showed a lower degree of agreement when asked if they thought those skills could help them in other situations using a computer. In this case, students moderately agreed that the English studied in class helped them to play the game. However, they vastly disagreed to the idea that the English used to play fantasy sports could be used in other situations. Just as students did not think that computer skills learned from playing fantasy sports could transfer to other situations, so too it appears that students also did not think the English used to play fantasy sports could be useful in other situations.

CONCLUSION

Now that the results have been presented and discussed, they can be applied to the research questions. Limitations to the study will be addressed, as well as an exploration of future considerations.

Research Question 1: Did students regard fantasy sports as helpful in facilitating communication?

Several responses fit well into the middle and upper levels of the pyramid model of influences related to willingness to communicate as designed by MacIntyre, et al. (1998).

L2 self-confidence: Clement (1986) asserts that self-confidence is a reflection of one's sense of value and worth, and that anxiety can negatively affect how a person thinks about himself. Students reported that fantasy sports did, to some extent, increase L2 self-confidence. However, responses also showed that students were nervous when talking with others about the game. What is not known is how significant an effect this nervousness had on L2 self-confidence.

Interpersonal motivation: Features such as similarity (Osbeck & Moghaddam, 1997) and

repeated exposure (Zajonc, 1968) promote interpersonal motivation, which positively influences willingness to communicate. In this program, similarities were found on two levels. At the micro-level, students worked together in groups as co-managers, with the same goal in mind. At the macro-level, they were all first-year, male Japanese students studying English in class designed for sports students. Students also had the benefit of repeated exposure to one another. The class met every week and students were also urged to meet outside of class to discuss team strategy. Students responded that they did, to a reasonable degree, feel a fellowship with their co-managers, hinting at the likelihood that some degree of interpersonal motivation was involved.

State communicative self-confidence: MacIntyre et al. (1998) differentiate between Clement's (1986) general concept of self-confidence and that of state communicative self-confidence. State communicative self-confidence deals with the perceived ability one has to communicate in a given situation or particular point in time. This perceived ability is affected by both prior exposure to the situation and the possession of language skills needed to navigate the situation. The condition of prior exposure was met, as students were involved in the game every week. Since students responded favorably when asked if the English studied in class helped them to communicate better when playing the game (given situation), it would seem that the second condition was met as well, resulting in an increase in state communicative self-confidence.

Desire to communicate with a specific person: The nature of the game demanded that students interact with one another, often requiring interaction with particular individuals. Students seemed to concur, as responses show that they did feel the need to talk to specific individuals during their fantasy sports experience.

L2 use: As the students' responses revealed, attitudes were generally favorable concerning the motivational and situational variables which lead to a willingness to communicate. Equally positive results were reported as students felt, to a fairly high degree, that they spoke more English when talking about the game than they did in other class activities. It is possible that this perceived increase in English use was a result of time on task, as much of the class time was spent involved in the game. Even if this were the case, according to the model, if students felt they were using the L2 more frequently, then it would indicate that a willingness to communicate was present.

Perceived competence influences motivation, thereby bringing about a willingness to communicate and ultimately L2 use (Hashimoto, 2002). Students' responses here seem to suggest that a fantasy sports league positively impacts influences which facilitate communicative use.

Research Question 2: What were the students' perceptions about playing fantasy sports?

The teacher chose to use fantasy sports because it fit well within the curricular parameters and

it gave students a chance to engage in both a cooperative and competitive environment. It offered students the autonomy to play the game however they wanted (within the rules) and the chance to gain a sense of achievement. The game could be easily adapted as a language learning activity, and involved a subject matter that was considered to be of interest to the students.

If the students' responses are applied to the points Tobias & Fletcher (2012) made regarding areas to consider when deciding to incorporate computer simulators and games in the classroom, a fairly negative reaction is evident.

Transfer: Students overwhelmingly felt that the language used in the fantasy sport league would not transfer into other L2-related situations. A similar view was expressed regarding computer skills.

Guidance: There was strong agreement that the game was difficult to learn, but equally strong agreement that the teacher was available if help was needed.

Cost benefit analysis: Students felt the outcome was not worth the time and effort that was involved in learning and playing the game. Furthermore, although students felt more confident in their ability to play fantasy sports by the end of the course, there seemed to be little motivation to continue playing the game under any circumstances in the future.

