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Interactive platforms for the teaching-learning of english as a foreign language for a student with autism spectrum disorder in high school

Plataformas interactivas para la enseñanza-aprendizaje de inglés como lengua extranjera para un estudiante con trastorno del espectro autista de secundaria

Lucio Doménica Robles

droblesl@unemi.edu.ec

<https://orcid.org/0009-0001-3844-4120>

Universidad Estatal de Milagro

Guayaquil – Ecuador

Karen Andrea Cervantes Maridueña

kcervantesm2@unemi.edu.ec

<https://orcid.org/0009-0002-0839-6102>

Universidad Estatal de Milagro

Guayaquil – Ecuador

Luis Enrique Brocell Villao

lbrocellv@unemi.edu.ec

<https://orcid.org/0009-0007-9576-1249>

Universidad Estatal de Milagro

Guayaquil – Ecuador

Gilberto Antonio José Véliz

avelizg1@unemi.edu.ec

<https://orcid.org/0009-0001-9668-7868>

Universidad Estatal de Milagro

Guayaquil – Ecuador

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Abstract

This study investigates the effectiveness of interactive platforms to facilitate the teaching and learning process focused on a high school student with autism spectrum disorder (ASD). The research process involved a qualitative methodology. Before starting, detailed assessments were conducted to understand the student's prior knowledge of language skills, cognitive skills, and areas for improvement. During implementation, several interactive platforms were used to address challenges associated with ASD, such as sensitivities and difficulties in social communication. These platforms include visual aids, interactive activities, and personalized learning programs to drive engagement and understanding. Data collection methods include observation, teacher interviews, and assessments of language recognition using qualitative measures. After implementation, the student showed progress in EFL skills, developed grammatical accuracy and speaking skills thus creating a learning environment that encouraged peer interaction and socialization. It is suggested that future research can focus on evaluating the lasting impact of these technological tools and improving the design of platforms for a better teaching-learning process for students with ASD.

Keywords: autism spectrum disorder (ASD), interactive platforms, teaching-learning process, english as foreign language (EFL)

Resumen

Este estudio investiga la eficacia de las plataformas interactivas para facilitar el proceso de enseñanza y aprendizaje enfocado en un estudiante de secundaria con Trastorno del Espectro Autista (TEA). El proceso de investigación implicó una metodología cualitativa. Antes de comenzar, se llevaron a cabo evaluaciones detalladas para comprender los conocimientos previos del estudiante en habilidades lingüísticas, habilidades cognitivas y áreas de mejora. Durante la implementación se utilizaron varias plataformas interactivas para atender los desafíos asociados con el TEA, como sensibilidades y dificultades en la comunicación social. Estas plataformas incluían ayudas visuales, actividades interactivas y programas de aprendizaje personalizados para impulsar la participación y la comprensión. Los métodos de recopilación de datos incluyeron observación, entrevista a los profesores y evaluaciones del reconocimiento del idioma utilizando medidas cualitativas. Después de la implementación, el estudiante mostró progreso en habilidades de inglés como lengua extranjera, desarrollando precisión gramatical y habilidades para hablar creando así un entorno de aprendizaje que fomentó la interacción y la socialización entre pares. Se sugiere que las investigaciones futuras puedan centrarse en evaluar el impacto duradero de estas herramientas tecnológicas y mejorar el diseño de plataformas para un mejor proceso enseñanza aprendizaje de estudiantes con TEA.

Palabras clave: trastorno de espectro autista (TEA), plataformas interactivas, proceso de enseñanza – aprendizaje, inglés como lengua extranjera

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INTRODUCTION

Within the field of education, addressing the educational requirements of children with special needs, especially those diagnosed with Autism Spectrum Disorder, presents a significant challenge for both educators and families. Many students with autism may not have advanced as anticipated (Parson, Kovshoff, & Ivil, 2020) underscoring the need for tailored educational assistance to address their distinct needs.

Autism is defined on the basis of social and communication problems and repetitive and restrictive behaviors that can vary in individuals along a continuum of severity (Lord, Mayada, Gillian, & Veenstra-Vanderweele, 2018). In other words, it is a condition that affects the brain development, influencing an individual's perception and social interactions and resulting in communication difficulties. The term "spectrum" encompasses a broad range of symptoms and severity levels.

