

Redefinition of a Non-formal Personalized Virtual Language Learning Environment

Integrating Socio Emotional Learning Aspects and 21st Century Skills

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Abstract

The present project aimed at determining the pedagogical factors that should be integrated into a non-formal personalized virtual language learning environment considering socio-emotional learning aspects and the development of 21st-century skills. This qualitative descriptive study gathered data through document analysis, observations, and semi-structured interviews with three teachers and four student participants. Through thematic data analysis, the authors concluded that different pedagogical factors such as the material, the interactive tools and structured feedback processes support the cognitive and the socio-emotional dimension of the students by fostering their motivation and engagement in the learning environment. Furthermore, technology was seen as a tool that enhances collaboration, critical thinking, and communication, which are some of the key aspects of 21st-century skills. Finally, the research study led us to propose the holistic approach as a guiding pedagogical framework that enhance the social, cognitive and socio-emotional dimensions of the student.

Keywords: 21st-century skills, holistic approach, non-formal education, socio-emotional learning, virtual environments.

Resumen

El presente proyecto tuvo como objetivo determinar los factores pedagógicos que deben integrarse en un entorno virtual no formal y personalizado de aprendizaje de idiomas, considerando los aspectos del aprendizaje socioemocional y el desarrollo de habilidades del siglo XXI. Este estudio de investigación cualitativa y descriptiva recopiló datos mediante análisis documental, observaciones y entrevistas semiestructuradas con la participación de tres docentes y cuatro estudiantes. A través del análisis temático de los datos, los autores concluyeron que diversos factores pedagógicos, como el material, las herramientas interactivas y los procesos estructurados de retroalimentación, apoyan la dimensión cognitiva y socioemocional de los estudiantes al fomentar su motivación y compromiso en el entorno de aprendizaje. Además, se identificó a la tecnología como una herramienta que mejora la colaboración, el pensamiento crítico y la comunicación, los cuales son aspectos clave de las habilidades del siglo XXI. Finalmente, el estudio de investigación nos llevó a proponer el enfoque holístico como un marco pedagógico orientador que fortalece las dimensiones social, cognitiva y socioemocional del estudiante.

Palabras clave: ambientes virtuales, aprendizaje socioemocional, educación no formal, enfoque holístico, habilidades del siglo XXI.

Introduction

During the last century, education has evolved periodically due to new educational theories such as the connectivism theory which emerged as a response to the rapid societal changes and interconnection of a digital world (Dr. Md. Alam, 2023). These changes support training processes, helping students develop skills relevant to their contexts. Acknowledging this, the non-formal learning environment has always met the balance of innovative practices concerning traditional formal education seen as an “alternative and/or complement to formal education within people’s ongoing learning processes. It is often provided to ensure the universal right of all individuals to education. It seeks to meet the needs of people of all ages” (Almeida & Morais, 2024, p. 1). In this sense, this non-formal personalized learning environment (VLLE) provides broader learning scenarios and greater opportunities for individual educational preferences.

Along that line, the non-formal learning environments have adopted new teaching and emerging pedagogies such as personalized tutoring, which is perceived as a remedial purpose supplementing formal education since it is flexible to the needs of the student (Černá, 2020). Similarly, it builds an implication in the motivation of students depending on the activities that the teacher implements (Pescaru & Pescaru, 2022). With this in mind, the learning process should involve students’ motivation, emotions, and their learning styles, rather than merely preparing them to become future workers.

Furthermore, the non-formal personalized language learning environment has gained acknowledgment from learners and teachers since it can be conducted virtually, synchronously, or even asynchronously thanks to technology. The role of technology in this learning environment remains crucial for its development because “technology provides personalized

learning classes with opportunities and ways to fulfill students' needs" (Herawati, 2023, p. 5).

Considering this perspective, the non-formal personalized VLLE is organized within a personalized framework to achieve specific objectives, modifying the learning experience to address the unique needs, interests, and language levels of each student.

Therefore, after an initial interaction with the learning environment and two observations conducted to explore this field, we identified that non-formal personalized tutoring sessions were a means for many students to achieve their objectives and fulfill and enhance speaking, writing, reading, and listening in the language. However, the challenge in this non-formal personalized VLLE lied in articulating a pedagogical approach that defines it as an educational practice capable of developing socio-emotional skills while effectively integrating innovative strategies, such as personalized learning, feedback and interaction to foster 21st-century skills like critical thinking, and self-regulation. Therefore, we aimed to determine the pedagogical factors that enhance socio-emotional learning aspects and the development of 21st-century skills in a non-formal personalized virtual language learning environment.

Research Question

How are the socio-emotional learning aspects and the development of 21st-century skills integrated in a non-formal personalized virtual language learning environment?

Objectives

General Objective

To determine the pedagogical factors that integrate a non-formal personalized virtual language learning environment considering socio-emotional learning aspects and the development of 21st-century skills.

Specific Objectives

- To identify the factors that integrate a non-formal personalized virtual language learning environment.
- To analyze the pedagogical factors needed to enhance a non-formal personalized virtual language learning environment considering socio-emotional learning aspects and 21st-century skills.
- To establish the pedagogical factors of a non-formal personalized virtual language learning environment considering socio-emotional learning aspects and 21st-century skills.

Theoretical Framework

This literature review focused on key theoretical constructs for determining the pedagogical factors that integrate a non-formal personalized VLLE considering socio-emotional learning aspects and the development of 21st-century skills. The concepts included theories on the characteristics of a non-formal VLLE such as technology-enhanced learning, non-formal education, personalized language learning, student-centered approach, pedagogical factors, socio-emotional learning aspects, and 21st-century skills. Overall, this chapter analyzed the views of various authors and studies to support the integration of these constructs into an educational framework considering the emotional dimension of the students as well as some of the 21st-century skills competencies such as critical thinking, interaction, communication, and collaboration.

Learning environments and virtual learning environments

A learning environment refers to the context in which the educational process takes place, encompassing both physical and virtual aspects that influence knowledge and skills acquisition. This environment ranged from traditional classrooms to online platforms, and its characteristics significantly influence the effectiveness of learning. As outlined by Wong et al. (2018), an effective learning environment provides the right conditions for students to explore, interact, reflect, and construct knowledge meaningfully and relevantly. In this sense, Benadé (2019) suggests that the design and development of innovative school buildings should promote flexible learning spaces that enable collaborative and facilitative teaching styles as the layout of physical space, access to educational resources, interactions between students and teachers, and the technological tools used to facilitate teaching and learning.

Along with this, the rapid evolution of education, driven by accelerating technological advancements, has facilitated the rise of VLLEs, which serve as transformative learning environments, revolutionizing traditional teaching and learning methods. These environments changed face-to-face teaching by adopting synchronous, asynchronous, and hybrid methodologies, offering flexibility, accessibility, and interactivity that adapt to individual needs. This directly relates to Borba et al. (2015, as cited in J. Marín and Pino, 2022) who assert that these learning environments have become significant in recent decades as an educational approach aimed at democratizing access to learning opportunities and making educational processes more accessible to everyone, regardless of their age or prior knowledge. Therefore, the growth of these learning environments has become more noticeable, allowing factors such as time, distance, economy, and accessibility not to hinder educational training.

Following the views of the previous authors' arguments, Tavakol (2012, as cited by Hussain et al., 2019), points out that virtual education is:

A learning environment where teacher and students are separated by time and/or space and the teacher provides course content through ICT-based methods such as the internet, multimedia resources, and videoconferencing. Students get the content and communicate with the teacher via the same media (p. 2).

The ecosystem in VLLE transcends geographical boundaries, offering a comfortable learning environment as it accommodates the space and time of the participants. In this sense, this project fits within the ubiquity framework “as the technological support that facilitates the creation of Internet/intranet-based educational environments, providing an interface to design a series of educational tools that facilitate learning, communication and collaboration” (J. Marín & Pino 2022, p. 159). This conceptualization stands for the learning environment we studied in this

research proposal since both virtual and ubiquitous learning were part of its characteristics as a VLLE.

Technology-enhanced learning

As inferred earlier, learning through Information and Communication Technologies (ICT) has become an important element of modern education. This vision was significantly accelerated as (ICT) became indispensable during the pandemic period of COVID-19. In that time, ICT transformed educational practices and became a useful tool for performing tasks and communicating information; helping students acquire all types of learning, and enhancing learning assessment (Batra & Kumar, 2022, as cited in Antón-Sancho et al., 2023). Today, “Teaching with technologically assisted tools and approaches is widely employed in the current foreign language teaching and learning arena” (Santos 2022, p. 4). In consequence, the desire to learn other languages is no longer seen as something distant; on the contrary, e-learning has allowed the acquisition of languages to have no limits on time because classes can be flexible since they offer versatile schedules, allows classes to be taken anywhere, and eliminates commuting expenses.

