2018

Towards a Conceptual Framework for the Development of Immersive Experiences to Negotiate Meaning and Identify in Irish Language Learning

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Towards a conceptual framework for the development of immersive experiences to negotiate meaning and identity in Irish language learning

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Abstract—The onset of virtual reality systems allows for new immersive content which provides users with a sense of presence in their virtual environment. This paper provides the conceptual framework for a larger study examining how designed virtual reality experiences can be utilised to transform Irish language meaning making and a user's personal Irish language identity

Keywords - virtual reality, Irish language learning, social constructivism, games, identity, situated language learning

I. INTRODUCTION

The continued proliferation of consumer virtual reality (VR) products, discussion on the application of this nascent technology is the focus of industry and researchers alike. Contemporary research in the application of VR software for a variety of uses has demonstrated its viability beyond mere entertainment, in the areas of health and psychology for example [1], [2], [3], [4]. Another area of potential application is within education, as a tool within an expanded curriculum. The potential for VR in education is recognised by military and corporate organisations, and it is vital that the education community is also a stakeholder in this evolution of learning [5].

This paper will be leveraged as part of a larger study to outline a comprehensive framework for designing immersive experiences for Irish language learners. In particular, it will focus on the experiences of Irish language learners and how immersive environments can be leveraged in order to develop their ability to negotiate meaning and identity. [6] We begin by discussing the social constructivist epistemology of knowledge. This epistemology informs our belief in how learners construct knowledge. This is followed by a definition of identity and Discourse and their importance in construing meaning. After we highlight situated learning theory and communities of practice and their developments to social constructivist theory. We will examine the Irish language context specifying the role of identity within the community. We define what is meant by a designed experience and the role it can play as a method of developing identity. We discuss immersive environments and the concept of presence as the defining feature of virtual reality environments. Finally, we conclude with an outline of how highly immersive experiences can be utilised to negotiate meanings and identity in an Irish language context.

II. CONSTRUCTIVISM, DISCOURSE AND IRISH LANGUAGE

A. Social Constructivism Epistemology

Constructivist epistemology is the theory that knowledge is constructed from experience and has personal meaning for the learner [7]. Social constructivism is a branch of the theory originally developed by Lev Vygotsky, who saw learning as inherently social, believing that ideas are constructed through interaction with others [8]. Vygotsky believed language was necessary in order to form knowledge, and it is through social interaction using language that individuals learn. [9] His most widely known theory: The Zone of Proximal Development (ZPD) provides a theoretical underpinning for how this development takes place. ZPD is the range of tasks that a learner can perform with the help and guidance of others but cannot yet perform independently. Vygotsky saw human development intrinsically linked to the social environment of the learner. He saw learning as a two way process of learning from and creating social environments. These environments he saw as a collection of the social-cultural-historical factors that people collectively develop which in turn creates what we refer to as society. A learner develops their knowledge through a more competent peer who gives the learner the tools necessary for new learning through interaction in the environment. Key to this learning is that structure is inferred. Social activity with the social other allows the learner to have access to cognitive skills they have not fully developed yet to bridge their personal experience to the cultural-social-historical factors to deepen their understanding. [10]

B. Identity and Discourse

Identity is defined by James Gee as being a recognition of being a certain kind of person in a given context [6]. In this conceptualisation, a person's identity varies depending on the interaction and context they find themselves in and this changes how they interact with language. Words are married to the world we inhabit, giving meaning to words through our interactions with our environment. Thus words and their meaning depend, somewhat, upon our individual identity. Words and their meanings are not just understood through their dictionary definitions but through the language community's cultural model. A cultural model is a process by which

individuals interact with the environment and define words and meanings for their interactions, forming a shared consensus about meaning among other language speakers. These shared meanings transcribe values, perception, cognition, motivation and emotion among the community in their understanding. Cultural models are in a constant state of flux as the values the community transposes to interactions to their environment are always changing. They vary across context, and are rooted in history and culture [11]. Our cultural models are created through figured worlds,which are simulations based on what we consider the typical or normal which varies based on our context, cultural, and social group. These figured worlds are needed in order for people to negotiate meaning and make sense of the world, and are how we transcribe meaning and understanding to words and language [12], varying depending on the person's individual identity and by the language's social and cultural history within the context the language is being used [13]. If a person is an Irish language speaker there are 25 different words at their disposal for describing seaweed, all dependent on the context. This is the result of the language community passing down meaning and values through their interactions with the environment. For example, a person can collect seaweed on the beach. If this is the first time the individual has engaged in this action they can understand what the beach and seaweed (in general) looks like. If the person collecting seaweed engages in this activity often they will have a more expansive conceptualisation, as they can imagine the difference between seaweed close to the water, floating seaweed, long ribbons of seaweed, etc. In this case Irish language speakers are a community that traditionally lived close to the sea and have passed their knowledge through their cultural model. An Irish language speaker can conceptualise the environment using words like "lstrach" meaning withered seaweed, and "cadamn" meaning seaweed found on the upper part of the beach. Language simultaneously reflects contexts and constructs it to be a certain way as can be seen in this example [13]. Defining who we see ourselves and others as in our figured worlds, in order to put meaning to our values and actions, is known as a Discourse.

