Classification of Games to Be Used in Virtual Learning Environments: Some Reflections Based on the EU-Funded GUINEVERE Project

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Abstract

In the context of the EU-funded GUINEVERE Project (Games Used IN Engaging Virtual Environments for Real-time language Education, 2017-2019), research has been undertaken to define different categories of games used in virtual language teaching environments. This paper aims to analyse and categorise selected games for language learning, created and provided for 2D and 3D virtual learning environments and identify their suitability for use in 3D immersive virtual language learning. The field-testing events within GUINEVERE offered sound evidence of the effectiveness of selected games according to levels, categories, needs, and their adaptability to a variety of language learning contexts, as well as different virtual learning platforms such as Second Life, Open Sim, and Minecraft. The models of game-like activities described in this paper show many examples of good practice that indicate how important it is to encourage learners to become actively involved in the learning process [1] , [2].

Keywords: *Categorising games, Language Learning, Virtual Worlds, Minecraft, Second Life, Open Sim.*

1. Introduction

When designing games for language learning in virtual environments, it is useful to find inspirations from games or game-like activities that have been successfully used in the physical classroom. Such games can range from simple board games, puzzles, scavenger or treasure hunts, and role plays to task-based, experiential or problem-based learning experiences. The games and game-like activities discussed here are not the stand-alone types of games. Most of what is generally addressed as games in the language classroom are in fact learning activities rather than real games in the strict sense as they don't have the structured competitive rules evident in gameplay [3]. By identifying our classification of games for virtual language learning, we aim to offer a useful resource for classroom teachers to help them to select games according to levels, categories, needs, and their adaptability to a variety of language learning contexts. The exemplary games used in our framework were characterised according to their applicability to Second Life (SL), OpenSim (OS) or Minecraft (MC).

2. Classification of Games and Game-like Activities

The educational value of games or game-like activities in the language classroom is that students learn a language through interaction by using the language in a meaningful way provided that the learners are able to communicate at this level. It is therefore important to pitch the level of difficulty depending on the complexity and the level of a game as it can be boring when it is either too complex or too easy [4]. In his taxonomy of player types, Bartle [5] identified that each player is defined by the gaming elements they enjoy most. Based on a case study carried out during the EU-funded CAMELOT project [7] we discovered that teachers often can't afford the extra time necessary to design games for their own classes [8]. Therefore, in GUINEVERE we aimed to save time by classifying games in an easy to use taxonomy. This process aimed to encourage teachers to create and use games as teaching tools in different contexts [4].

From the great variety of approaches available we have adapted Whitton's [3] categorisation of games in the context of the GUINEVERE Project, which has eight aspects. Two teacher training courses were designed by the GUINEVERE project and these provided instructions and additional material on how to use games in 3D immersive virtual environments for different languages and CLIL (Content and Language Integrated Learning) as well as how to adapt the games according to learners' specific needs.

One way of classifying games is to specify linguistic contexts to support teachers as regards to their usability and adaptability in their teaching curricula. This includes investigating the selected games in

terms of their goals, teaching objectives, the skills they require, and elements of language to be practiced, as defined in the CEFR (Common European Framework of Reference) at levels A1-C2 (from basic to proficient user): listening/understanding; spoken interaction/speaking with other people; spoken production/making announcements and speeches; and reading and writing (from notetaking to report writing) (see Table 1).

Table 1 Template for categorising games

Name of the game				
The way to learn with/through the game according to Whitton's [2] classification			Specific goals of the game	
Linguistic/Language Skills i.e. reading, and understanding listening, speaking, writing. Vocabulary practice, grammar practice, i.e. if-clauses…	**Skills** in a virtual environment i.e. moving around, voice-chat, text chat, teleport, building, mining…	**Platform** SL, OS, MC	**Level** A1/A2/B1/B2/C1/C2 according to the CEFR (Common European Framework of Reference)	**Time** required for the game/ activity

2.1 Board Games

When considering the design of games in 3D virtual worlds, there are numerous classical games we can take inspiration from in the physical world. They all follow similar patterns including rules, goals, progression, and rewards. There are several templates to be found on the internet that can be adjusted to learners' needs and the language skills required for storytelling and more. One of the most enjoyable elements in 3D immersive virtual environments is that learners can act as counters and move their avatars (or counters) on the board and give them a personal touch as Figure 1 shows.

Figure 1 Example of a board game with avatars as counters

Note: EVO ViLLAGE 2016 (Photo: C. Schneider)

The more players are involved in a game, the longer it will take and the more boring it might get for other players standing around until it is his/her turn [4]. As an example, the Giving Advice Game is a simple game to help learners to talk to each other (see Table 2). Players take turns to throw a dice and move forward on the board according to the number they score. They read the 'problem' on the section they have moved to, while other players give advice (see Figure 2).