In addition to Santos's (2022) view, Noroozi et al. (2012, cited in Noroozi & Sajin, 2023), further elaborated the concept of “Technology Enhanced Learning (TEL) which was a combination of all the tools, techniques, and approaches in which technology supports the teaching-learning process especially students augmented learning” (p. 114). Accordingly, TEL was found to be beneficial in helping students learn in the individualized virtual learning scenario we studied, where learning became more effective when objectives were outlined in a design sensitive to individual differences.

Non-formal education

As read before, with this rapid evolution of learning environments and the impact of technology in their development, personalized VLLEs have supported the growth of non-formal education through the implementation of non-formal personalized virtual language tutoring. This environment goes back to the last century when Coombs (1976), presented in his journal the conception of non-formal education as a conventional denomination that serves to cover the assortments of an organized education that was held beyond exterior formal environments to support the learning diverse needs of subgroups. Hence, non-formal education was seen as a decentralized, integrated, and planned process according to the intended objectives and the needs, interests, and priorities of the learner.

While research on personalized language tutoring in non-formal education in VLLE is still evolving, some studies have been conducted across the world, highlighting its potential and challenges, Pescaru and Pescaru (2022), provide critical insights into this matter. On one hand, the authors argue that non-formal online education fosters flexibility and creativity but at the same time, it presents some challenges in achieving meaningful interaction. On the other hand, these authors emphasize that educational platforms facilitate the learning process by enabling the creation of non-formal learning spaces, essential for personalized virtual tutoring.

Pescaru and Pescaru (2022), also highlighted that the motivation of students of online non-formal education depends on stimulating their interests through the content, which demands the teacher to organize his approach by defining its foundational principles, goals, and strategies for teaching to encourage students in an innovative environment where they can discover themselves and their surroundings, develop new skills, and establish values such as collaboration, respect, and responsibility which support their personal growth.

Consequently, teachers in the non-formal personalized VLLE are required to think beyond traditional methodologies to stimulate student's interest and give meaningful and transformative learning experiences to the students. Manurung et al. (2021) reinforced this perspective by adding that “non-formal education greatly contributes and benefits students (in terms of their competencies) due to the lack of information they receive from formal schools” (p. 4). Thus, the non-formal personalized VLLE stands out for the advantage of the opportunity to adjust to the evolving challenges such as literacy, cultural differences, language barriers, and emotional and social aspects faced by learners in their individuality.

Personalized Language Learning and one-on-one teaching

The non-formal personalized VLLE environment involves one-on-one teaching adjusting instruction to individual students' needs (Amro & Borup, 2019), and focusing on addressing specific areas of weakness rather than emphasizing mastering skills such as language proficiency, grammar use, or writing skills. Amro & Borup (2019), supported the idea that one-on-one teaching has a role in addressing students' individual needs and enhancing their learning experience. This perspective enables educators to provide guided support, facilitate effective individualized instruction, and emphasize the importance of differentiation, and personalization. It highlights the educators' key role in identifying the diverse learning needs of students (Zmuda et al. 2015, cited by Radó, 2020). However, the quest for complete personalization should consider potential knowledge gaps, urging a balanced approach that accommodates teacher guidance with student autonomy based on the one-to-one approach, where the teacher must identify the differences between the learners to accomplish the objectives proposed.

In a similar point of view, Holmes et al. (2018) outlined that personalized learning must be understood as including its “objectives (to improve student engagement and achievement), its

differentiation (its focus on meeting individual student's learning needs), its flexibility (its ability to shift to meet changing needs), and its variable pacing (its recognition that individuals progress at different rates)" (p. 15) and as the personalized classes are a voluntary process where students seek tutors, aligns with the "teaching model that focuses on learning outcomes, voluntary learning, and the concept of autonomy learning. The basic idea of this was the individuality of each student and the active activity" (Herawati, 2023, p. 1). Thus, students' strong interest and autonomy make their learning process more engaging, independent, and dynamic.

Student-centered approach and students' agency

As previously stated, personalized language learning centers its processes on the student's agency and interests; in this specific context, students request what they need to learn or which abilities and competencies they want to develop. This learning environment fosters the student agency approach prioritizing an engageable communicative learning environment where students feel free to express themselves from their ideas, emotions, and identities (Rojas & Escobar Alméciga, 2023) as it follows a student-centered model. By directing personalized teaching on individual goals, the students take an active role in their learning processes. This is connected to the idea of Kerimbayev et al. (2023) establishing that this "method places the needs and interests of students at the center of the educational process. It emphasizes engagement, collaboration, and student autonomy, aiming to create a learning environment that supports, challenges, and aligns with students' needs and goals" (p. 1).

Consequently, teachers tailor learning processes to students' interests, aspirations, cultural backgrounds, and real-life contexts, using differentiated lesson plans. Along with the foundations proposed by Kerimbayev et al., (2023), Conde & Igarza (2019), argued that

La aplicación de este modelo implica focalizar la atención en lo que el estudiante hace para aprender, con la guía de un docente quien, desde su conocimiento y experticia, diseña estrategias y acciones necesarias para que el estudiante construya el conocimiento (p. 4).

Given that, the role the teacher assumes when designing and planning his/her classes is extremely fundamental to getting to the goals set for the students who are the ones who paced their learning process enhancing students' agency that "involve control over learning (self-regulated learning) and transforming students themselves into active actors of the own learning" (Marín et al., 2020 p. 17) what is seen in virtual environments where "live virtual classroom provides agency to the student and creates a sense of empowerment which promotes ownership of the course by providing each learner opportunity to adapt the curriculum for personalized pedagogy" (Elen et al., 2007 cited in Galbally and Christodoulidi, 2023, p. 7) this connects with the student-centered approach enabling students to direct their learning process deciding on how and what to learn, increasing his/her motivation to learn, and proposing their learning objectives while the teachers are guiding those choices as scaffolding agents.

Pedagogical principles and socio-emotional learning aspects

This research aimed to propose the pedagogical factors of a non-formal personalized VLE needed for the development of socio-emotional skills and 21st-century competencies highlighting not only cognitive but socio-emotional development. This perspective aligned with Hughes and Acedo's (2016), cited in Yu et al., (2020), the view which states, "There is increasing understanding that new areas of knowledge, competencies, and behaviors need to be integrated into curricula if young people are going to function well in an increasingly complex global society" (p. 140). In consequence, emerging pedagogies should prioritize fostering students'

social and emotional development by creating student-centered learning environments and shifting from instructor-led teaching, while supporting positive emotional growth.

In this regard, Moore (2007, cited in Achuthan et al., 2024) stated that distance and online education must be guided by Transactional Distance Theory (TDT). TDT suggests that the level of independence and interaction between the learner and the course content, along with psychological distance measuring the learner's cognitive and emotional involvement with the materials and the instructor, was crucial to learning since “Personalized learning approach increases student motivation and engagement, which improves academic performance” (Makhambetova et al., 2021, p. 2). This framework highlights that effective teaching in open learning spaces includes cognitive factors and socio-emotional learning development, aligning with pedagogical principles that foster critical thinking skills, communication, interaction, and collaboration.

Hughes and Acedo (2016, as cited in Yu et al., 2020), also point out that “students are more likely to develop critical thinking skills when they feel free to take risks, are corrected without feeling criticized, and discuss different opinions in open learning spaces” (p. 134) which reduces barriers to participation given that “the shift to virtual learning creates more opportunities for students to receive prompt, real-time feedback that can establish immediacy and reduce isolation time for virtual learners” (Carby, 2023, p. 37). However, “there is a negative correlation between learning anxiety and students’ academic performance, examination performance, oral and written expression ability, and self-confidence” (Gardner and MacIntyre, 1993 cited in Wang et al., 2021, p. 2) in which online learning affects the academic performance of students who learned a language due to anxiety, which was defined in the internet context as “environmental

anxiety” (Wang et al., 2021) caused by distractions, limited access to technology and lack of knowledge when using platforms in online environments.

Similarly, Martin (2008, cited in Jiang et al., 2024) stated that the integration of motivation must consider engagement and the following four factors “adaptive motivation (i.e., positive orientations toward learning), adaptive engagement (i.e., students’ positive behaviors in learning), maladaptive motivation (i.e., orientations that impede learning), and maladaptive engagement (i.e., students’ negative behaviors that impede learning” (p. 5) what influence socio-emotional aspects in the learning process. This is presented by the Collaborative for Academic, Social, and Emotional Learning Organization (CASEL) (2020) through the framework for systemic Social and Emotional Learning (SEL).