Dornyei (2001) lists modelling as a strong motivational influence. The students seemed to recognize positive modelling on the teacher's part, but that modelling was not enough to get them involved in the game on a daily basis. The choice not to partake in the game at the level needed for optimum gameplay, despite the teacher support and resources provided resulted in a gaming experience which would most likely leave any student unsatisfied, and possibly lead to demotivation.

Despite the best effort of the teacher, students appeared to see little value in the game. A clear pattern emerged which showed that students did not find the game relevant to real-life situations or worth the time and effort involved. A low level of motivation to become involved in the game was evident by their lack of engagement. These perceptions would lead to the conclusion that some adjustments need to be made in the way the game is implemented. More precisely, the teacher needs to find a way to motivate the students to become more involved and reassess the relevancy of the game to real-life situations.

Research Question 3: What benefits did CALL offer to the fantasy sports project?

The justification to use CALL in a fantasy sports program is evident in that students felt that without a computer (particularly Internet and some sort of fantasy sport website), participation in the game would be extremely difficult. Excellent facilities and sufficient access to the website outside of school (home and mobile devices) were available, but students did not seem to take advantage of them. Computer skills gained during the course were perceived as useful for the

game, but beyond that, students did not see them as being very useful.

While students did perceive an improvement in computer skills, it would seem that the primary benefit CALL offered was that it took care of the computational and organizational aspects of the game. Due to the difficulty of accessing the statistical data needed to play the game, as well as the complicated nature of organizing the data, the use of CALL for this one benefit alone validates its use.

Limitations and future considerations

Two limitations are evident in this study. First, the small sample size ($n=23$) makes it difficult to establish concrete findings in regard to the overall student population. In addition, while a majority of students may have shown disagreement to an item, the small sample size could mask a significant minority who strongly agreed with the item. Second, the nature of the survey relied on the sincerity and truthfulness of the respondents. There is a possibility that students responded according to how they thought the teacher wanted them to respond, or that responses were given to placate the students' egos.

This study has shown that students do see some value in the use of fantasy sports within the EFL classroom. Further research focusing on the particular experiences of these students that resulted in positive effects would provide insight into the value of the activity, while an exploration into the decision to choose a fantasy sports program versus any number of other options would strengthen its validity in the field L2 learning.

Appendix A

English Version of Student Response Survey

Question	1 Strongly Disagree	2 Disagree	3 Agree	4 Strongly Agree
1). I enjoyed playing fantasy sports.				
2). I checked my team's status every day.				
3). Fantasy sports helped to improve my computer skills.				
4). I did not like fantasy baseball because it was too difficult to learn.				
5). The teacher did a good job explaining how to play fantasy sports.				
6). The teacher helped me if I didn't understand something about the game.				

7). I think the teacher enjoys fantasy sports.				
8). Given a choice between playing fantasy sports and using a textbook, I would choose fantasy sports.				
9). I felt a fellowship with my co-managers.				
10). I liked the freedom I had in managing my team.				
11). I spoke more English when talking about the game (compared to other class activities).				
12). Fantasy sports gave me many chances to talk to other students.				
13). Fantasy sports helped to increase my confidence to use English.				
14). I would like to take another English class which uses fantasy sports.				
15). I would like to play a different fantasy sport (e.g. soccer, basketball, etc.).				
16). The website was convenient to use for playing the game.				
17). It would be too difficult to play a fantasy sport without the Internet.				
18). I felt nervous talking to other people about the game.				
19). The English I studied in class helped me to communicate better when playing the game.				
20). There were times when I needed to talk to a specific person.				
21). The English I used when playing fantasy sports can be used in other situations.				
22). I feel more confident in my ability to play fantasy sports now than when I started.				
23). Playing fantasy sports improved my attitude toward studying English.				

24). Fantasy baseball was difficult to learn.				
25). The computer skills I learned playing fantasy sports can help me in other situations using a computer.				
26). Playing fantasy sports was worth the time and effort it took to learn.				

REFERENCES

Al-Jarf, R. S. (2004). The effects of web-based learning on struggling EFL college writers. *Foreign Language Annals, 37*(1), 49.

Brown, J. S. (2002). Growing Up Digital: How the Web Changes Work, Education, and the Ways People Learn. *USDLA journal, 16*(2), n2.

Chen, I. (2001). A Constructivist computer-assisted language learning environment for second Pennsylvania State University. UMI: Dissertation Abstracts International, 62, No. 12A, p. 4031.

Clément, R. (1986). Second language proficiency and acculturation: An investigation of the effects of language status and individual characteristics. *Journal of Language and social Psychology,* 5(4), 271-290.