Figure 2 The Advice Game

Note: Carol, An, Letty, and Hazel on EduNation in Second Life (C.Schneider)

Table 2 Sample for categorising the Giving Advice Game

The Giving Advice Game					
Learning with entertainment games/ Education		Skill-based/ Problem-solving/ Interactive			
Linguistic/Language Skills	Skills in a virtual environment	Platform	Level	Time	
Giving advice: Language: *You should/you shouldn't, You ought to/ you'd better, Why don't you/ what you can do is...*	clicking objects, moving around	SL, OS	B1/B2/C1	15- 20 minutes	
Skills practiced: reading, spoken interaction, listening, and understanding					

2.2. Popular Games and Activities

During the field-testing period of the project, we discovered that mazes are very popular in virtual learning environments and provide significant opportunities to trigger language use or to recycle or practise specific vocabulary at different language levels [9]. Puzzles can be effective to fill a gap in between activities such as jigsaw reading puzzles, which can simply be created as competitive tasks in teams or pairs. In such an activity, each team is given different parts of a story that they have to reassemble to get the complete story in the right order (see Figure 3).

Figure 3 Building a treehouse

3. Role-Plays and Simulations

Mawer and Stanley [10] consider roleplaying and action games as the most popular and highly motivating games among students. Falconer [11] understands role-plays as situations in which learners take on the role profiles of specific characters or representatives of organisations in an artificial setting. In role-play much of the learning occurs because the learning design requires learners to explore and articulate viewpoints that may not be their own [12]. In contrast to role-plays, the key characteristic of a simulation is that people don't take part in the play in the form of interaction [13].

4. Pedagogical Agents in Action

Based on the assumption that spaces created in 3D immersive worlds are often deserted after a project, the idea is to make use of such learning spaces created in SL, OS or MC and offer them for autonomous language learning by employing non-player pedagogical agents (NPCs). NPCs or chatbots, provide a natural language interface to their users and have a positive effect on learning outcomes [14]. A good example is the design of the *III Magnifico Bar* at *Virtual Prato* in Second Life, created by Kaylee West at Monash University, Prato, Italy (see Figure 3).
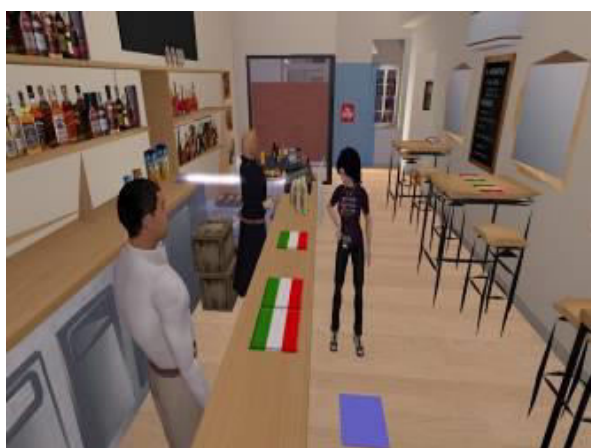

Figure 3 III Magnifico Bar at Virtual Prato in Second Life.

At the entrance of the bar you find information about a Hud (Head-up-display) that avatars needs to wear in order to display their wallet which can be used to purchase various items around the island; some by directly clicking on the item, others by engaging in conversation with the NPCs in Italian at various locations of Virtual Prato.

5. Findings and Discussion

The idea to provide language learners with a choice of holodeck scenarios, equipped with a variety of pedagogical agents is a significant step into the future and would help language facilitators to provide extra learning scenarios outside the regular classroom. It will give learners the opportunity to experience several learning scenarios to practise their language skills. Such settings could also be facilitated in addition to physical classes. By using ideas from face-to-face situations and transferring them to 3D immersive virtual language learning, the GUINEVERE project demonstrated a wide array of games, mazes, treasure hunts, quiz games, role-playing games, board games, and simulations. We also showed how such games could be applied to the 3D virtual language classroom.

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List of URLs and Links

[1] Demonstration of Story Telling Game: https://youtu.be/JhxT10EaUAc

[2] Example of Minimal Pairs Game: https://youtu.be/vzWGoxHirUA

[3] Using Mazes for Vocabulary Practice: https://youtu.be/mfAmWFEDKqo

[4] Using Mazes for Giving Instructions: https://youtu.be/NkP6jB3DGmQ

[5] Rezzing a bridge with the correct answer: https://youtu.be/UAAe23lk33E

[6] Boutique Renoir - Changing Outfits: https://youtu.be/5_S0sDcPOfc

[7] Demonstration of the Opinionator: https://youtu.be/TfSR9AcuLUM

[8] Making the Opinions Game in OpenSim: https://youtu.be/pf44YEdJchY

[9] A house falls into pieces. Kladderadatsch, das lustigste deutsche Wort: https://youtu.be/A7J3sbH9q08

[10] Storytelling game: https://www.youtube.com/watch?reload=9&v=UuzTmb5Knt0&t=14s