Figure 1

CASEL’s Framework for Systemic Social and Emotional Learning



Note. From “CASEL’s SEL framework, by Collaborative for Academic, Social, and Emotional Learning”, 2020, (<https://casel.org/casel-sel-framework-11-2020/?view=1>).

This framework aims to promote Social and Emotional Learning (SEL) addressed to students' development of essential skills alongside the learning environment. As is seen in the previous chart, the SEL framework (2020) proposed five competencies: self-awareness to promote the learners' recognition of emotions, thoughts, and limitations, self-management as a factor to regulate emotions and set goals, social-awareness to understand others and respect their backgrounds, relationship skills to lead learners to build relationship with others through cooperation and communication, and finally responsible decision-making where students will be able to make respectful and constructive choices.

The 21st-century skills

The integration of 21st-century skills from the competencies “In an increasingly interconnected and rapidly changing world, skills such as critical thinking, creativity, communication, and collaboration are essential for people to contribute effectively to society and to adapt to changing workplaces” (OECD, 2018, p. 3). These components are the foundation of contemporary educational systems, which aim to provide broader learning outcomes and emphasize the need to better prepare learners to solve and face global challenges.

These skills are also needed in those VLLEs that focus on personalization. Indeed, as Sujarwo et al. (2022) identified, integrating case-based and collaborative learning strategies into a VLLE develops critical thinking and adaptability congruent with lifelong learning principles in the new paradigms where we can observe student center, network environment, collaboration, interaction, and critical thinking as shown in the following table.

Table 1

The 21st Century Learning paradigm

Old paradigm	New paradigm
Teacher centered	Student-centered
Isolation	Network environment
Abstract	Real-world context
Indiviadual	Collaborative
One way	Interactive
Factual thinking	Critical thinking
Knowledge transfer	Knowledge exchange
Single learning media	Multimedia learning

Note. Adapted From “Developing 21st Century Skills: Critical thinking skills in Case-Based learning in social studies” by Sujarwo et al., 2022, *Edukasi IPS*, (p. 16), <https://doi.org/10.21009/EIPS.006.2.02>

Similarly, the 21st-century skills proposed by The Partnership for 21st-Century Skills (2004), as cited in Pardede (2020), outline the essential 4Cs—critical thinking, communication, collaboration, and creativity—as part of the learning and innovation skills needed to equip students for the challenges of a globalized world. These skills are intended to help students develop competencies to navigate the complexities of modern life. Furthermore, Pardede (2020) emphasizes the importance of ICT in integrating the 4Cs within the framework of integrated skills learning. From this perspective, the use of ICT “strengthens and increases the possibilities of communication and reinforces the synchronization and collaboration skills development between peers” (Ananiadou et al., 2009, as cited in Pardede, 2020, p. 78) which enhances

communication through diverse resources, which, in turn, promotes collaboration, critical thinking, interaction and creativity.

Method

This study employed a qualitative approach to delve into the experiences and viewpoints of individuals in a non-formal personalized VLLE. According to Merriam and Grenier (2019), “qualitative researchers aim to understand how individuals perceive and interact with their environment in a specific time and context” (p. 4). By focusing on participants' reflections, perspectives, and experiences, we gained a deeper understanding of this learning environment and its significance within the educational sphere. On one hand, Morales Zúñiga (2016, cited in Ponce et al., 2022), underscores viewing education as a social phenomenon, including its teaching strategies, materials, curriculum, and values, necessitating an analysis through a social-scientific perspective. On the other hand, this helped align education with the competencies to meet the demands of the 21st century, promoting the redefinition of this learning environment.

Given that this research aimed to determine the pedagogical factors for the non-formal personalized VLLE, we framed in the descriptive research method where Manjunatha (2019), explains that descriptive research is “a research method that describes the characteristics of the population or phenomenon that is being studied. This methodology focuses more on the “what” of the research subject rather than the “why” of the research subject” (p. 863). In this sense, with this method, we wanted to understand what occurs within this learning environment and its characterization identifying elements through its pedagogical and socioemotional components to establish it as an authentic learning environment.

Participants

This study was contextualized in a non-formal personalized VLLE in which its participants (4 students and 3 teachers) were in different cities in Colombia and abroad. Taking into account their contexts of current residence, it can be said that this population had a wide knowledge of cultural exchange, human, linguistic, social, and formative diversity. Similarly, their enrollment in this educational context was framed in the acquisition of linguistic skills for better job and school opportunities, as well as the personal motivation to acquire linguistic competencies for life. The participants described in Table 2, were asked to sign a consent format for the participation of this research study allowing transparency in the project development ([Appendix 1](#)).

Table 2

Number and characterization of participating teachers

Gender	Age	Place of residence	Professional profile	Years teaching in non-formal virtual English teaching	Language proficiency level
Male	34	Cúcuta (Colombia)	Bachelor's degree in foreign languages English French	4	English C1 - French C1
Female	25	Arauca (Colombia)	Bachelor's degree in foreign languages with emphasis in English	3	English B2
Female	29	Medellín (Colombia)	Bachelor's degree in English with emphasis in Spanish	3	English C1

Note. This table shows the actual data collected from the teachers' participants in this research.

Table 3

Number and characterization of participating students

Gender	Age	Place of residence	Interest in learning	Time enrolled in learning practices in non-formal personalized virtual classes	Hours of classes taken in a month term
Female	18	Montreal (Canadá)	Career Advancement & Cultural Understanding	2 years	2
Female	25	Montreal (Canadá)	Education & Communication	1 year	3
Female	23	Cucuta	Professional development	2 years	3
Male	30	Bogotá (Colombia)	Personal Development	2 years	3

Note. This table shows the actual data collected from the student participants in this research.

Selection criteria for participants

Sukmawati et al., (2023), explained that selecting participants in qualitative research usually follows the principle that the individual understands the topic, possesses relevant data, and is willing to provide complete and accurate information. Considering the above, a purposive sampling technique was used in which “a selected number of relevant participants could be identified and used to represent the entire population which we can then call a sample” (Nyimbili et al., 2024, p. 99) as it allowed us to identify a small-targeted group of participants who represents the entire population involved in this research setting.

On one hand, or the selection of the three teachers, we considered their professional profile and qualifications, time of teaching experience in the non-formal personalized VLLE, as well as their level of language proficiency, age, and gender, since all these criteria allowed understanding of the level of recognition within the dynamics and specific requirements of the

non-formal personalized VLLE. On the other hand, the four students were selected taking into consideration aspects such as gender, age, place of residence, their learning interest, and the time of enrollment in this learning practice, this was essential to understand the diverse experiences and needs in a non-formal personalized VLLE. It is important to mention that the students come from socioeconomic strata classified as level 3, further contextualizing the choice for them of an effective educational scenario that addresses the diverse needs they presented.

The criteria previously mentioned align with the qualitative approach and descriptive method as they focused on selecting participants who were directly engaged in the learning environment being studied. This ensured a thorough and detailed exploration of their experiences and perceptions, providing a comprehensive understanding of the dynamics within the context.

Data collection instruments

The current study gathered data using three different instruments, all in line with the nature of descriptive research: document analysis chart, observations, and semi-structured interviews. All three fit the description of a descriptive research approach, which helped us gather appropriate and pertinent data to meet the study's main objective.

Document analysis

In our research project, we worked from documental analysis as a key data collection instrument to first redefine a non-formal personalized VLLE and determine its pedagogical factors. In that sense, Kayesa & Shung-King, (2021) stated that document analysis is a collecting instrument that implies activities like skimming, detailed reading, content examination, and document interpretation. The process consisted of systematically collecting, documenting, analyzing, interpreting, and organizing data from printed or electronic sources through the

selection and categorization of pertinent documents, extracting data to derive insights and conclusions on a particular concept (Bowen 2009 cited in Kayesa and Shung-King 2021).

To ensure the depth and relevance of our research, we carefully selected and prepared documents to align with the study's objectives and research questions. Duplicates with no relevance were excluded so that the focus would be only on the source-discussed topics of virtual learning environments, personalized learning, socio-emotional aspects, and academic performance. Related search results were removed so that duplication could be avoided, and discarding unconnected content could make it possible to focus on the virtual learning environment, personalized instruction, socio-affective aspects, and academic performance themes. This analysis was done in Excel ([Appendix 2](#)) for systematic organization. The matrix connected quotations to sources, enabling triangulation with observations and interviews.