Among the characteristics of the student with ASD that impact the learning of the second English language is difficulty in communication and social interaction, sometimes they have difficulty understanding the directions of the activity, initiating and maintaining dialogues in English and participating in activities. group. There are topics that are of interest to you and that can capture your attention from the first moment, however, in areas that are not of interest to you, you may show a lack of motivation to learn. Students with ASD may be sensitive to light, sound, or touch, which can affect their ability to concentrate in a traditional learning environment. Students with ASD may have difficulty understanding abstract concepts, following instructions, and completing tasks independently. (Nistal, 2019)

This professional research article is based on a student with autism spectrum disorder (ASD) who is in his first year of high school. This article seeks to address the various strategies for teaching English as a foreign language to a student with Autism Spectrum Disorder as a crucial aspect within the context of equitable access to education, in improving results within the teaching-learning process, through empathy and tolerance when addressing language barriers beyond the traditional classroom in EFL teachers in the face of diversity. providing equal opportunities for all students to actively participate in their educational experience through inclusive interactive platforms that provide quality education in learning a foreign language and that satisfy the needs of each type of learner. (Bertills, 2023).

Students can work at their own pace and complete activities in the time they need. According to the use of interactive platforms for students with ASD can work at their own pace and complete activities in the time they need. Through use games, animations and other multimedia tools to make learning more engaging and motivating. provide rewards and positive reinforcement for completing activities. Interactive platforms offer a wide variety of resources, such as videos, audios, games, activities and exercises, that help students learn more completely and effectively.

According to (Seaborn, 2021), for everything to work and take advantage of interactive platforms, it must have an accessible design, with different sensory and language processing needs. Navigation should be simple and intuitive so that students can use them independently. Likewise, teacher training is important on how to effectively use interactive platforms with students with ASD.

The fact of being able to adapt an educational environment for a student is a key factor that every teacher must consider, unfortunately this is something that teachers tend to encounter and do not know what type of strategies to implement, especially when it comes to the students who have special needs. (Demetriou, 2022) contends that having everyone in a shared classroom is advantageous for all involved. Students with Special Educational Needs (SEN) advance and grow alongside their non-SEN peers, while the latter acquire an appreciation for acceptance norms, but this does not mean that educational treatment should be provided for both parties.

Another interesting aspect is early detection of student needs is essential to implement personalized strategies that fit the needs of each student. It is important to address each difficulty throughout the academic field; it should not be overlooked. high in pedagogical approach (Brahim, 2022). reaching the full potential of being able to more appropriately create educational environments for any type of student, breaking the limits of her condition.

The current research explores the difficulties and challenges that EFL teachers and the students with SEN encounters within the teaching – learning process. In addition, the study intends to give answers to the following questions:

What interactive platforms prove to be most effective in facilitating the teaching and learning of English as a Foreign Language (EFL) for high school students diagnosed with Autism Spectrum Disorder?

How do the inclusive pedagogical strategies for teaching English as a Foreign Language (EFL) impact the linguistic development, social interaction, and overall academic performance of high school students with Autism Spectrum Disorder?

What challenges do educators face when implementing interactive platforms tailored for the teaching and learning of English as a Foreign Language (EFL) for high school students with Autism Spectrum Disorder, and how can these challenges be effectively addressed?

This professional research article aims to recognize how interactive platforms improve the teaching of English as a foreign language (EFL) for a student with autism spectrum disorder (ASD) who is in the first year of secondary school. improving in his communicative skills in English.

DEVELOPMENT

(Martos, 2019) says that the current criterion of autism refers to the term of a diverse group of behavioral properties, caused by modifications in the development of the nervous system. The age at which autistic children are suspected is around 22 months. Autism spectrum disorder is caused by variations in neurodevelopment. Autism does not have an exclusive basis and its expression in behavior is difficult, encompassing different autistic disorders or a chain of autistic attributes and behaviors defined as ASD. Despite the similarities among autistic individuals, an exaggerated clinical variety has been discovered, ranging from mild alterations in temperament to severe disability.

According to (Bernal & Ramos, 2022) argue that it is extremely important to update the curricula where foreign language teachers are trained to be able to face the challenge of teaching people with this disorder; This correct training will help teachers to properly use learning methods and ICT.

Likewise, (Domínguez, 2020) supports that in recent years, research on the implementation of Information and Communication Technologies (ICT) in the educational context has gained great importance among teachers and student learning. The implementation of ICT provides an environment where the teacher can have control, as it facilitates the structure and organization of the educational environment for students with autism spectrum disorder (ASD). The various didactic resources for individuals with ASD provided by ICT play a crucial role in creating meaningful situations, scenarios, and contexts. Besides, this autor points out that the implementation of ICT has a positive impact on the teaching and learning process of students with ASD, since it promotes respect for the rhythm, growth and, above all, the cognitive level of each student.