When you put language, action, interaction, values, beliefs, symbols, objects, tools, and places together in a way that you are recognised as a particular type of what, you are engaging in a Discourse [11]. This is how meaning is linked to identity: when your identity is recognised in a particular context by the actions you are performing, this is a Discourse. Our current model of language education in schools focus on instantiating language learning through definition of words rather than through actions. They ask students to exist in a limited set of identities with preconceived ideas [14]. In today's schools performing the Discourse of the "good student" requires knowledge of the language of the classroom. It is rare for students to engage in learning activities where they are placed in roles outside of the limited options provided for them in the school environment. Situated learning theory offers an explanation as to how learners gain access to the resources of their community and adopt Discourses recognised by their community which conflicts with our traditional method of schooling.

C. Situated Learning Theory

Situated learning is immersion in a particular social situation over time to gain skilful knowledge along with the ability to engage in the norms and practices of a socio-cultural group known as a community of practice. Lave and Wenger developed the concept of communities of practice developing a theory with three main dimensions [15].

Its members are defined by their understanding of shared meaning that they continually renegotiate with each other. The shared meaning and negotiation bring its members together as a social group. Over time the communal resources developed by the community become a repertoire of knowledge for the community. It is focused on the social engagements needed for learning to take place rather than cognitive processes. [16]. Where cognitive theorists see tasks as independently analysable without individual or collective meaning, situated learning views an individual's activity as an act of participation in a system of practices that are constantly evolving [17]. Language plays an important part in a community of practice. Language acts as a medium to experience shared meaning, understanding, and bridges the personal and societal identity of a member of a community. When speaking, the speaker contextualises their meaning and understanding with words developed by the community over time; if the speaker is recognised, and understood by the listener they become part of a social group of speakers. As a person participates in different communities of practice, experience guides their development, and they develop a personal identity alongside linguistic practices which articulates this identity [18]. We defined this process earlier as being recognised as performing a Discourse. An Irish speaker saying "chuaigh muid go dt an siopa" would be recognised as a Connacht native by their use of "chuaigh muid" rather than the standarized method "chuamar" to say we went to the shop. The speaker has developed their use of Irish by immersion in their community and can now be identified through their use of the language as a member of the Connacht community of Irish speakers. In effect, they are preforming the Discourse of that particular community. Both examples given say the same thing, and both are recognised as the Irish Language, but the way it is said, in both examples, identify the speaker as belonging to a particular community of speakers.

D. Irish Language Context

We have explored how language acts as a socio-historical tool that links our personal actions and understandings to the cultural model of the wider speaking community, this in turn forms our identity which simultaneously alters the wider cultural model's identity. This has wide ramifications for a minority language such as Irish. The Irish language has a complicated identity. It became the minority language in Ireland during the 19th century due to the disproportion number of native speaking areas know as the Gaeltacht areas

affected by the Great Famine causing widespread emigration and death by starvation and the introduction of the National Schools, the primary school system introduced by the English government which banned the use of Irish until 1871. The Irish nationalist movement who fought to recognise the Irish identity as separate to the English Empire created an image of the Irish identity as a noble peasant class with a pure language without English influence [19]. This image has persisted as Gaeltacht native speakers act as gatekeepers to the Irish language Discourse with an innately proficient identity, seen as"true" speakers [19]. This static view of language limits learners by being denied access to the resources of the community to develop their language skills in Irish but also limits the language from evolving by a larger group of speakers. This is because the community considers English as contamination of the language due to its complex history with English. With over 2300 hours on average of Irish taught in schools a year, students do not perceive the language as a living language but rather as a static school subject [20]. Therefore a change is necessary in the formation of identity for new learners, as they need access to the rich cultural knowledge of the community in order to learn the practice of the larger Discourse and to become accepted in it. Therefore new methods and means of accessing this knowledge, and forming new identities, firmly routed within the Irish language, but not necessarily adhering to a static, rote method of language learning, is needed. One way of doing this is to create designed experiences that enable users to engage with some form of a community of speakers, and cultural knowledge, in order to form new identities as Irish language speakers.