Observations

The second instrument used in this research was observational analysis. Mirhosseini (2020) states, “In collecting qualitative data, the ideal procedure is participation in an observation of research participants in the research field” (p. 62). In this study, the observation exercises involved one researcher as a participant observer and two as full observers. The goal was to systematically observe and document the development and dynamics within the non-formal personalized VLLE. This instrument's relevance stemmed from the diverse perspectives of the three researchers.

Mirhosseini (2020), comments that “The evidence that was examined in qualitative research was gained from outsiders’ view of what went on in a context and interpreted from a distance, or an insider’s situated observation and understanding” (p. 62). These insights

allowed the information obtained from these observations to be systematically and neutrally organized to outline the main components of the learning environment.

The observations ([Appendix 3](#)) in this study were done over four weeks, each one for 60 minutes to take an in-depth look into this non-formal personalized VLLE. A total of four sessions were observed through pre-defined categories to ensure its reliability along the following axes: classroom dynamics, teacher-student relationships, technological tools used, pedagogical strategies, and socio-emotional relations influencing student approaches as seen in the observation analysis ([Appendix 4](#)).

Table 4

Observation systematization

	Observation 1	Observation 2	Observation 3	Observation 4
Date	May 20th, 2024	July 9th, 2024	July 11th, 2024	July 22nd, 2024
Length	1h33 minutes	48 minutes	1 hour	59 minutes
Participant	T1	T2	T2	T3
English level	A1	A1	B1	A2

Further supplementary notes taken during and at the end of the sessions complemented the observations. The instrument combined an active and external perspective across sessions, resulting in key qualitative data that complements findings from other instruments in providing a complete understanding of the learning environment.

Semi-structured interviews

In our research project, three semi-structured interviews (one interview for teachers and two for student participants) of 10 open-ended questions each were designed. The interviews considered the specific objectives and explored detailed qualitative data with a length time of 15 minutes. Interviews also focused on participants' experiences related to the non-formal personalized VLLE, conceiving their pedagogical strategies, challenges, socio-emotional learning aspects, and technology's role in the process ([Appendix 5](#)) ([Appendix 6](#)). The interviews were conducted after the observations to triangulate the data, with participants' consent, to ensure accuracy. Transcripts and notes documenting non-verbal cues and immediate reflections further complement this analysis in the learning environment ([Appendix 7](#)) ([Appendix 8](#)).

Scholars such as Mirhosseini (2020) highlight that this instrument “provides space for interview participants to reflect on and recount their perspectives, perceptions, and attitudes” (p. 86). The semi-structured interviews helped us to gain an in-depth understanding of the views of each of the teachers and students about this non-formal personalized VLLE. Similarly, as noted by Ruslin et al. (2022), “talking to people and eliciting their perspectives and attitudes about issues under investigation has always been considered a potentially rich source of data that provides valuable insights into the depth of many research questions” (p. 85) which allowed us to explore specific issues in greater detail while staying aligned with our research goals discovering new insights that supported the understanding of the learning environment aiming at determining the pedagogical factors that integrate a non-formal personalized virtual language learning environment considering socio-emotional learning aspects and the development of 21st-century skills.

Analysis and results

This descriptive qualitative research aimed to determine the pedagogical factors that should be integrated into a non-formal personalized VLLE considering socio-emotional learning aspects and the development of 21st-century skills. The data analysis was categorized by the main concepts that encircle this investigation. In that sense, we adopted a deductive and inductive thematic analysis following the steps explained by Dawadi (2020) who adapted them from a research proposal by Braun and Clarke (2006), who stated that this approach starts the analysis with deductive themes but always considers emergent ones.

For the first step, the authors suggested that for the thematic analysis, an initial familiarization with the data was necessary. In that sense, a general reading from the transcriptions of the data gathered was done. After the reading, it was necessary to focus on a deductive code analysis taken from the research question, general objective, and specific objectives. Table 5 presents the deductive codes that were contemplated for the analysis of the information.

Table 5

Familiarization with the data analysis chart

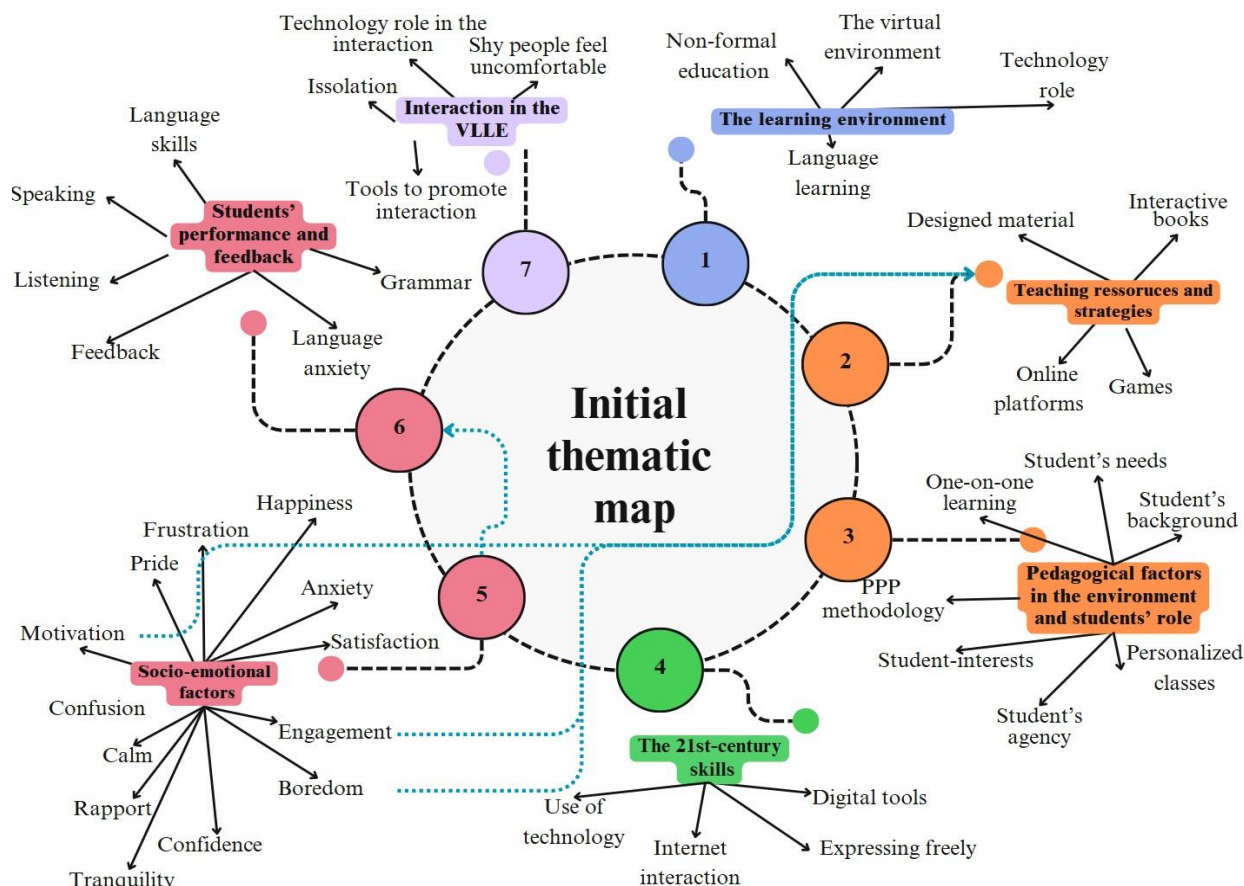
Research question	How are the socio-emotional learning aspects and the development of 21st-century skills integrated in a non-formal personalized virtual language learning environment?	
General objective	To determine the pedagogical factors that integrate a non-formal personalized virtual language learning environment considering socio-emotional learning aspects and the development of 21st-century skills.	Priori codes Socio-emotional learning aspects, 21st-century skills.
Specific Objective	To identify the factors that integrate a non-formal personalized virtual language learning environment.	The factors of a non-formal personalized VLLE

Specific Objective	To analyze the pedagogical factors required to enhance a non-formal personalized virtual language learning environment considering socio-emotional learning aspects and 21st-century skills.	Pedagogical factors
Specific Objective	To establish the pedagogical factors of a non-formal personalized virtual language learning environment considering socio-emotional learning aspects and 21st-century skills.	Factors of the non-formal personalized virtual language learning environment

Secondly, Dawadi (2020) explains that it is crucial to do a second reading to start with the identification of the codes considering the initial deductive codes presented previously in Table 5. We re-read the transcripts to detect patterns, themes, and recurrent excerpts that were not initially anticipated. The codification of all data was done from the transcriptions of the interviews and the analysis of the observations and document analysis in which 43 new emergent codes appeared as shown in Figure 2.