While, (Raposo-Rivas, Martínez-Figueira, & Cortizo, 2021). The implementation of ICT represents a significant advancement in the context of educational intervention for students with ASD. The use of ICT increases the benefits of the classes taught, serving as a foundation for such classes.

In the same way, (Tárraga Mínguez, Vélez-Calvo, Lacruz-Pérez, & Sanz-Cervera, 2019) say that Teachers who understand the principles of inclusive education will be able to correctly integrate ICT as an essential support resource, acting as a key to accessing and maintaining non-discrimination against students by affirming that the way information is processed in an environment controlled generates security and trust, which is crucial for the proper development of a class.

Rasti Behbahani & Shahbazi (2020) found the use of digital games in L2 learning to be beneficial for vocabulary acquisition. found digital games in language learning to improve students' productive-recognition of form-meaning.

(Hao-Jan Howard & Hsiao-Ling, 2020) found digital games beneficial in both receptive and productive learning of vocabulary. In addition, indicated digital games in language learning to have a positive impact on vocabulary mastery and even gains in terminology. Thus, our findings that digital games as a part of L2 learning are beneficial for receptive and productive vocabulary knowledge support previous research in the field. They support the view that digital games are a useful tool for language learners to gain vocabulary knowledge. Therefore, the use of digital games in formal education can support the learning process.

Various ICT tools and applications were selected specifically for the needs of the student and English language learning. The ICT tools were: Gimkit, is a gaming platform in the classroom where the student competes by answering questions on their electronic devices. Instead of earning points, students receive virtual currency that they can "invest" during the game to improve their score. Games can be played live or used for independent practice.

According to (Dierfenbach & Müssig, 2019) Habitica is the gamified task management platform with the advertising slogan "Motivate yourself to do everything" This open-source habit building platform makes users' lives gamified by incorporating daily tasks, for example daily homework, tasks and positive habits predicted in Monsters

(de Paula Porto, C. Ferrari, & C. P. F. Fabbri, 2019) say that users can create three types of custom tasks: To Do Tasks, tasks that users need to complete once or rarely. The creation platform makes users' lives playful by incorporating daily tasks, for example daily homework, tasks and habits positive in monsters. Users can create three types of custom tasks: To-Dos, tasks that users need to complete once or infrequently, Daily, activities that users do daily or on a specific day of the week, Habits, goal habits that users want to develop and establish. Diaries, activities that users perform daily or on a specific day of the week, habits, goal habits that users want to develop and establish the student logs in with game codes or a class account and can play in a web browser on any internet-connected device and Habitica is a game that helps you improve your habits in real life. It "bites" your life by giving you in-game rewards for your real-world activities.

The better you complete real-world tasks, the further you progress in the game. If you fail in life, your character in the game begins to regress. At Habitica, responsibility comes first. As you complete your actual tasks, you can check off Habitica tasks. These are your one-time goals (To Do), routine tasks that need to be done every day (Daily), and habits that you are trying to do more of or want to give up.

METHODOLOGY

For the study of this article, the methodology that was applied was qualitative in nature. as an approach that involved a procedure whose methodology used texts, speeches, words and images to study various components of the social life of the subject under study through meanings attributed by the subject himself. (Sánchez, 2019)

The qualitative research depended on the perspective of the participants, and its main objective was the understanding and interpretation of social interactions, seeking to explore complex social issues and appreciate the experiences of the participants. When applying these theoretical considerations to this case study, we were presented with a participant with ASD and his social and educational context. (Janashak, 2020)

Furthermore, a large amount of information is generated, which limits its systematization. According to (Alonso, 2023), She states that case studies can address an examination of real or theoretically constructed phenomena; implying that they may be specific cases that will be delimited throughout the study, which is beneficial for their proper direction.

This case study focused on the implementation of Information and Communication Technologies (ICT) to support English language learning in a student with autism spectrum disorder (ASD). Various ICT tools and applications were selected specifically for the needs of the student and English language learning.

The student diagnosed with ASD is 15 years old, has difficulties in areas such as communication, social interaction or learning the English language and has access to technological devices and the Internet.

A direct observation of the student was carried out in different contexts (classroom, home, etc.), also interviews with parents, teachers and other professionals who work with the student and finally an analysis of academic documents and previous evaluations of the English level.

According to (Bans-Akutey, 2021), triangulation involves the use of various data sources or different data collection methods to confirm or verify findings or interpretations in the study. In other words, the principle of triangulation is based on multiple data collection techniques, commonly interviews and observations. Interviews with different informants at different times or observations of different situations or contexts, these tools have a simple purpose, to analyze a variety of sources in order to acquire a degree of validity. This statement is affirmed by (Noble & Heale, 2019), who said triangulation is a term used to define a process to increase the credibility and validity of research. In simple terms, we will be able to interpret different perspectives on the same topic, contrasting different points of view to solve our research question.

