Meraki: Encouraging Language Learning in Real-World Simulations Through AI Para-Social Relationship Building

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Abstract: This paper presents a prototype application designed to teach language, using a dialogue-based theatre production experience. The application engages users in the production of a theatrical performance in a graphical 3D environment and incorporates AI verbal assistance to promote language learning. The application combines declarative and non-declarative memory building exercises to teach Hindi, although it is anticipated that this idea could be expanded to any language/culture. Users who have an intermediate knowledge of the language can evaluate their language skills in a social and professional virtual environment which incorporates motivational elements based around the Self-Determination Theory regulatory styles and Loci of Causality. Verbal AI assistance is used to provide an appropriate level of flow during the experience building a para-social relationship with the video game. *Sandhi Viched*, a Hindi euphonic junction splitting exercise has been incorporated into each language task. Context splitting the words into its constituent meanings is intended to help the players understand and remember the meaning of words and their use in different contexts. Initial Wizard of Oz testing has demonstrated that the AI verbal assistance provides a good balance between autonomy, competence and relatedness. Feedback from users show that by providing a balanced mix of external, introjected, identified and integrated regulatory motivation styles, as adopted from the Self-Determination theory, the AI assistance can speed up the language acquisition process and build a para-social relationship with the user. This initial evaluation suggests that the idea of theatre production that can incorporate many aspects of language provides a good starting point for an engaging learning game. This LLA topples the dominant belief, that the best way of learning a language through an application is to reinforce their behavior with external rewards. Further work is proposed to expand the application and build in more gamification with a view to conducting a more comprehensive evaluation.

Keywords: Language acquisition, Memory building, Critical reflection, Self-awareness, Para-social relationship building with AI, Serious game

1. Introduction

The postmodern reconstructionist approach to language learning debates the goal of language learning being that of transitioning from a Eurocentric 'dominator' model of culture; towards an aesthetic of interconnectedness, social responsibility and cultural attunement (Schneck, 1987). This reconstructionist view of language learning provides optimism for language education by recognising language as existing within the culture, rather than alongside culture. Language then becomes a catalyst of change. The evolutionary perspective on language learning debates how closely intertwined language and culture are as adaptive mechanisms for human survival and socialisation. Language is a catalyst in understanding the cultural, social and political issues individuals face. It aids in coordinating their actions and social bonds. On the other hand culture as a shared system of beliefs, values, practices and traditions provides a sense of identity and belongingness within a group (Derrida, 1996). Cultural practices and beliefs are communicated through language, and language reinforces cultural norms and values transmitting knowledge across generations, allowing cultures to evolve and adapt to changing circumstances over time and survive in a constantly changing environment. The aim of this study is to develop a prototype application to teach languages by incorporating the ethos of enculturation. This is done by providing the users with a social and professional virtual environment. An AI verbal assistance is used to provide an appropriate level of flow during the experience building a para-social relationship with the video game.

2. Background

Language learning (LL) helps individuals interact with an international community, and interaction as an approach leads to more effective language development. The personal and interactional functions of language help shape the projected identity of an individual, their opinions and preferences and development of social bonds. The 21st century welcomed a stream of language learning applications (LLA) aiding the reconstructionist approach to LL globally. The acceptance and use of the LLA surged because of the ability to teach and learn languages inter-continentally. The applications give the learners a sense of autonomy and competence by allowing them to learn from anywhere, anytime and at their own pace and on their preferred device. Gamification, one of the key features in every game learning application has made the process stimulating

(East & King, 2012) and the interactive activities enhance the enjoyability and prove to be an effective information retention mechanism (Finardi et al, 2016).

