GROUNDING L2 LEARNING IN SOCIAL PRACTICE THEORY: THE VIRGIL2 SERIOUS GAME


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Abstract

The lack of knowledge destination-countries languages is one of the main reason for the social exclusion of immigrants. In this paper, we will introduce VIRGIL2, a Serious Game (SG) developed in the context of the Digital Innovation for Social Inclusion (DISI) Erasmus+ project and designed to enhance learning of a foreign language as L2. Moreover, VIRGIL2, within its L2 learning activities, reproducing real -life scenarios and exploiting situated learning and Social Practice Theory (SPT ) allows learners also to acquire knowledge on aspects and dynamics related to the social contexts in which they are integrating.

Keywords: Serious Games, L2, Situated Learning.

1 INTRODUCTION

Immigration is an ever-increasing phenomenon in the European Union (EU) countries: reports state that immigration to the EU from non-member countries was 2.4 million in 2017[1]. While international migration can be beneficial in destination countries (e.g. as a tool to solve labour market shortages), social inclusion of the immigrants into the fabric of society is a problem, mainly caused by the lack of knowledge of the destination countries’ language.

Many factors come into play in the success of both the learning of the new language and the acquisition of a high level of proficiency in it. Pre-migration exposure to the language, age of arrival and linguistic distance between the native language and the new language are all important [2]. Moreover, many immigrants learn the new language “by doing”, through daily exposure rather than learning it in a structured context [2]. We believe that both easing the access to educational content, making it available regardless of the geographic location, and providing a context that replicates daily activities, while also adapting the learning experience to the learner’s specific level of proficiency, can be highly beneficial.

In this paper, we will introduce VIRGIL2 (VIRtual Guide for Immigrants in L2), a Serious Game (SG) developed in the context of the Digital Innovation for Social Inclusion (DISI) Erasmus+ project to support and enhance the teaching of a second language to immigrants, implementing the situated learning approach through a specific theoretical framework: The Social Practice Theory (SPT) [3,4]. VIRGIL2 aims to be a tool both for the teachers, by easing the use and implementation of situated learning, and for the students, by providing useful and user-friendly access to educational contents.

2 SOCIAL PRACTICE THEORY AND SITUATED LEARNING

As introduced above, the framework in which we ground the learning experience is the SPT. A social practice can be described as a set of socially organized and accepted actions that are mutually linked in everyone’s daily life. These can also be described as a set of social activities that are conveyed through different means (both linguistic and not), are situated in specific real social contexts, are materially embedded and involve different actors with different roles (and thus are distributed among different agents). Moreover, social practices are interconnected through the cultural knowledge of the specific social context in which they happen, and therefore they may also require essential paralinguistic elements like facial expressions, intonation and gestures. In the context of this framework, language can be described as a social tool and the process of learning a language can be seen as emerging from the nexus of different social activities tied to our daily lives. In fact, in Social Practice Theory each language is deeply social and actional (where with actional we mean that it contributes to carrying out actions in the world through social interaction routines) [5]. Within this perspective the knowledge gained by students is context-based and can be transferred only to similar situations. Learning becomes the result of social processes including procedural knowledge, communicating with others and observing the environment; so the learning process is not disconnected from actual actions but it exists in a social environment consisting of actors, actions and situations [6]. From this point of view, learning as situated
can be conceived as a path of progressive participation in communities of practices and fully concerns
the actions that a person can carry out in a social world. It does not provide cognizers with packages of
knowledge about the world but involves them entirely in relational activities in-and-with the world [7].

Exploiting the SPT, we aim to put in place the situated learning, grounding the knowledge acquisition in
the actions of everyday life.

3 VIRGIL2

3.1 The ideas behind the design of VIRGIL2

In the light of what has been discussed above, we believe that it is important not to see the learning a
new language as an isolated cognitive phenomenon, but rather as a process within other relational and
social processes. L2 learning can be seen as an ongoing process that begins at the micro level of social
activity, with individuals engaging with others in specific multilingual contexts of action and interaction
[8]. Moreover, the use of all the available semiotic resources (from the linguistic ones to the non-verbal,
graphical and auditory ones) is important [9].

These reasons point to the idea that a Serious Game (SG) can be a great tool for language learning: it
provides a simulated environment that enables (and eases) the use of all kinds of semiotic resources
and enables the replication of the daily activities involved in the most common (or most critical) social
practices. Since the target is immigrants, the use of a situated learning approach also has the benefit of
allowing the learner to gain and consolidate the knowledge relative to these social practices, thus helping
with social inclusion as well. The scenarios that are sensible to the theme of social inclusion are
numerous: job interviews, opening a bank account, paying bills, obtaining medical help, etc. We choose
to focus on one of them: supermarket shopping. In this scenario, among the several social routines and
skills involved, we identified the most crucial ones (and the most useful for an immigrant) for
asking information, spatial orientation, products identification, turn-taking and the payment process.

Another advantage of an SG is the presence of a narrative hook to boost the engagement and to keep
the player in the flow while he/she’s learning practicing the game. The narrative line that leads the virtual
experience involves the alternation of two categories of activities: conversational and didactical. The
former engages the player in dialogues with the purpose of introducing social practices and new words.
The latter makes the player in interaction with the surrounding 3D virtual environment in order to
complete given tasks. Didactical activities usually follow conversational activities and have the purpose
of practicing and consolidating the knowledge gained.

Since language is influenced by paralinguistic resources, we make use of visual and auditory supports
to assist and enhance the learning process and the building of the semantic field of this specific scenario.
Both conversational and didactical activities use paralinguistic elements. Examples of this are billboards
to convey information about the isle structure of the supermarket, images and 3D models of products,
audio recordings of keywords, etc. The game can present these resources in both the target L2 and the
L1 of the player, reason why we designed the game in order to scale with, and support, any number of
languages (for example by retrieving the game’s linguistic resources, texts and audio files, at run time
from a web server according to the selected language).