Coleman, D. (2002). On foot in Sim City: Using Sim Copter as the basis for an ESL writing assignment. *Simulation & Gaming,* 33(2), 217-230.

Deci, E. L. (1971). Effects of externally mediated rewards on intrinsic motivation. *Journal of personality and Social Psychology, 18*(1), 105.

Deci, E. L., & Ryan, R. M. (2000). The "what" and " why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological inquiry,* 11(4), 227-268.

Dörnyei, Z. (1998, March). Demotivation in foreign language learning. In *TESOL'98 Congress, Seattle, WA, March.*

Dornyei, Z. (2001). Teaching and researching motivation: applied linguistic in action.

Dörnyei, Z., & Ushioda, E. (2013). *Teaching and Researching: Motivation.* Routledge.

Duffy, P. (2008). Engaging the YouTube Google-eyed generation: Strategies for using Web 2.0 in teaching and learning. *The Electronic Journal of e-Learning, 6*(2), 119-130.

Egbert, J., Paulus, T. M., & Nakamichi, Y. (2002). The impact of CALL instruction on classroom computer use: A foundation for rethinking technology in teacher education. *Language Learning & Technology, 6*(3), 108-126.

Finocchiaro, M., & Brumfit, C. (1983). *The functional-notional approach: From theory to practice.* Oxford University Press, 200 Madison Ave., New York, NY 10016.

Freiermuth, M., & Jarrell, D. (2006). Willingness to communicate: can online chat help? *International Journal of Applied Linguistics, 16*(2), 189-212.

Gaudart, H. (1999). Games as teaching tools for teaching English to speakers of other languages. *Simulation & Gaming,* 30(3), 283-291.

Gillespie, H. (2014). *Unlocking learning and teaching with ICT: Identifying and overcoming barriers.* Routledge.

Gopher, Daniel, Maya Well, and Tal Bareket. "Transfer of skill from a computer game trainer to flight." *Human Factors: The Journal of the Human Factors and Ergonomics Society* 36.3 (1994): 387-405.

Gorham, J., & Christophel, D. M. (1992). Students' perceptions of teacher behaviors as motivating and

demotivating factors in college classes. *Communication Quarterly, 40*(3), 239-252.

Hake, R. R. (1998). Interactive-engagement vs. traditional methods: A six-thousand student survey of mechanics test data for introductory physics courses. *American Journal of Physics,* 66(1), 64-74.

Huang, S. (1998). Differences in the nature of discussion between peer response sessions conducted on networked computers and those conducted in the traditional face-to-face situation. ERIC Document Reproduction Service No. ED 423686.

Hashimoto, Y. (2002). Motivation and willingness to communicate as predictors of reported L2 use: The Japanese ESL context. *Second language studies, 20*(2), 29-70.

Industry Demographics. (n.d.). In *Fantasy Sports Trade Association.* Retrieved from http://fsta.org/research/industry-demographics/.

Kelly, G. J., & Green, J. (1998). The social nature of knowing: Toward a sociocultural perspective on conceptual change and knowledge construction. In B. Guzzetli & C. Hind (Eds.), *Perspectives on Conceptual Change: Multiple ways to understand knowing and learning in a complex world* (pp. 145-181). Mahwah, NJ: Erlbaum.

Kouritzin, S. G., Piquemal, N. A., & Renaud, R. D. (2009). An international comparison of socially constructed language learning motivation and beliefs. *Foreign Language Annals, 42*(2), 287-317.

Kumar, R., & Lightner, R. (2007). Games as an Interactive Classroom Technique: Perceptions of Corporate Trainers, College Instructors and Students. *International Journal of Teaching and Learning in Higher Education, 19*(1), 53-63.

Lam, Y. (2000). Technophilia vs. technophobia: A preliminary look at why second-language teachers do or do not use technology in their classrooms. *Canadian Modern Language Review,* 56(3), 389-420.

Lee, K. W. (2000). English teachers' barriers to the use of computer-assisted language learning. *The Internet TESL Journal, 6*(12), 1-8.

MacIntyre, P. D., Baker, S. C., Clément, R., & Conrod, S. (2001). Willingness to communicate, social support, and language-learning orientations of immersion students. *Studies in second language acquisition, 23*(03), 369-388.

MacIntyre, P. D., Dörnyei, Z., Clément, R., & Noels, K. A. (1998). Conceptualizing willingness to communicate in a L2: A situational model of L2 confidence and affiliation. *The Modern Language Journal, 82*(4), 545-562.