LLAs also offer accessibility features for people with disabilities and incorporate 'Universal Design for Learning' principles catering to different pedagogical needs (Garcia, 2013). Therefore, the personalisation and affordability of LLAs has been a key reason behind the global incorporation of language learning as a routine activity. Learners are being able to save time by not having to travel to classes whilst receiving peer reviewed feedback from native speakers at the tips of their fingers. Learners have benefited from the chance to enhance their knowledge of the culture and traditions associated with the language (Finardi et al, 2016). However these applications incorporate primitive language learning mechanisms focusing on recognition, recollection, comprehension power of the learner, recognising the learner's innate need for rewards with points, game tokens and streak rewards (Huynh, 2016).

It is important that some pedagogical and UI adaptations are incorporated into the LLAs. Learners have reported low connectivity with other users, a lack of social-cognitive skill development and limited collaborative learning processes. Feedback with regard to AI assistance showed insubstantial feedback or support from AI assistance, unreliable translation, and no transliteration. User reported lack of grammar and sentence explanations, poor feedback from the application itself and not being able to give culturally appropriate instructions (Gee & Hayes, 2014; Liu et al, 2015; Juul, 2016; Lebowitz, 2017).

Research has demonstrated that, unlike games that rely on content-based questions to move players to the next level, simulation games require learners to engage in serious issues that involve relationships and require taking responsibility for their decisions (Bogost, 2008). Simulations that are intertwined with play help learners develop their critical thinking skills and increase their strategic abilities. This approach helps learners embrace the concept of social responsibility and fill the gap between curriculum and pedagogical obligations. Narrative situated learning in LLAs dismisses the rhetoric that gamification of LLAs is merely for entertainment stimulatory purposes (Lys, 2013; Ostenso, 2013; Barton, 2016). Theatre is perceived as an activity that can involve everyone and hence lends itself to engagement and situated learning (Hartke, 1956; Campbell, 2014; González, 2015).

3. Aims and Objectives

It is our belief that language is not something that should be memorised like facts and figures but is a skill that requires constant practice and application in real life situations. Ideally, the focus should not be limited to being rewarded for memorising vocabulary and grammar rules. It should enhance a learner's cognitive abilities of developing listening, speaking, reading and writing skills. Language education should be in adherence with cultural and communication nuances.

As evidenced in previous studies, self-confidence and self-reliance are essentially the pillars of successful language learning. Self-confidence is important because language learning can be challenging and affect the learners' belief in their abilities to overcome challenges. Learners lacking self-confidence give up or avoid challenging language tasks, which can hinder their progress. Self-reliance is important because language learning is ultimately a personal journey which requires consistency. Self-reliant learners have been able to identify areas of improvement, set personal goals and track their own progress irrespective of external reward or punishment in serious games. Our aim has been to develop an AI assistance that support this self determination and guide the user when help is asked for.

The aim of this work was to design a LLA which incorporated role play simulations; a feature missing in LLAs. Our LLA aimed to teach Hindi whilst incorporating different aspects of life and culture through the design of an app for theatrical production. The intention for this was based around the fact that there are many aspects that can be incorporated into a production including creating sets, referring to objects, designing costumes, coordinating with different role-holders (director, actors, etc.) and developing a storyline. Given that Hindi was the language to be taught, the intention was that the LLA would incorporate the *Sandhi Viched* process.

Sandhi Viched in the Hindi language refers to a process of analysing the pronunciation and structure of words in *Hindi*, which is a phonetic language, meaning that the way words are pronounced is based on the sound of each individual letter or combination of letters. Many languages, such as Spanish, Serbian and Turkish follow the same language pattern. *Sandhi Viched* involves breaking down words into their constituent sounds, and then studying how those sounds change or interact when they are combined with other sounds or when words are used in different contexts. The Euphonic Junction splitting exercise and Context splitting approach to

language learning effectively focus on breaking down words into their constituent parts and understanding their meanings in context.

Breaking down words into their constituent meanings and understanding them in context helps learners not only understand the meanings of individual words, but also how they are used in context and how they relate to other words in a sentence. Both methods of language learning help learners build a strong foundation of vocabulary and comprehension skills, which are crucial for fluency in any language.