Figure 2

First themes' categorization and codes



Note. Authors source

Furthermore, in Table 6, 12 of the final 43 codes with their excerpts are represented to help us better understand this data analysis.

Table 6

Data excerpts and codes

Data excerpts	Coded for
The people who are dedicated to teaching need many more pedagogical tools to be able to improve teaching (Int.1)	Teaching resources
Since there is no literal physical contact, the class tends to get very distracting, whereas if more interactive strategies are adapted, either	The teaching strategies and



through software or through different programs, the class would be a little more entertaining (Int.1)	students' engagement
The student shows a lack of interest in the topic the teacher chose for the class development, which provokes demotivation in the student's argumentation (Obs.3)	Content and socio-emotional learning aspects
I think that (socio-emotional learning aspects) that has an impact in academic performance because if I feel good, if I have a good emotional state, if I am motivated that will impact the way I am learning (Int.2)	Motivation
The teacher was introducing three topics at the same time (Personal pronouns, simple present, to vs ing). It was evidenced that students were lost because he was going too fast with the topics (Obs.1)	Teaching strategies affecting student's performance
We have experienced anger when... the student feels frustrated because he is not capable of some production, and I feel frustrated because he is perhaps a very irresponsible student (Int.1)	Frustration
Since there are no other students, there is not that exchange of words, that practice of you telling me some words, I tell you another and there is a dialogue. So that's it, for me it would be a disadvantage (Int.2)	Lack of interaction
The teacher didn't adapt his English level to the level of the students. Despite the class being given in Spanish and English, when he was speaking in English, the students didn't understand what they had to answer (Obs.1)	Confusion / Frustration
She doesn't have a board or a document where she can write down the words, she says which generates confusion in the student since she repeats the word the teacher gives her but cannot see it written (Obs.3)	Teaching resources and socio-emotional learning aspects



One expects the teacher to provide corrections because, in the end, we'll have to face real-world situations every day, and of course, no one wants to make mistakes in those moments. It's better to make mistakes in the classroom than outside of it. That's why feedback and corrections are crucial, those are the key elements for improving. (Int.2)

Feedback

One of the challenges is connectivity issues, which sometimes cause the class to be interrupted either due to platform problems or time limits. This can happen right when you're feeling the most inspired, which can be really frustrating (Int.1)

Technological
issues influencing
students'
performance

I think that I have to keep adapting the trends in technology or things that are coming out to be able to apply them in this language since many new things are coming out every day (Int.1)

Technology role

There is an immediate correction (corrective feedback) in terms of the use of language (Obs.2)

Feedback in the
VLLE

Note. This table shows samples of the excerpts collected from the instruments applied (interviews and observations) and their codification concerning this learning environment's aspects.

Similarly, as it was stated by Dawadi (2020) the codes were grouped by initial categories and subcategories through a manual codification in Excel ([Appendix 9](#)). In this step, we identified two inductive categories and a deductive category.

On one hand, following Dawadi's (2020) procedure, we proposed a revision to provide a coherent classification of codes in each category. Table 7 evidences the socio-emotional learning aspects in this non-formal personalized VLLE as a deductive category that emerged from the code of Table 4 (familiarization with the data). However, from the codification of the data, two emergent sub-categories were inductively identified from the deductive category: the feedback

and the academic performances as factors of this non-formal personalized VLLE influenced by socio-emotional learning aspects.

On the other hand, we inductively found that this learning environment offers various pedagogical factors influencing students' motivation, including teaching strategies, resources, and students' active role and awareness of their learning process. Additionally, a new category emerged highlighting the importance of interaction in enhancing students' learning development in a non-formal personalized VLLE. This category conceived technology as a tool to promote interaction and critical thinking among students within such environments.

Table 7

Themes' categorization and codes

How are the socio-emotional learning aspects and the development of 21st-century skills integrated in a non-formal personalized virtual language learning environment?		
	Categories	Emergent subcategories
Deductive	Socio-emotional learning aspects in a non-formal personalized virtual language learning environment	- The impact of socio-emotional learning aspects on the student's academic performance. - The socio-emotional learning aspects and the influence on the students' feedback.
Inductive	Teachers' pedagogical factors influencing the students' motivation.	- The need for innovative teaching strategies and resources in a non-formal personalized VLLE. - Student's agency and awareness of their learning process in a non-formal personalized VLLE
	The role of technology as a tool to enhance interaction and develop 21st-Century Skills in a non-formal personalized VLLE.	

Results

With the sequence of the steps previously presented in our research analysis and the matrix in Excel ([See Appendix 9](#)), the triangulation of the data showed us three main categories and five subcategories. Firstly, as a deductive category, we maintained the interest in socio-emotional learning aspects in a non-formal personalized VLLE, but we found out that these socio-emotional learning aspects were impacting the student's academic performance and the feedback given.

Similarly, the data analysis presented that the teachers' pedagogical factors influenced the students' motivation from the need for innovative teaching strategies and resources as well as the students' active role in the class and awareness of their learning process in a non-formal personalized VLLE. Finally, we identified that technology promotes interaction in collaborative learning and fosters critical thinking and communication for the development of 21st-century skills, as proposed by The Partnership for 21st Century Skills mentioned in Pardede (2020). The data allowed us to present the following description of results regarding each category and its subcategories.

1. Socio-emotional learning aspects in a non-formal personalized virtual language learning environment.

In this first category, the socio-emotional learning aspects were evidenced as a way to complement the student's learning process. Along these lines, “an efficient personalized learning approach increased learners' motivation and engagement in learning activities so that improved learning results” (Shemshack & Spector, 2020, p. 2). From this perspective, the factors that were most influential to this learning environment were students' academic performance and the feedback they received from the teachers as explained below.

1.1. The impact of socio-emotional learning aspects and the influence on the student's academic performance

Some socio-emotional learning aspects such as motivation, frustration, and anxiety influenced the student's academic performance in this learning environment. Achuthan et al., (2024) stated that interaction between the learner and the course content, along with psychological distance measuring the learner's cognitive and emotional involvement with the materials and the instructor, what is crucial to learning. In agreement with the previous perspective, during the three observations conducted, it was possible to identify that the students were always motivated by the encouragement that the teacher provided them during their learning process, there were words such as "See the advances you have made from the first class to this class" (T1, Obs.1).

However, this non-formal personalized VLLE presents negative socio-emotional learning aspects that interrupt the development of the learning process. Participant S2 expressed:

On the emotional side, it has been a little frustrating because, even though we are taught English as a second language from an early age, the teaching methods have not been the best. So, there is a kind of learning shock, as if what I was taught is not the reality (Int.1).

That is why, the teacher needs to take his/her time to identify her student's difficulties which was seen as a lacking factor during Observation 4, where the teacher could have considered other teaching strategy options to help him overcome his difficulties regarding the topic explained (T3, Obs.4)

Similarly, student S3 mentioned that in this non-formal personalized VLLE, it is difficult for the teacher to identify the socio-emotional learning aspects impact on students "There is a lack of emotional support. In non-formal virtual classes, teachers can analyze when a student

feels bad when he/she is bored, but in the virtual part, they cannot evidence it as easily” (Int.2). This was evidenced in the class observations where the teacher couldn’t identify students’ emotions when he was speaking so fast which provoked frustration in his students because the teacher didn’t adapt his English level to the level of the students, and they had to tell him that they did not understand (Obs.1).

Moreover, socio-emotional learning aspects affected the academic performance of students “I think that that has an impact on academic performance because if I feel good, if I have a good emotional state, if I am motivated that will impact the way I am learning” (S4, Int.1). With this, it was possible to highlight that the learning environment might increase students’ motivation through the mere fact of being personalized and focused on a student-centered approach “personalized learning approach increases student motivation and engagement, which improves academic performance” (Makhambetova et al., 2021, p. 2). This was also stated by the participant teacher T2 who highlights “this personalized part helps a lot to that. To generate academic maturity in the process because they have to be aware of their own process” (Int.1).

From the previous analysis we gave voice to the fact that the socio-emotional learning aspects and the personalized approach enhanced the students’ academic performance in the learning environment; however, these emotional aspects were not always positive since “there is a negative correlation between learning anxiety and students’ academic performance, examination performance, oral and written expression ability, and self-confidence” (Gardner and MacIntyre, 1993 cited in Wang et al., 2021, p. 2), and it is evident that this learning environment is not far from this reality. For instance, the participant S3 cited “Sometimes expressing ourselves in front of an audience is difficult. Sometimes our brain gets blocked, nervousness... so many things that influence so that we can't do it in a freeway, let's say it, or with more fluency” (Int.1).

