

# Videogame-like Applications to Enhance Autonomous Learning

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**Abstract.** This paper presents the results of an ongoing study which has been carried out with a group of German Foreign Language students at the University of Cadiz since 2012. The purpose of the study was to analyze the impact of videogame-like applications on foreign language learning and their motivational potential to increase learning beyond the classroom. The paper presents the results of a comparative study of several learning tools: a videogame-like application, a J-CLIC application and several Paper-based learning materials and their impact on students' foreign language learning. All three applications were designed by us for the specific purpose of the present study and in line with our target students' language proficiency and needs. In order to measure the impact of each application on students' learning, we designed a four part pre- and post-test, which was filled in by each student once before using the application and twice after using it. Additionally, we gathered personal feedback from the users by giving them an anonymous questionnaire.

**Keywords:** videogame-like applications, foreign language learning, virtual learning environments, motivation.

## 1. Introduction

The current pilot study aims to explore the possibilities and benefits of integrating 3-D videogame-like applications in the area of tertiary foreign language learning. The starting point of our study was the increasing need to provide our students with the learning tools that are able to motivate them towards autonomous learning in order to widen and foster what has previously been introduced in the classroom.

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Since our target students are beginners, our interest focuses on the A1.1 level of the Common European Framework of Reference for Languages (CEFR) and the exploration of the learning tools that meet the specific needs of our learners. Amongst those is especially the necessity to acquire basic vocabulary and grammar skills which is often done through different kinds of drill-based activities that include reading, writing and listening. Moreover, with the increasing use of blended learning, teachers are expected to provide their students with additional tools for the autonomous learning beyond the classroom. This is often done by using Virtual Learning Environments (VLEs) as these enable teachers to provide a wide range of different learning contents and tools which students can access anytime and anywhere. On the one hand, this implies an enormous gain since it allows students to access materials whenever they need to and, on the other, teachers to follow students' learning process and, if necessary, to revise and add learning materials (Berns, González-Pardo, & Camacho, 2013).

## 2. Method

### 2.1. Materials

In order to analyze the impact of videogame-like applications on A1.1 level students' foreign language learning and their motivation towards autonomous learning, we have designed a 3-D videogame-like application, called the Supermarket game, as well as two alternative learning tools: a J-CLIC application and a Paper-based learning material. By doing so, we aimed to carry out a comparative study and to establish the impact and benefits of videogame-like applications, compared to more traditional learning tools (Garris, Ahlers, & Driskell, 2002; Schwiendorst, 2009). Taking into consideration our target students' language proficiency, the prime goal of each of the aforementioned tools was to provide learners with meaningful and comprehensible vocabulary input rather than excessive grammar and form training. Given this, we selected one of the main topics from the curriculum planned within the A1.1 level. This was related to food and beverages. In part, both topics had previously been practiced in the classroom and were now being fostered and widened by each student using one of the aforementioned applications. All three learning tools were based on the same vocabulary that was introduced by means of texts, photos and audio-recordings. Nevertheless, they were embedded in two different VLEs. Whilst the 3-D videogame-like application (see Figure 1) was lodged in a virtual platform called VirtUAM (Virtual Worlds at the Universidad Autónoma de Madrid) (Berns, González-Pardo, & Camacho, 2012), the J-CLIC (see Figure 2) and the Paper-based materials (see Figure 3) were accessible through the Virtual

Campus (VLE of the University of Cádiz). Both learning environments permit students access on a 24 hour basis and allow teachers to trace their students' access and learning path.

Figure 1. Supermarket-game



Figure 2. J-CLIC











			Pizza	Wasser	Bier
			Broccoli	Bananen	Zwiebeln
			Kürbis	Zucchini	Brot


Figure 3. Paper-based material



### 1. Welches *Gemüse* kennst du? Hör und notier!


Auberginen - Broccoli - Erbsen - Knoblauch - Belgischer Salat -  
 Bohnen - Gurken - Kürbis - Möhren - Zwiebeln - Salat - Kartoffeln - Spinat  
 - Zucchiniis - Avocados - Paprikaschoten - Tomaten

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To analyze the videogame-like application's impact, a group of more than 60 students from the same German language course were randomly selected and were then arbitrarily placed into three different groups. In addition to this, each group was provided with a different learning tool. The first group was named Experimental Group (EXPG) and played the aforementioned Supermarket game. For a more detailed description of the game and the different activities designed within it we here refer to previous publications (Berns, González-Pardo, & Camacho, 2013). The second group was named Control Group One (CG1) and used the J-CLIC, whereas the third group, which was named Control Group Two (CG2), used the Paper-based materials. Each group was allowed to access only one of the online learning tools. The instructor had previously assigned each student a personal username and access code that would allow them to access only their respective VLE (VirtUAM or Virtual Campus) throughout the following two weeks. Whilst the study with both control groups (CG1 and CG2) was organized without a fixed schedule, as learners were free to enter the VLE as often and whenever they wanted, the study with the experimental group (EXPG) was structured into at least two sessions. During the first session the instructor met students within the VLE in order to familiarize them with the game-mechanism and tools they would need to

use the game successfully. During the second as well as following sessions students worked mostly on their own, even though the instructor sometimes logged into the VLE to give individual support when students needed it.