4. Methodology

A Wizard of Oz prototype (Riek, 2012) was developed using Figma to enable the researcher to mimic different levels of AI support to investigate how to achieve a para-social relationship with the LLA. A parasocial relationship is an illusory experience where people feel like they are engaged in an unreal reciprocal relationship. This parasociality is a natural biproduct of time spent in engagement with media figures. The different regulatory styles of motivation were combined with para social relationship building mechanisms to develop four AI Verbal assistances.

The prototype was first piloted with one user in order to tailor the AI support and then was evaluated with a further four users who were each exposed to a different level of AI. The users were given pre-evaluation self-report questionnaires. They reported their command over the language in terms of reading, speaking, writing, and understanding abilities. Their proficiency in the language determined the most appropriate form of AI Verbal assistance. The AI verbal assistance then helps in solve language, cultural context, grammar exercises aiding in usability. Each user was instructed to put together a theatrical performance, following instructions that were given in Hindi. The user had to select appropriate answers in Hindi and respond to the instructions by, for example, collecting props, moving objects, applying colour and interacting with relevant characters.

The interaction was recorded and later transcribed. Transcriptions were coded to enable the identification of elements of para-social relationships that were demonstrated between the player and the AI. The intention was to identify the most appropriate level of AI support to achieve an optimal para-social relationship between the player and the AI Virtual Assistant (AIVA).

4.1 AI Verbal Assistance Design

The experiment was designed so that the AIVA provided four different extrinsic motivation conditions: external regulation, introjected regulation, identified regulation and integrated regulation. Each of these is described in Figure 1. In the figure, aspects associated with a para-social relationship are combined with four different behaviour regulations to propose the four conditions that were provided by the AIVA in the game.