The previous idea differs from Wang et al., (2021) conception of online learning affecting the academic performance of students who learned a language due to anxiety, which was defined in the internet context as “environmental anxiety” caused by different factors such as distractions and technological issues in online environments. This contrast considers how complex was the learning process in this learning environment. However, there were pedagogical factors such as tools and teaching strategies, motivation, frustration, and anxiety regulation that could be adopted by the teacher to facilitate the learning process offering opportunities where students feel comfortable and do not feel judged by others.

1.2 The socio-emotional learning aspects and the influence on the students’ feedback

Scholars such as Kobzar & Kuriata (2015, cited in Manegre et al., 2020), stated that “Online Language Learning allows learners to receive feedback on their production and grammar, which is essential to self-assessment and self-correction. The learner can ask questions and have time to process the information learned” (p. 977) this assertion was corroborated from student participants 1, 3, and 4 who agreed on the fact that the feedback in this virtual personalized language learning environment was somehow more paced and provokes positive feelings, of pride and autonomy. For example, S1 stated:

What I found most practical is that doubts are resolved, everything is solved. In practice, at the moment of pronouncing something, if you miss something or make a mistake, you can correct it quickly, since, due to the convenience of virtuality, you have a closer hearing, it is more private (Int.1).

Moreover, in the four observations conducted, the teachers gave continuous feedback (corrective feedback) and support to their students, which helped them to identify and correct their errors (Obs.1,2,3,4). In that sense, participant teacher T2 stated that she was always looking

forward to helping students; reflecting observations made by Maier et al., (2022) remark “personalized feedback also aims at broader educational goals, such as self-regulated learning, motivation, or the acquisition of more generalized concepts or strategies in the domain” (p. 4). In this context, T2 emphasized:

I say to him (to her student), look let's reinforce this because I realized that it's important that you have this clear before moving forward to understand the importance of certain basics moving forward. He tells me that he feels very comfortable, and he loves it when I correct him (Int.1).

This quote was supported also by participant S3 who stated “when the teacher comes to give feedback, it clarifies so many things, that one feels calmer and that also helps one to acquire confidence in learning a foreign language” (Int.2). From these perspectives, it was clear that the feedback not only helped students to improve their language skills, but it also promotes a learning environment where they feel safe to express themselves. This highlights the need for an approach that considers the feedback from a comfortable factor that increases confidence in the students’ learning process. In that way, S1 stated:

You expected the teacher to make those corrections because, you know, you’re going to be out there, facing things in daily life, and obviously, you don’t want to make mistakes out there, it’s better to make them in class than to make a mistake outside, and obviously this feedback, these corrections are the most important thing, the key part to improve (Int.2)

Moreover, S2 highlights the need of a feedback since with “that feedback is when I realize if I am failing, if I am improving or if I really need to focus on a specific area to help

building my knowledge” (Int.2). From that perspective, S3 considers feedback as necessary aspect when learning since:

Feedback was a teaching strategy that was skipped at any time, that can be carried out ... that allows us to strengthen those competencies, those concepts that are clearer, that clears up doubts, that clears up concerns. So, it was true that many times after a class, obviously, some questions remain (Int.2).

Along these points of view, it was confirmed that feedback influenced students emotionally since “the shift to virtual learning created more opportunities for students to receive prompt, real-time feedback that can establish immediacy and reduce isolation time for virtual learners” (Carby, 2023, p. 37) as was noted by participant S4 “If I know that I have done a good job and the teacher gives me feedback and the results are good, then naturally I will feel good and I am proud of myself” (Int.2). This allows us to consider a learning environment that is not only focused on linguistic skills but also promotes the confidence and motivation to persist in the students' learning journey through constructive feedback, rather than corrective feedback, identified in the four observations.

2. Teachers' pedagogical factors influencing the students' motivation.

Considering our first specific objective about identifying factors that integrate a non-formal personalized virtual language learning environment, we found that it includes pedagogical factors that influence students' motivation. On one hand, Martin (2008, cited in Jiang et al., 2024) stated that the integration of motivation must consider engagement since it is crucial for students' success in this non formal personalized VLLE. On the other hand, the author highlights four factors presented in this environment “adaptive motivation (i.e., positive orientations toward learning), adaptive engagement (i.e., students' positive behaviors in learning), maladaptive

motivation (i.e., orientations that impede learning), and maladaptive engagement (i.e., students' negative behaviors that impede learning" (p. 5) what hinder socio-emotional learning aspects such as lack of motivation and interaction, as well as frustration when presenting difficulties in their learning process.

As this learning environment was flexible for being developed in the non-formal education, it catered to each student's unique needs. In that sense, two emergent subcategories were identified: the teaching strategies and the teaching resources influencing students' motivation as well as the students' active role in the class to be aware of their learning process. These subcategories are explained here.

2.1. The need for innovative teaching strategies and resources in a non-formal personalized VLLE.

The data analysis showed that the non-formal personalized virtual language learning environment must consider “an integrated approach to activities that are the product of self-organization or learning, or the individual instruction that takes into account personal needs and goals” (Makhambetova et al., 2021, p. 12), which was perceived too in the four observations conducted where most of the teachers implemented a diversity of platforms and resources such as baamboozle, chats, digital books, forums, chat box, images, slides, and games. However, when there was the same activity implementation, and it was repetitive the students got bored as happened in observation 1 where the student was yawning and seemed bored with a number game activity that lasted for 12 minutes (Obs.1).

From the participants' voices, it was evident the importance that the teaching resources and strategies such as personalized feedback, fostering student agency, and incorporating technology directly affect students' motivation and engagement in the non-formal personalized

VLLE, which allowed learners to have a more significant experience adapted to their different learning styles, needs and preferences. As an example, participant S1 expressed “if someone is more visual or perhaps more of a listener, then the teacher must find a strategy to adapt to oneself, since not everyone has the same capacity or way of learning” (Int.1). Similarly, student participant S3 implies:

Teachers today need a wider range of pedagogical tools to improve the learning experience. Since there was no direct physical interaction, it was easy for students to get distracted. However, incorporating more interactive strategies, whether through software or different educational programs, can make classes more engaging and enjoyable (Int.1).

This was important since the motivation of the students depends on the strategies that the teacher implements which demands the teacher to organize his approach (Pescaru & Pescaru, 2022). Similarly, participant S1 agreed with S3 on the need to implement strategies where they feel more attached to the class since the learning environment being virtual may provoke some distractions “Many more pedagogical tools are needed to improve teaching. Since there is not literal physical contact, the class tends to get very distracting, whereas if more interactive strategies were adapted... the class would be a little more entertaining” (Int.1).

According to the previous voices, it was noticeable that the non-formal personalized virtual language learning environment led students to be distracted for some moments, and that’s why the teaching strategies in the class were interactive and engageable. Teachers adapted pedagogical strategies such as using digital books with interactive activities, role-playing exercises to simulate real-life contexts, visual materials for contextualization, and audio recordings to enhance listening comprehension, that integrated more stimulant learning environment strategies that motivated students to engage in the class.

Knowing that this virtual learning environment provides a flexible learning process that offers different tools and methodologies that the teacher adopts and adapts to students, the participant teacher T3 mentioned “I believe that the virtual environments facilitate this, the use of new tools and different didactics, therefore, I really like ... this way of teaching for the same reason, it is very versatile” (Int.1). Moreover, based on the input from one of our teacher participants, we identified that this learning environment requires that the teachers create their own material based on the students’ backgrounds and not to follow a textbook syllabus proposed by any institution that in many cases were disconnected with the student's background and needs:

I always use my own resources. Material that I have designed precisely to explain certain topics, generally they are slides with a grammatical structure, I try to make it a little implicit that allows me to give examples of what I want them to do to make them feel familiar with the topic (T2, Int.1).

This was consistent with the reflections of Conde & Igarza (2019), who remarked:

The application of this model (Personalization and flexibility of learning in non-formal personalized VLLE) implies focusing attention on what the student did to learn, with the guidance of a teacher who, from his or her knowledge and expertise, designed strategies and actions necessary for the student to construct knowledge (p. 4).

From this point of view, designed material and different resources such as the interactive digital book Interchange 2 and resources like Bamboozle, Google Images, interactive games and slides engage students and increase their motivation in the learning process. This not only is a way to instruct students emotionally but also aligns their educational experiences with the principles of a life-long learning experience.