McCallum, G. P. (1980). *101 word games for students of English as a second or foreign language.* Oxford University Press, USA.

McCroskey, J. C., & Baer, J. E. (November, 1985). Willingness to communicate: The construct and its measurement. Paper presented at the Speech Communication Association convention, Denver, Colorado.

Nemerow, L. G. (1996). Do classroom games improve motivation and learning? *Teaching and Change,* 3(4), 356-366.

Osbeck, L. M., Moghaddam, F. M., & Perreault, S. (1997). Similarity and attraction among majority and minority groups in a multicultural context. *International Journal of Intercultural Relations, 21*(1), 113-123.

Oxford, R. L. (1998, March). The unravelling tapestry: Teacher and course characteristics associated with demotivation in the language classroom. Demotivation in foreign language learning. In *TESOL '98 Congress, Seattle, WA.*

Park, H., & Lee, A. R. (2005). L2 learners' anxiety, self-confidence and oral performance. In *10th Conference of Pan-Pacific Association of Applied Linguistics, Edinburgh University, conference proceedings* (pp. 197-208).

Patton, M. Q. (1987). *How to use qualitative methods in evaluation.* Newbury park, CA: Sage.

Peterson, M. (2010). Massively multiplayer online role-playing games as arenas for second language learning. *Computer Assisted Language Learning, 23*(5), 429-439.

Ranalli, J. (2008). Learning English with The Sims: Exploiting authentic computer simulation games for L2 learning. *Computer Assisted Language Learning,* 21(5), 441-455.

Roskams, T. (1998). Collaborative interaction in networked writing classrooms: The student experience. ERIC Document Reproduction Service No. ED 424780.

Rossett, A. (1982). A typology for generating needs assessments. *Journal of Instructional Development,* 6(1), 28-33.

Ruben, B. D. (1999). Simulations, games, and experience-based learning: The quest for a new paradigm for teaching and learning. *Simulation & Gaming, 30*(4), 498-505.

Ryan, R. M., Stiller, J. D., & Lynch, J. H. (1994). Representations of relationships to teachers, parents, and friends as predictors of academic motivation and self-esteem. *The Journal of Early Adolescence,* 14(2), 226-249.

Salaberry, M. (2001). The use of technology for second language learning and teaching: A retrospective. *The Modern Language Journal,* 85(1), 39-56.

Saraceno, J. (2006, August 18). As fantasy football fever continues to spread, it's not all geeks to me. *USA Today.* Retrieved from http://usatoday30.usatoday.com/sports/columnist/saraceno/2006-08-17-saraceno-fantasy-football_x.htm.

Schwartzman, R. (1997). Gaming serves as a model for improving learning. *Education,* 118(1), 9-18.

Seliger, H. W. (1977). Does practice make perfect?: A study of interaction patterns and L2 competence. *Language learning,* 27(2), 263-278.

Shin, H. J., & Son, J. B. (2007). EFL teachers' perceptions and perspectives on Internet-assisted language teaching. *Computer-Assisted Language Learning Electronic Journal (CALL-EJ), 8*(2).

Shipman, F. M. (2009, April). Blending the real and virtual in games: the model of fantasy sports. In *Proceedings of the 4th International Conference on Foundations of Digital Games* (pp. 69-174). ACM.

Swain, M. (1998). Focus on form through conscious reflection. *Focus on form in classroom second language acquisition,* 64-81.

Tobias, S., & Fletcher, D. (2012). Learning from computer games: A research review. In *Serious Games: The Challenge* (pp. 6-17). Springer Berlin Heidelberg.

Ushioda, E. (1998). Effective motivational thinking: A cognitive theoretical approach to the study of language learning motivation.

Wright, A., Betteridge, D., & Buckby, M. (2006). *Games for language learning.* Cambridge University Press, New York.

Yashima, T. (2002). Willingness to communicate in a second language: The Japanese EFL context. *The Modern Language Journal, 86*(1), 54-66.

Yolageldili, G., & Arikan, A. (2011). Effectiveness of Using Games in Teaching Grammar to Young Learners. *Online Submission,* 10(1), 219-229.

Zajonc, R. B. (1968). Attitudinal effects of mere exposure. *Journal of Personality and Social Psychology, 9* (2p2), 1-27.

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〔**Designated Research Projects**〕

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〔**Collaborative Research Projects**〕

Articles

Article

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