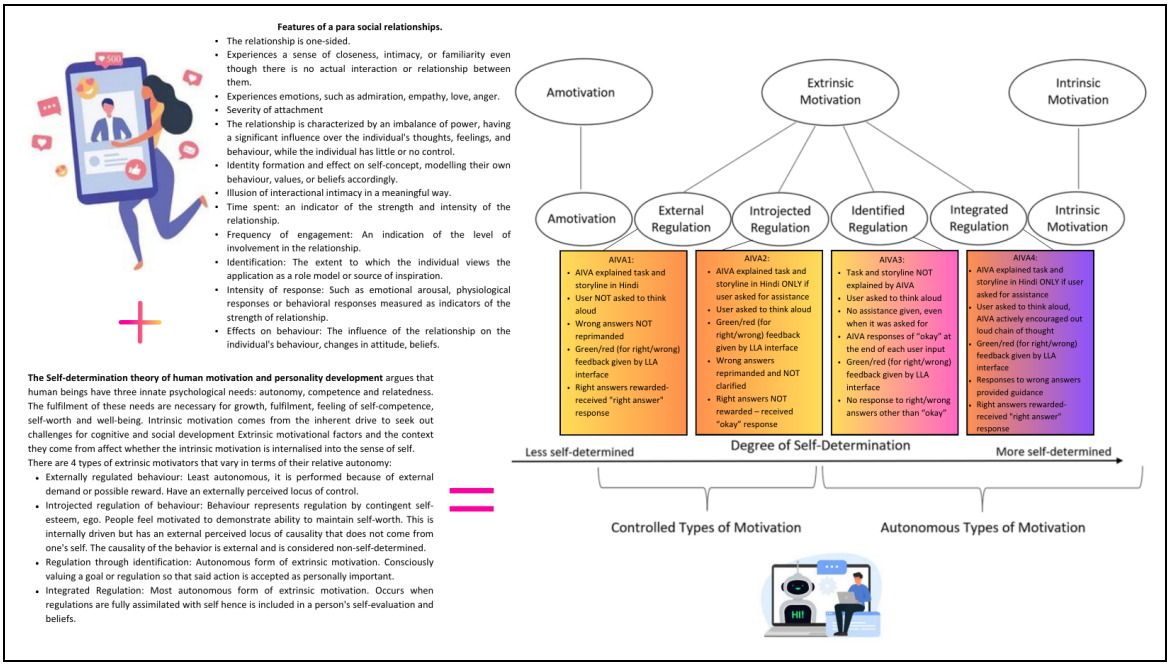

Figure 1: AI Verbal Assistance Design

5. Language Learning Application (LLA) Design

The LLA provided a collaborative theatrical space to entertain, create character, social relationships, and increase self-worth and independence, these being the core of our game development ethos. It involved people of multiple ethnicities, cultures, socioeconomic backgrounds, race, and class with the aim of breaking socio-political assumptions and status cues. It provided opportunities for individuals to express themselves creatively to build confidence. A more detailed synopsis of the activities the LLA provided is shown in Figure 2.

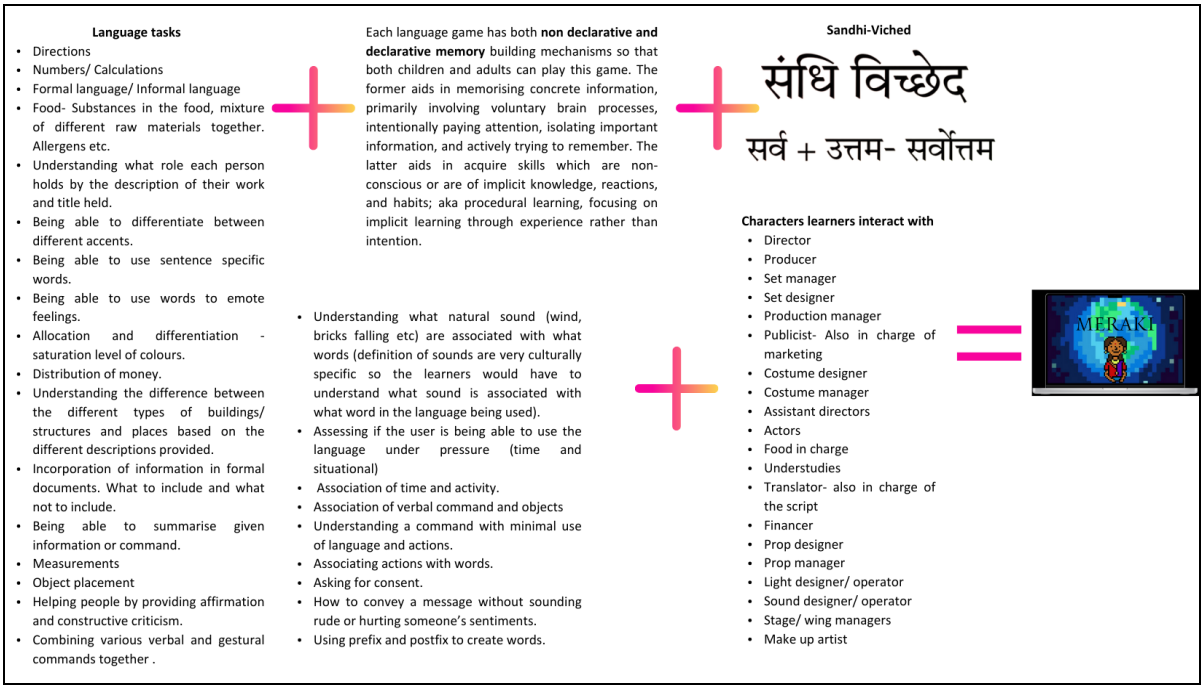

Figure 2: Tasks and Characters in the Theatrical Performance

Screenshots from the prototype can be seen in Figure 3. Further images can be seen in the appendix. The image shows different views of the theatre production and AIVA questions and responses. The design deliberately incorporated cultural traits into the characters being interacted with. The aim of this was to allow the player to differentiate between the characters and be mindful of the clothes, features and use of language the characters are associated with. The director and the producer are both practising Muslims. The player is introduced to every department and is greeted upon interacting with the cast and crew. This enhances the immersion process and the collectivistic approach the gameplay proposes.