2.2 Student's agency and awareness of their learning process in a non-formal personalized VLLE

Personalized learning is define “as a student-centred system that supports their diverse needs and the development of abilities” (Lee et al., 2018, cited in Makhambetova et al., 2021). This concept was exemplified within our learning environment, where from the observations it was possible to notice the need for students' interests to foster a supportive classroom atmosphere as it happened in observation 4 where the teacher considers “The World Cup” as a topic to connect the class and where the student immediately showed interest and engagement (Obs.4). This was the reason why the students’ interests might be considered in the non-formal personalized VLLE, as expressed by the participant teacher T2 who explained that in her non-formal personalized virtual classes she always considers what her students need:

...from a certain point I would say, besides that I propose certain topics, please, tell me what you want to reinforce, and from there, I feel that this changed. ... I take very much into account what the person or what the student proposes to me. (Int.1)

In the same line, participant S1 stated that the learning environment might focus on his needs and learning style since “in an environment with more people, there are other people who advance much faster, while others stay behind ” (Int.1). In that sense, the development of student agency was evident in this non-formal personalized VLLE, as it “involves control over learning (self-regulated learning) and transforming students themselves into active actors of their own learning” (Marín et al., 2020, p. 17).

Aligned with this framework, the participant S2 agreed with the ideas mentioned above explaining the teachers’ role in her learning process, “The teacher will be focused on helping

him/her (the student) to meet the objectives and what this person or this student really requires” (Int.1). This factor of considering students’ needs gives us a regard for the role they have in the classes where they need to be aware of their learning process such as mentioned by Elen et al.(2007) cited in Galbally and Christodoulidi (2023), “live virtual classroom provides agency to the student and creates a sense of empowerment which promotes ownership of the course by providing each learner opportunity to adapt the curriculum for personalized pedagogy” (p. 7) which complements this learning environment as individualized “...is more personalized and that strengthens both my comprehension, for example, in the listening exercises and in my production, especially in the speaking part.” (S3, Int.1).

Consequently, analyzing the role students had in this non-formal personalized virtual language learning environment, teachers need to listen to them and consider their interests as well as the activities they felt more comfortable with. For example, S2 expresses “I consider that the most important activities are the conversational roles, focusing on a specific area, such as work or studies” (Int.2). Supporting this voice, observations indicate that the topics developed in the class have either a positive or negative impact on the students’ interest in the class. Similarly, it was evident that there was a need to focus on real dialogues and comprehension questions to help students develop practical skills and enhance their ability to communicate effectively in English (T2, Obs.2)

Contributing this assertion, Makhambetova et al., (2021), highlight personalized learning methods and the class content must consider students’ backgrounds and their interests. For instance, during the third observation, the student showed a lack of interest in the topic of movies and Hollywood stars, which provoked a limitation in the student’s argumentation regarding the topic as demotivation was perceived in the student’s face. Similarly, in the first observation,

some students seemed to be tired when the teacher T1 implemented an extended activity, which became repetitive, and contributed to their discouragement (T1, Obs.1)

From the participants' voices, we highlighted the need for teachers to get students involved in their learning process since it is necessary to promote a role where they identify their interests, contexts and needs. From this argument, S1 states "That's what I am looking for, a personalized class that considers my needs" (Int.1). In that sense, we state that the learning environment allows flexibility to the contents and needs of learning from each student which at the same time enhances the motivation and commitment of students as the main agent of their process, who acquired an active role based on his/her experiences and voices, giving a significant value to previous knowledge that is part of the construction of new learning, guided by the teacher for the achievement of more meaningful and lasting learning.

3. The role of technology as a tool to enhance interaction and develop 21st-century skills in a non-formal personalized VLLE.

The data analysis showed that the lack of interaction was one of the major challenges from this non-formal personalized VLLE which was caused by the inherent characteristics of this environment. Moore (2007, as cited in Achuthan et al., 2024) stated that distance and online education must be guided by Transactional Distance Theory (TDT). TDT suggests that the level of independence and interaction between the learner and the course content, along with psychological distance measuring the learner's cognitive and emotional involvement with the materials and the instructor. Nevertheless, in this non-formal personalized VLLE, technology plays an important role in the conception of how to address this lack of interaction since "the social dimension of VLE is essential to create an online learning environment that promotes active participation and collaboration between students and teachers." (Castro et al., 2024, p.

1633). Thus, there were some 21st century skills such as interaction and collaboration that were limited in this learning environment as it was centered on a personalized approach. In that sense, the teacher participant T1 and student S3 agreed on this issue saying:

Since there were no other students, there was no exchange of words, that practice of you telling me some words and I telling you others and there was like a dialogue. So that for me it was suddenly a disadvantage (S3, Int. 2).

Furthermore, one of the challenges perceived for the teacher T1 is that students are interested in having an “interaction...with other students or native speakers” (Int.1) what this learning environment do not offer. Scholars such as Manegre & Sabiri (2020), highlighted that "virtual classrooms integrate multiple online interactions and learning management technologies and resemble physical classrooms by supporting online real-time interaction, immediate feedback, just-in-time response, and group discussions" (p. 3).

Despite the view offered by Manegre and Sabiri (2020), the facts observed in the four classes, and the perceptions provided by the students of this non-formal personalized VLLC referring to the lack of interaction; it was appropriated to highlight this issue as a constrain since it diminished opportunities for meaningful collaborative learning that were considered to provide a significant communicative setting and one of the skills for the 21st century, being these interactions important to foster the development of 21st-century skills learning paradigms (Sujarwo et al. 2022) such as collaboration and, critical thinking.

Building on this argument, the lack of interaction in this learning environment limited students to communicate with other learners to develop peer discussions. However, the use of technology in this non-formal personalized virtual language learning environment is a factor that enhances critical thinking in students as a skill of the 21st century. Having this in mind, ICT

significantly transformed educational practices and became a useful tool for performing tasks and communicating information; helping students acquire all types of learning, and enhancing learning assessment (Batra & Kumar, 2022, as cited in Antón-Sancho et al., 2023).

Accordingly, in the four observations conducted, it was perceived a high use and implementation of technology with teachers incorporating different tools that enhance the students' learning process. In observation 3, the teacher implemented Bamboozle as a resource to promote argumentation with her students encouraging her to share experiences, personal perspectives and positions about Hollywood actors and movies through speaking card questions and situations (T3, Obs.3). From this point of view, was predictable that the use of technology was a factor that can promote interaction and develop other skills as mentioned by participant S1 "one has grown up with technology and this makes easy to use these tools (technological tools)" (Int.1) which gives us a regard about the importance of implementing those resources in the learning environment.

Further supporting this, Hughes and Acedo (2016, as cited in Yu et al., 2020) pointed out that "students are more likely to develop critical thinking skills when they feel free to take risks, are corrected without feeling criticized, and discuss different opinions in open learning spaces" (p. 134). This was an evident factor that is also perceived from S3:

The exchange of ideas and opinions, all this helped us to develop argumentation and reflection skills. Also, in the activities proposed by the teacher, such as problem situations, or different roles in which we can interact. I believe that this also allows us to learn how to easily resolve conflicts and analyze different situations (Int.2).

This is how from the fact of learning a language teachers consider strategies to integrate platforms, situations and resources to promote critical thinking among students since English allows “learn a lot, gain general knowledge, and explore different aspects” (S4, Int.1). Moreover, it is fundamental to involve different disciplines to create a better learning experience because “English allows that, that there is a kind of union or transversalities of contents” (S3, Int.1). That’s why it is necessary to consider “better tools...that creates more interactive classes and that the teacher has a community to practice with. That within the learning section there are spaces for live interactive chats with other people” (S2, Int.1).

In that sense, Moore (1989, as cited in Entusiastik, 2024) stated that “classroom interaction models in the context where learning is supported by computer or other electronic medium regards interactivity may be seen from the students’ interaction with content, students’ interaction with the instructors, and from their interactions with peers” (p. 29). Despite the interaction with peers is not seen in this non-formal personalized VLLE because of its characteristics of being personalized, it is evident how technology promotes interaction with content through structured information and material proposed by teachers.

Recommendations: The holistic approach as a pedagogical principle to be considered in a non-formal personalized virtual language learning environment

From the previous analysis and as an answer to our research question how are the socio-emotional learning aspects and the development of 21st-century skills integrated in a non-formal personalized virtual language learning environment? It is important to mention that the results highlight socio-emotional aspects such as motivation, frustration, anxiety, and encouragement that impact the student's academic performance and influence feedback on the students. In that way, positive feedback increases students’ motivation and allows them to create a more

engageable learning environment. This remarks the importance of incorporating a holistic approach that not only focuses on cognitive development but integrates socio-emotional aspects which enhance the student’s learning experience and boost their language skills outcomes.