## **2.2. Pre- and post-tests**

In order to analyze the impact of each of the above mentioned learning tools on students' foreign language learning, we designed a four part pre- and post-test. Each part consisted of 15 questions which aimed to test the learning impact on students' receptive as well as productive language skills. Since the skills we wanted to train throughout the different learning tools were mainly listening, reading and writing, the pre- and post-tests focused on these skills. Parts 1, 2 and 3 were multiple choice tasks which focused on listening and reading. Students had to match different objects with their names (part 1), as well as several audio-recordings with their phonetic transcriptions (part 2) or with their corresponding visual concepts (part 3). Unlike this, part 4 focused on students' writing skills; students had to write the name of several categories of food and beverages. All participating groups were first asked to complete the same four-part pre-test online, following the same methodology. Whilst the pre-test had to be completed by all participants one day before starting the experiment, the post-test had to be repeated by each student twice: once immediately after using the assigned learning tool, and the second time two months later. By doing so we aimed to measure the impact of each on students' short and long-term memory.

## **3. Discussion**

The results of post-test 1 show that the learners who played the videogame-like application (EXPG) got better marks in parts 1, 2 and 3, which focused on reading, listening and phonetic skills, than the students who used the J-CLIC (CG1) or Paper-based materials (CG2). However, there is a difference regarding the average marks obtained in part 4. Students who played the videogame got slightly lower marks when testing their writing skills compared to those obtained by students who had previously used the J-CLIC application. At the same time, it was conspicuous that in part 4 the videogame players got very similar results to the ones obtained by the students who used the Paper-based learning materials. In the case of the videogame this deviation might be explained by the fact that the game focuses more on reading and listening activities rather than on explicit writing tasks, whilst the J-CLIC application focuses on all three. However, with regard to the generally lower results of the Paper-based learning materials we believe that these can be related to their generally less motivational potential. Furthermore, the results

of post-test 2 show that the videogame-like application had a higher impact on students' long-term memory than the J-CLIC and Paper-based learning materials did (see [Table 1](#)).

Table 1. Average marks of the three participating groups (EXPG, CG1 and CG2)

	Pre-test			Post-test 1			Post-test 2		
	V-Game (EXPG)	J-CLIC (CG1)	P-based (CG2)	V-Game (EXPG)	J-CLIC (CG1)	P-based (CG2)	V-Game (EXPG)	J-CLIC (CG1)	P-based (CG2)
Part 1	3.15	3.25	3.25	8.15	7.91	7.30	7.98	6.73	6.56
Part 2	5.32	5.18	5.43	7.80	7.58	6.65	7.67	6.57	6.40
Part 3	3.94	3.89	3.53	7.80	7.58	6.65	7.67	6.57	6.40
Part 4	1.02	1.04	0.89	3.76	4.20	3.75	3.61	3.45	3.26

The aforementioned results, together with the feedback information we got from the questionnaire, leads us to the hypothesis that videogame-like applications certainly hold great potential to enhance foreign language learning, but they need to be designed very carefully and according to students' specific weaknesses and needs. Some of our students' weaknesses refer to their writing skills since they are usually enrolled in language courses with very large size classes, which include a lot of oral input but few opportunities to focus on learners' individual writing skills. Furthermore, by tracing back students' logs and use of the different VLEs we were able to gain an insight into the appropriateness of each to engage students in autonomous learning. From the analysis of students' logs it seems that the students who were asked to play the videogame felt much more motivated to access the learning environment and to practice their language skills than the students of both control groups did. This was equally confirmed by the personal feedback we got from the participating students and their interest in using one or another learning tool.

#### 4. Conclusions

Some final conclusions can be drawn from the results obtained as well as students' observations during the current pilot study. Videogame-like applications make foreign language learning in many cases more engaging and efficient since they are more entertaining and fun than many traditional online learning tools (in this case the J-CLIC and the Paper-based materials). One of the reasons is the fact that videogame-like applications provide highly immersive and interactive environments, in which language is presented in context and through game-based activities. In addition to this, videogame-like applications offer many opportunities for multidirectional interaction in the target language, thereby providing students

not only with much valued foreign language input, but also with meaningful opportunities for foreign language output (Berns, Palomo Duarte, & Camacho, 2012; Berns, Palomo Duarte, Dodero Beardo, & Valero-Franco, in press). By combining both, the target language can be practised on a receptive as well as a productive level. However, a deeper statistical analysis on a greater data set is necessary to find reasonable evidence in favour of the videogame-like learning experience.

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