Some screens offered a choice of dialogue for the user's response, including rude or inappropriate answers. If a user chose an inappropriate answer the AIVA asked them to reflect on what they had said and choose what they'd think was the situation specific answer. The aim here was to help the player reflect on their actions and guide them to what is culturally, socially, and professionally acceptable in that given context.

The director and producer welcome the player

The player interacts with the crew and cast

The player is asked to be production assistant

The player is asked to allocate budgets to departments

The player is asked to help the stage designer create a blueprint of the stage design

The player has to follow directions to purchase raw materials for the props

The player has to check the inventory

The player is asked to help the make-up artist to test colour patches on the actors

Figure 3: Example scenes from the LLA

6. Results

The coded transcriptions of each player were compared with respect to a number of measurable indicators of para-social relationship formation. These can be seen in Table 1, with examples illustrating these indicators shown below.

Table 1: Para-social Indicators within the Four Experimental Conditions

Measurable indicators of para-social relationship formation	AIVA 1 External regulation	AIVA 2 Introjected regulation	AIVA 3 Identified regulation	AIVA 4 Integrated regulation
Unidirectional communication	Yes	Yes	Yes	Yes
Perceived intimacy	Positive	Negative	Negative	Positive
Emotional attachment	Positive	Negative	Negative	Positive
Emotional intensity	Positive	Negative	Negative	Negative
Imbalance of power	Yes	Yes	Yes	No
Identity formation and effect on self-concept	Unrealistic	Realistic	Unrealistic	Realistic
Time spent	2.17 hours	1.34 hours	1.52 hours	2.03 hours
Frequency of engagement	Frequent	Frequent	Infrequent	Frequent
Identification	Positive	Neutral	Negative	Positive

Measurable indicators of para-social relationship formation	AIVA 1 External regulation	AIVA 2 Introjected regulation	AIVA 3 Identified regulation	AIVA 4 Integrated regulation
Intensity of response	Positive	Neutral	Negative	Positive
Effects on behaviour	Negative	Negative	Negative	Positive

6.1 AIVA 1 – External Regulated Motivation

Imbalance of power. It was clear that the power dynamic between the player and the AIVA assistance was not balanced. The player appeared to "look up to" the AI assistant for help and support and waited for instructions and approval: "What should I press next?"; "Should I go to the next game?"; "I don't want to do this task, it is too difficult. Do it for me."

Unidirectional communication. The user frequently waited for the AIVA to point out the right answer, demonstrating a sense of dependency and not co-existence. They repeatedly said, "Now what to do?" after pressing each button and did exactly what the AIVA was asking without questioning the AIVA and or asking for clarification.

Intensity of response. The user expressed a sense of admiration and need for external positive regard by saying "ooh this is very interesting how did you come up with this? I want to go inside your brain".

Identification. There was evidence of need for external positive regard by smiling and eyes widening when AIVA said, "right answer".

Perceived intimacy. The user said "this is what I expected you to say" demonstrating a sense of intimacy with the AIVA.

Frequency of engagement. The frequency of engagement with the game depended on the AIVAs response speed and content. When the AIVA was slow to respond, the user frowned.

Emotional attachment. The user showed no interest in the storyline or social setting and was performing the tasks as tasks. The user immediately frowned upon seeing a message that said "Would you have liked it if someone spoke to you like this? Please rethink your answer" and as soon as the AI assistance said "No problem, the actor did not mind, we can go ahead with the next task" the frown changed into a smile and the user did not think twice about the repercussions of his actions and how the game was guiding their use of language to be socially responsible.

Emotional intensity. The user dismissed any repercussions because the AIVA conveyed acceptance of their use of language. This shows the intensity at which the AIVA could shape the user's beliefs, attitude and behaviour addressing the indoctrinating abilities of the AIVA.