In that sense, Datnow et al., (2022) state that “scholars in the education field are arguing for an integration of learning and well-being and for conceptualizing cognitive, socio-emotional, and identity development as overlapping constructs” (p. 14). Considering the above, it is important to highlight that a holistic learning process integrates the whole of the human being where intellectual development is as important as cultural, physical, social, moral, and emotional development.

Figure 3

Dimensions of Holistic Student Development



Note. From “Transforming Education for Holistic Student Development: Learning from Education System (Re)building around the World”, by Datnow, A., Park, V., Peurach, D. J., & Spillane, J. P. (2022), *Brookings University*. P. 14, (https://www.brookings.edu/wp-content/uploads/2022/08/Brookings_Report_Tranforming-ed-for-holistic_FINAL.pdf)

Datnow et al., (2022). Dimensions of holistic student development [figure]. Transforming education for holistic student development.

Moreover, the non-formal personalized VLLE allows the students to be aligned with a student-centered approach that considers students' needs and the content material that fits better for their learning process which allows students to be more autonomous and responsible in their classes. With this in mind, students must be considered active learners who can share with the teacher what helps them the most and what their interests are to construct their agency in the learning environment. Similarly, a holistic approach in this non-formal personalized VLLE must include technology as a tool to support comprehensive skills through digital tools that foster dialogues, critical thinking, and meaningful interaction with the content. The results presented clear evidence that the role of technology is an important tool to enhance interaction and Develop 21st-Century skills in a non-formal personalized VLLE.

In that way, the holistic approach aligns with Comprehensive Learning Diagnosis (DIA), developed by the Quality Agency in Chile which considers it from a holistic perspective that promotes strategies for building and rebuilding education systems considering socio-emotional learning aspects. In that sense, now that we have identified the factors of this non-formal personalized VLLE, we proposed the holistic approach as a pedagogical proposal that integrates socio-emotional components necessary to face the global challenges in this 21st century. This need is aligned with a teaching approach that supports students not only from cognitive factors but also considering their socio-emotional learning development.

In that line, as researchers of this non-formal personalized VLLE, we highlight the following principles of a holistic approach to consider in a non-formal personalized virtual language learning environment:

1. The teaching strategies and resources must be designed thinking of the students' needs and interests since they influence students' motivation and engagement.
2. Placing students' needs and interests at the core supports autonomy, allowing learners to be active agents of their learning process which enhances self-regulation, participation, motivation, and engagement.
3. Teachers should aim for feedback that builds learners' confidence, helping them to recognize skills for improvement while reinforcing their strengths which supports not only academic performance but emotional student development.
4. Technological tools enhance interaction, collaboration, and critical thinking skills as factors of 21st-century skills through platforms that are carefully designed to support the development of critical thinking and digital literacy.

Conclusions

The findings of this qualitative research study direct the answer to the question: How the socio-emotional learning aspects and the development of 21st-century skills are integrated in a non-formal personalized virtual language learning environment? With the implementation of four observations, three semi-structured interviews and the analysis of ten theoretical documents, it was possible to gather data considering the specific objectives to determine the pedagogical factors that integrate a non-formal personalized virtual language learning environment considering socio-emotional learning aspects and the development of 21st-century skills.

From the results, we could determine that the designed material such as personalization planning, interactive tools, the feedback on the student's academic performance, and the student's active role in the non-formal personalized virtual classes are pedagogical factors that should be integrated into the non-formal personalized VLLE. Moreover, the findings emphasized

incorporating pedagogical and socio-emotional learning aspects such as motivation, frustration, and engagement since they enhance the learner's experience through the material designed by the teachers. Furthermore, it was evident that technology is fundamental to develop student's 21st-century skills such as critical thinking through discussions and argumentation which build interaction in non-formal personalized virtual language learning environments. In this learning environment, technology is perceived as a bridge to enhance interaction due to the nature of the learning environment itself which is necessary for the practicing the language and developing critical thinking and collaborative activities being the previous aspects factors to develop the 21st-century skills.

Considering this, the contribution of this research project focuses on the redefinition of this learning environment helping teachers who take this educational field as a unique work resource to promote holistic practices that incorporate not only cognitive development but social and emotional aspects that impact the student's academic performance in a non-formal personalized VLLE. This perspective aligns with the holistic approach that promotes strategies for building and rebuilding education systems through holistic student development considering socio-emotional learning aspects as was evidenced in this non-formal personalized VLLE.

Limitations and further research

During the development of this project, we went through some research limitations such as the lack of fundamental articles that have in common all the characteristics of the learning environment under study. That is why from the documental analysis we had to analyze separately different studies that integrated those characteristics to support our findings. Similarly, we had to conduct a second interview to get deeper information from the participant students. This qualitative methodology allowed us to comprehend this non-formal personalized VLLE through

the participants' perceptions and emotions which contributed to a detailed analysis and rich content. Moreover, the thematic data analysis process helped us to organize the different themes that emerged from the data gathered and that might be considered for further research studies.

Through this research process, some suggestions emerged for future investigations, for example, how different feedback styles influence students' motivation and academic performance in non-formal personalized VLLE and how technology may be implemented to promote collaboration in the absence of physical contact in personalized virtual classes. Additionally, an important consideration would be how a holistic approach enhances the student's learning process in this VLLE.

Finally, our research suggests implementing flexible teaching practices that consider students' roles in developing their autonomy. Additionally, teachers' materials in this learning environment should be adapted to students' needs and motivations, thereby enhancing their engagement in the learning process. Moreover, by integrating cognitive and socio-emotional aspects, this study recommends that teachers adopt a holistic approach, addressing students' learning development from emotional, social, and cognitive perspectives.



Appendixes

Appendix 1: Participants' consents template

Link: https://usantotomaseduco-my.sharepoint.com/:w:/g/personal/carmensantos_usantotomas_edu_co/ESrk6Iw8Ab1JuANHUn8AnTIBjzBfbcuLgRLbSMCa3rc-Bw?e=SfKeug

Appendix 2: Documental analysis implementation

Link: https://usantotomaseduco-my.sharepoint.com/:x:/g/personal/carmensantos_usantotomas_edu_co/EQs0RxI2L_5PuHmng6KyUj0BAPXhl4zhEKAU3ZyI1zpMlg?e=d8HJ8o

Appendix 3: Recording of the participant observations

Link: https://usantotomaseduco-my.sharepoint.com/:f:/g/personal/carmensantos_usantotomas_edu_co/EggxTPQtTTtKm6CSU2nMzPMBNznbQGZtI0motmbMf8iETg?e=bMheDm

Appendix 4: Participant observation analysis

Link: https://usantotomaseduco-my.sharepoint.com/:f:/g/personal/carmensantos_usantotomas_edu_co/EiD2oUce6QlAtIHup-NHsI4BP9UfTkZ61vPtaRkw9sIh1w?e=vefyFg

Appendix 5: Teachers semi-structured interviews recordings

Link: https://usantotomaseduco-my.sharepoint.com/:f:/g/personal/johanna_lopez_usta_edu_co/Esp7VlMsIJVDITqgHOCj_TQB5uzRBCGj0DTi7rTzVrckew?e=ThxrUt

Appendix 6: Students semi-structured interviews recordings

Link: https://usantotomaseduco-my.sharepoint.com/:f:/g/personal/carmensantos_usantotomas_edu_co/EpwdCx6n70xPr1ftWDue1o0BwKHEzm-BH7rlk3Qy7nWUhg?e=cJIPEs

Appendix 7: Teachers semi-structured interviews transcriptions

Link: https://usantotomaseduco-my.sharepoint.com/:f:/g/personal/carmensantos_usantotomas_edu_co/EpM4fsjVLmVOkvCcfNtdxqgBCP_7gpdf0WXG0aViLXAzJQ?e=d5axhX

Appendix 8: Students semi-structured interviews transcriptions

Link: https://usantotomaseduco-my.sharepoint.com/:f:/g/personal/carmensantos_usantotomas_edu_co/EiVoEaaaREpGl5VBykV2QiYB7YI3WOH_pJwF1tj7ZXZsnw?e=qKqZSA

Appendix 9: Data triangulation

Link: https://usantotomaseduco-my.sharepoint.com/:f:/g/personal/carmensantos_usantotomas_edu_co/Ei2oNWJUUhKNDlgqngHEVtgBmEPTV2jY_G3z367grKbTfA?e=2e9sH7

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