3.2 Description of the serious game

VIRGIL2 is a PC serious game developed through the Unity3D game engine. Players, through a first-
person point of view, can navigate the 3D space of a virtual reproduction of a supermarket, full of isles,
characters (Non-Player Characters), shelves and products. The story is about the player helping Virgil,
a local (native speaking) blind person, in shopping at the supermarket. Virgil is unable to do the shopping
on his own because of his disability, but knows well the supermarket itself. He will act as a guide for the
player, telling him/her in which isles to find which products, introducing new terms and explaining the
social practices one can encounter in such a place.

Interaction with the characters (both with Virgil and with the other NPCs) is possible in the form of
dialogues, while many tasks require interaction with the shelves and the products contained in them.
The players are allowed to explore all the available space in the scene, they can make their character
walk around using the keyboard directional keys and can look around using the mouse. When they face
an NPC a conversational activity may starts: the NPC starts speaking and the users’ character stops
moving, the users then read (and listen) what the NPC has to say and in some activities they have to
engage the dialogue by selecting the correct sentence with the mouse. There are also some of the conversational activities that take place in front of the items that are the actual subjects of the dialogue, in these cases the dialogue itself aims to describe what the players see and sometimes the activity is successfully completed if the users interact in the right way with those items.

The didactical activities that take place between the conversational ones require the students to perform specific interaction with the 3D environment in order to be completed. They are useful to test the new knowledge students gained: in order to verify the comprehension of keywords (e.g. products’ or categories’ names) players have to listen to that word and then select the corresponding item in the scene.

The Figure 1 shows one of the first occurrence of this activity in the game. Here the player is asked to find an orange juice bottle, his/her view is forced to look at the shelf and to complete the task he has to click on the orange bottle in the upper right corner of the view. In order to prove the spatial lexicon acquisition, the players have to find their bearings inside the supermarket following given instructions (such as “in front of” or “turning left”) and reach a specific area, or simply they have to get some items from the shelf listening and reading their spatial information (e.g. “in the upper right corner”). To consolidate the learning of numbers, some activities require that the players have to pick up a specific product as many times as it’s written into the shopping list they have. The difficulty level of the didactical activities slightly increases progressing through the game: some of the activities may consist in a combination of the previous ones or may involve payment and money management (simple arithmetical operations to compute total price or the change) in order to reproduce the social practice that takes place at the cash desk.

![Figure 1. Screenshot of a didactical activity within the 3D experience of VIRGIL2](image)

The game experience is also enhanced by a Massive Open Online Courses (MOOC) platform, in which a number of 2D interactive mini-games are used to test, verify and consolidate the new knowledge the player has gained. These minigames reproduce the keywords and expressions used in the 3D experience, they are increasingly difficult, indeed almost every minigame is proposed 3 times, one per difficulty level; their gameplay may vary according to the best way to carry out the didactical content from that specific context. Some of the levels require the players click on the item’s image after hearing its name to reinforce the learning of the keywords related to the supermarket context; other levels aim to strengthen the association between the items and their category, for this reason the players have to drag every item and drop it inside the circle of its category.

As shown in figures 2 this typology of minigame presents all the items randomly around the screen, the player has to move every item in its own category circle. If the item is dropped correctly inside its category, a success message is given to the player and that item became undraggable. Instead, if an
item is dropped into a wrong category an error message appears and the item returns to its original position. During the level the player can also click on the items or the categories to listen their names. In addition, a further purpose of the minigames is to enhance players’ spatial orientation. For this reason there are some other levels in which player has to select the correct item on a shelf given its spatial indication. Finally, through the minigames, we plan to also consolidate the comprehension of numbers and their usage. In order to achieve this goal, the players have to complete some specific tasks in which they have to select the product quantities that they hear and read.

Each minigame is preceded by its tutorial that shows to the students how to successfully complete the level, only after viewing the tutorial players have to play by their own until they complete the scenario. The learning analytics for each minigame (such as the number of errors and completing time) are stored to the MOOC platform and further minigames get unlocked if the student gains enough points from the available levels.

![Figure 2. Screenshot of the starting setup of a drag&drop 2D minigame](image)

## 4 CONCLUSIONS

The use of games (and gamified workflows) in the context of learning a language is not new [10,11,12,13]. The novelty in our proposal resides instead in the idea of grounding the learning process in the SPT. As discussed, using this framework has a positive impact not only on the empowering of the learning process itself but also on presenting and explaining the social practices of a specific social context to immigrants. Both these components represent a concrete contribution to the issue of social inclusion that many european countries face today. Moreover, the structure of the game and the way it was designed enable a great scalability in terms of supported languages and scenarios (and therefore social practices involved).

In terms of future developments, the first step will be a research study in both formal and informal contexts. These would provide the data required to confirm our hypothesis and could help identify some potential improvements and/or problems.

## REFERENCES

[1] Eurostat, “Migration flows: Immigration to the EU from non-member countries was 2.4 million in 2017”, Accessed May 2019, Retrieved from [https://ec.europa.eu/eurostat/statistics-explained/index.php/Migration_and_migrant_population_statistics#Migration_flows:_Immigration_to_the_EU_from_non-member_countries_was_2.4_million_in_2017](https://ec.europa.eu/eurostat/statistics-explained/index.php/Migration_and_migrant_population_statistics#Migration_flows:_Immigration_to_the_EU_from_non-member_countries_was_2.4_million_in_2017)