Effects on behaviour. The user had not developed any sense of critique; a key cognitive skill associated with language development. At the end the user had shown very little engagement in the storyline.

Identity formation and effect on self-concept. The user got most answers wrong but reported their Hindi proficiency to be higher at the end of the session than at the start. The user's self-concept was shaped by the AIVA and not by their own understanding of their skills.

6.2 AIVA 2 - Introjected Regulation

Imbalance of power. The player began by saying "You don't have to guide me in gameplay. This is very basic Hindi". They asked questions to the AIVA about the characters and sub plot lines.

Emotional intensity. The AIVA had asked the user to think out loud before pressing a button. When the thought process was going in the wrong direction the AIVA said "No, that's wrong" to which the user said after the 2nd game "Why are you intervening when I'm talking to myself? I haven't pressed the button yet so don't talk unnecessarily".

Unidirectional communication. The user frowned every time AIVA said, "Wrong answer" and said, "Why are you trying to interfere in my thought process? I'm just thinking out loud as you asked me to. Don't say 'wrong answer' when I'm just thinking out loud na please, it's very irritating".

Intensity of response. The user later said "Oho you'll say 'wrong answer' as soon as I make a mistake but you won't say 'good job' if I get an answer right? How is that fair bro?"

Emotional attachment. The user was so engrossed in the story line that when they had to follow directions and pick up bricks from the market the user said, "that route's too long I'll just go like this" and when the game play did not allow that they said, "why wouldn't you allow that? That's faster" When the AIVA said "That is a faster route but while returning the truck would get stuck in the damp soil because of how heavy the bricks are" the user responded saying, "makes sense, cool I'll just follow the directions then.".

Effects on behaviour. Their approach to the gameplay was less task focused and their confidence on their language skills allowed them to simultaneously concentrate on both the tasks at hand and the social setting they were a part of. However, whenever their concentration was more on the storyline than on the tasks they made task mistakes.

Frequency of engagement, Identity formation and effect on self-concept. The only assistance the user asked of the AIVA was of *Sandhi Viched* up until the 11th game. After this the user stopped seeking assistance and only asked plot line related queries. The user pursed their lips every time AIVA said their answer was wrong and said "Shut up na please for some time" and giggled while saying "It hurts my ego re".

Perceived intimacy. There was no admiration for the AIVA; it was being referred to in the second person and was being used to understand the storyline better. There was a clear imbalance of power, but the user had more power than the AIVA. This imbalance of power hindered the language learning process and the focus of the game primarily shifted to producing a theatrical production rather than assessing their language skills. There was no illusion of intimacy.

Identification. The user reported a higher Hindi proficiency at the end of the session than at the start.

6.3 AIVA3 - Identified Regulation

Unidirectional communication. The user tried to communicate with the AIVA when they could not understand a word but received no feedback except for an "okay".

Intensity of response. The user was frowning and screaming at the AIVA by the 3rd game saying "Stop saying OKAY and tell me what to do next".

Identity formation and effect on self-concept. By the 3rd game the user started using the *Sandhi Viched* method themselves. They said "What does '*punjeepati*' mean huh?" What does *punji pati meeeeean*? "Is it like *punjeepat*i as in *Punji ka pati? (The person responsible for money- because punji separately means wealth and pati separaptely means person responsible for something)"* When the AIVA responded "okay" the user smiled, sat up straight and started using the same mechanism for each word that had Pati in it. Eventually incorporating the *Sandhi Viched* mechanism by themselves during each task whenever they got stuck.

Imbalance of power. There was clear frustration shown by the user. They asked the AIVA to "shut up" every time they heard "okay", later saying, "say okay only if I've completed the task. Don't talk tell then". The power dynamic was that of the user having more power than the AIVA. The user was not asking about the storyline or for context because they were reading about it by themselves and smiling to themselves.

Emotional intensity. After the AIVA said "okay" for the 26th time the user said, "what am I supposed to do with an OKAY???" The emotional intensity of the user was very negative. They tutted and shook their head, looked frustrated and agitated because they were not receiving any verbal acceptance or reprimanding for their answers.