III. GAMES, DESIGNED EXPERIENCE, PRESENCE AND VR

A. Designed Experiences

Kurt Squire argues for games to be framed in terms of designed experiences [14]. Games are distinguished from other medium by their ability to offer the player agency over the narrative of the gaming environment and its rule set. Game designers create the rules for the players' experience making the game experience an interaction between the game designer and the player. In the virtual world of the game, doing is essential. To play a game players must engage in the social practices of the game through action. Games develop ways of knowing, doing, being, caring, social practices, identities and shared values that when combine lead to expert knowledge [5]. Players are able to inhabit new experiences by playing in a new identity which allows them to re-create themselves to think, act and value themselves like their role [21]. The experience allows the learner to engage in unpredictable situations to cultural, linguistic and textual stimuli which is key to truly communicative learning not conformity to established patterns of knowledge [22]. Virtual reality experiences offer the same player agency as other types of games but allows for a deeper development of the player's identity due to the greater level of immersion.

B. Presence

Slater and Wilbur define immersion as an objective description of the aspects of a system such as field of view and display resolution [23]. The aim of virtual reality is to evoke a sense of presence in the user using the immersive aspects of the system [24]. The role of presence is under much debate in the literature with no one unifying description of its definition. There is consensus that it is a subjective experience linked to "a sense of being there". [25], [26], [27], [28]. According to Wirth, presence is a binary experience where self-location and perceived actions are connected to a mediated spatial environment and mental capacities are bound by the mediated environment instead of reality [28]. The user needs to perceive themselves in the virtual environment and draw upon spatial cues in order to suspend belief and accept the imaginary world as reality [29]. This process of accepting the imaginary world is a perceptually occurring process, a user can drop in and out of a feeling of presence in a virtual environment during an experience for a variety of different reasons: feeling distracted, ability to interact with the content, the match between sensors and display, the extent and fidelity of sensory information along with the users prior perceptual, cognitive and motor abilities. [27] This last factor refers to the user's identity. Presence is also an important factor in identity formation and how the process of meaning making forms. As we discussed earlier identity is being a certain person in a specific context. Understanding comes from the ability to create figured worlds: predictive mental models built from past experience based off of interactions with the environment. Feeling present in an environment creates the specific context necessary to being recognised as a certain type of person. The user will only accept a virtual environment and suspend disbelief if the virtual context agrees with their figured world. They build their figured world through interaction in the environment. This in turn means the more the designed experience reflects the users understanding of the real world the more present they will feel. Figured worlds are continually recreated based off of new experiences. A person first accepts the virtual reality experience as a real place and then the virtual reality allows the user to experience new context to shape and change their figured worlds, to assign new meaning to interactions. When they are recognised in the designed experience in their role they take on a new identity. This has powerful ramifications for language learning. Language facilitates meaning making and a thoughtfully designed virtual reality experience can tailor its design to allow the user access to the values and expert knowledge of the community of speakers without the need to be located in an environment near the community of speakers.

IV. DISCUSSION

It is the aim of this study to provide evidence that virtual reality experiences have the ability to improve a user's Irish language Discourse. The study will create virtual reality scenarios informed by the conceptual framework outlined in this paper. It will provide users with specifically tailored Irish language content and will analyse the effects of the user's

interactions in their virtual environment. It will examine the user's personal identity towards the Irish language and explore if it has been altered through interaction with virtual experiences. The study will leverage the following factors discussed in this paper: Virtual avatars in the experiences will take the place of real people to act as the more competent partners according to Vygotskys zone of proximal development to help guide the user to adopt the social and cultural Irish language practices. Tasks and challenges will be designed which afford the user interactions within the environment immersing the user in the Irish language community of practice giving them access to the rich socio-cultural history of the language and allowing for meaning making to form through their actions within the Irish context. There will be continual monitoring of their progress in the environment and recognition of their identity as an Irish speaker when they engage in the correct Discourse in the correct context. This will be achieved through positive reinforcement by the avatars in the experience and the user will only progress in a challenge when a Discourse is successfully recognised. The virtual experiences will be designed on the Unity game engine platform where Unity analytics will be used to track and measure user's presence and ability to successfully complete challenges. Top of the range equipment will be utilised to test the user in the virtual experience including the VIVE Pro headset, the most advanced virtual reality equipment at present. A consistent ruleset that models and reflects real world interactions will exist within the designed experiences to lead the user to a feeling of presence within the experience by reflecting their figured world of how the environment should interact. We will examine if this feeling of presence allows users to interact within the experience to change their own figured world and identity to build a new Irish language identity. We hope to examine the effects of the virtual experience to remove issues related to gatekeepers of the language and an identity of innate proficiency. Through interaction with virtual native speakers who will not factor in the prior history of the user, the user's interactions will be based on their use of the Discourse in a specific context at a specific time not their innate understanding of the language based from their birthplace. They will be accepted as engaging in the Discourse if they succeed in the challenge given to them. We will explore if this allows the user to negotiate meaning and create an identity as an Irish language speaker.

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