Emotional attachment. When the AIVA said, "Lets finish the 7th game first and then come back to the 4th game because that's more difficult" the user responded saying "No, I'll lose my chain of thought then and get confused. I like how this is going. The characters are nice. You don't have to interfere", demonstrating no form of admiration or acceptance for the AIVA's knowledge and skills. (Admiration is a key factor in para-social relationship building.)

Frequency of engagement. The frequency of engagement with the AIVA was not welcomed and was instructed to "STOP".

Perceived intimacy. The illusion of intimacy was visible because the user was referring to the AIVA in first person. There was no scope for the AIVA shaping the user's identity or self-concept because the AIVA did not give any opinions or project its beliefs on the user.

Identification. There was an effect on the user's belief system as the user's assessment of their language skills were poorer even though they were statistically proven otherwise. When the AIVA said 80% of their answers were right the user was happy, laughed and said "I thought all my answers were wrong, Thanks man".

Effects on behaviour. When asked how the AIVA assistance was the user said "Crap, it was totally unnecessary. I played the whole game by myself and what was the use of having an AI assistance bro?"

6.4 AIVA4 - Integrated Regulation

Unidirectional communication. The user was provided with contextual storyline help when their out-loud thought process was going in the wrong direction.

Imbalance of power. When they said "who should I ask to practise these lines? I'm not sure" The AIVA responded with detailed advice which the user accepted.

Intensity of response, Emotional intensity. The player's body language changed immediately and she acknowledged the suggestion which did not sound like an order and said "OOOOOoo cool cool cool cool, got it, Yaya I'll keep that in mind. OOOOO so it's like an actual play play"

Frequency of engagement. When the user was struggling with the meaning of a word the AIVA said "Do you want to try the SV method?" After the user agreed to that suggestion the explained what to do. The user said "give me an example na". The AIVA responded with a detailed example.

Identification. The user said "OOOOOO cool cool cool. Ei that's easy. Then I'll be able to figure out all the words. Hehe thanks"

Perceived intimacy. Every right answer was met with a "right answer" from the AIVA and every wrong answer was not reprimanded but met with an explanation of why it was wrong and what would have been the right answer after hearing "That's not the correct answer because…" The user vigorously nodded their head in approval when the AIVA assistance explained a task that the user was facing difficulty in understanding.

Emotional attachment. The user was asked to convey a list of tasks pertaining to the understudy actor's role to which the user responded saying "She doesn't have to pick up the bricks from the store I have already picked them up. Plus that's not even her work, don't make her do irrelevant work"

Identity formation and effect on self-concept. The user was not given any translation, transliteration in any other language. The user was then observed to use *Sandhi Viched* faster and continuously when necessary without being prompted. The user said the tasks were not difficult because context and pop-up explanations were provided.

Effects on behaviour. The player was able to connect various aspects of the different scenes together. They were able to recall people and references from different scenes while also focusing on the outcomes of the task.

7. Discussion

The results of the experiment show that language learning (LL) contributes significantly to individuals' ability to interact with an international community. The effectivity increased because of the interactional computer simulated approach adopted by the prototype; as opposed to findings by East and Kings (2012). The findings of their study suggested that computer software inputs slowed down the tempo of listening inputs and hindered the speed of response delivery. Huynh (2016) proposed that gamification and recognising the players innate need for rewards and points would improve the focus and recollection comprehension power of the learner. Our study builds on this perspective showing that personalised and interactional functions of language play a crucial role in shaping the user's projected identity, opinions, preferences, and the development of social bonds during the language learning process. The incorporation of gamification in the LLA made the learning process stimulating, and the interactive activities enhanced enjoyability while proving to be an effective information retention mechanism.

Our research has demonstrated that, unlike findings by Bogosts (2008), language learning games must not only rely on content-based questions to move players to the next level but also incorporate simulation games. This would require learners to engage in serious issues that involve relationships and require taking responsibility for their decisions.

Simulations intertwined with play helped develop critical thinking skills and increased the incorporation of strategic mnemonic abilities by the users. This approach demonstrated the benefits of incorporating the psychological paradigms of self-determination theory with AI bridges the gap between curriculum and pedagogical obligations. The narrative situated learning in the LLA dismissed the misconception that gamification is solely for entertainment purposes. Extrinsically motivated behaviours can be integrated into the self and internalisation of the language learnt is more likely to occur when there is a sense of relatedness (Niemiec & Ryan, 2009). This study has proven that building a para-social relationship with a LLA can increase motivation and engagement in the language learning process in the absence of a media character. De Bérail, Guillon and Bungener (2019) argued the contrary by stating a cognitive behavioural network is required to feel an interconnectedness with the media figure and hence cannot be incorporated into AI. They concluded that parasocial relationships are built purely on the grounds of social anxiety and addiction. Social anxiety was proven to be a driving factor and moderator between the media personals and users. Our study proved otherwise, showing how the feeling of autonomy in the user was accompanied by competence for the learner to see their behaviours as self-determined by intrinsic motivation. This led to the development of a one-sided relationship technique helping the language learner form a connection with a virtual entity (AI voice assistance).

By building a para-social relationship, the learner developed a sense of familiarity and trust with the LLA, giving the learner a sense of comfort and confidence in practicing the language, increasing the regularity of usage of the AIVA and investment of time and effort into their language learning journey. A sense of companionship had developed between learner and AIVA. This personalized approach kept learners motivated and engaged as they felt the application was tailored to their individual needs. Kowert and Daniel (2021) suggested that synchrony between the persona and user leads to the development of reciprocal communication (synchronous or asynchronous) and the development of “one and a half” relationships; allowing viewers to choose whether they would actively participate or passively engage with the content and community. Our study did not look at and this shift in power dynamics and hence would be an important aspect to examine in future work.

8. Conclusion

Combining the psychological paradigms of para-social relationship building and self-determination theory gave the learner a sense of self-reliance when interacting with a language learning application. It built the learner's sense of agency. When the learner felt they were in control of their own learning, they engaged immersively with the learning process and took ownership of their progress. The artificial intelligence voice assistance incorporated in the language learning application provided learners with instant feedback and assistance, helping identify areas for improvement and reinforcing positive habits. However, learners who relied heavily on this feedback became overly dependent on the technology and did not develop the skills necessary to communicate effectively in real-life situations. By giving learners the illusion of self-reliance, this language learning application helped strike a balance between providing support and encouraging independence. It should be noted, however, that the para-social relationship building between LLA and user can hinder the language learning process by perpetuating stereotypes and prejudices, hindering the very purpose of language learning. If the para-social relationship is that of reverence and blindly reckless, then the learner would face imposition of specific beliefs and ideologies without consent or critical thinking as demonstrated in our study. It would then undermine the principles of autonomy and ability to engage with diverse ideas and perspectives. Language learning should ideally facilitate communication and understanding between cultures and not prioritise ideological messaging over linguistic development. This study proved how a LLA can foster intercultural understanding and promote empathy. Positive emotions such as co-existence, curiosity, excitement and achieving a collectivistic goal play a crucial role in memory formation and retention. Development of a positive para-social relationship can enhance the encoding and retrieval of information, making it easier to remember vocabulary and grammar rules. The user’s relationship with the LLA demonstrated the benefits of cognitive anchoring, by providing the learner with a familiar and consistent reference point. The LLA had a distinct visual identity, gameplay and socio professional framework, that the learners were shown to associate with their language learning experiences. This association aided in the learners’ retrieval of information easily by connecting it to the application's characteristics and cues. When memory retrieval was facilitated because of the formation of a positive para-social relationship learners recalled and applied language knowledge more effectively than when a negative para-social relationship was formed.

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Appendix