In this research, the data collection methods chosen were interviews, academic documents, observation, and field notes. To analyze the interviews, an online meeting was necessary, in which the responses of teachers and parents were analyzed to draw some conclusions. In this case, the interviews were conducted with teachers who taught the participant from 9th grade to 1st high school, and the questions were based on general knowledge about autism spectrum disorder, strategies applied during the school year, teaching materials and the conduct. of the class with the participant, his behavior, participation and social interaction with his classmates and teachers as well. On the other hand, the interview conducted with the participating mother, in addition to containing questions about her connection with the school, her perception of the teachers' classes and the behavior of her classmate towards her son, also included personal questions related to her relationship with him and the way you work and study at home, including the things you do. And finally, the challenges and expectations she has for the future.

Academic documents such as grade reports, evaluations, and assessments were used to evaluate the student's strengths and weaknesses in the subject of English and validate the information collected during previous interviews with teachers, obtaining an overview of class work.

To obtain data on the functionality of these pedagogical strategies, applying TICs so to obtain data on the functionality of them the design of an observation pattern is essential, according to the needs of

the research. The CIPP model was chosen due to the content of its stages: context, input, process and product, which will help identify the progress of each week by applying the ICT strategies, which were three in total. Furthermore, the use of field notes will support every detail found during or after the application of the strategies in class, so it complements the technique perfectly.

In this research, in addition to data triangulation, the researcher performed temporal triangulation to check the reliability of the data. Temporal triangulation represents the collection of data on the same phenomenon at different moments in time (Arias, 2020). After collecting student data during the three weeks of online classes, the researcher verified the progress obtained through the use of time triangulation. This was to evaluate, compare and contrast the class results of the first week with those of the second and third week, with the aim of exploring the research more deeply and knowing if the student made any significant progress with the applications of ICT throughout the entire period that time.

Table 1

Collection of data

Activity	Indicators	Resources
Initial diagnosis of the Student with SEN.	Student with ASD Curricular Adaptations	Class observation
Teacher's role on the attention of students with SEN.	Behavioral learning/ Lack of knowledge about SEN Didactic strategies applied in English classes with technological tools.	Classroom observation/ Interview Workshops for teachers of the Educational Institution.
Role of the family in the educational process.	Level of family functionality. Lack of knowledge about SEN to collaborate with the implementation of interactive platforms for better understanding and affective communication.	Interview / Observation

SEN: Specific Educational Needs

ASD: Autistic Spectrum Disorder

Following data collection, the information underwent coding and analysis to facilitate comparison of their respective meanings. Discrepancies, agreements, and contradictions across various reports were identified. Instances of contradiction were juxtaposed with evidence from transcripts.

The analysis incorporated data such as opinions, suggestions, and notes gathered during observations of interactions within the institution. Temporal triangulation was employed to enhance the research process, aiming to elucidate the study's utility and breadth through the obtained results. This approach allowed for the synthesis of information from three distinct time points: the pre-action phase, the phased execution, and the post-action phase, where effects on individuals and environments became evident, as outlined in Table II.

Table 2

Effects on individuals and environments became evident

Participants	Before	During	After
Teacher	Teacher with doubts or lack of knowledge about the approach with a student with Special Educational Needs and the use of interactive applications to encourage the active participation of the student.	Awareness of the educational reality. Favorable participation for the execution of conferences and openness for the implementation of interactive activities.	Strong projection for the implementation of ICT's. Interactive applications such as Habitica and Gimkit. Biodiverse and integral education with students with Special Educational Needs.
Student	The student with special educational needs (Autism Spectrum Disorder) feels unheard and frustrated within the English subject.	Incentive to learn more about interactive applications, and interest in learning English as a second language. Improved self-esteem and self-confidence.	Better connection between student and teacher, evidencing significant advances in the cognitive process of learning English. Motivation Her favorite interactive platform was Habitika.
Representative	Mom willing to listen to feedback from teachers; however, she is unaware of technological tools for improving academic performance in the English language.	Receptiveness towards the importance of the implementation of technological tools.	Significant improvement in the autonomous management of their representative, as well as in school performance.

RESULTS

The study revealed a prevalent sense of distraction and disinterest among students with educational needs, necessitating the implementation of ICT-based strategies, particularly interactive platforms, for teachers. These platforms were intended to engage students, with family influence serving as a significant motivator. Significant changes in student attitudes towards learning were observed when teachers utilized interactive platforms both in and out of the classroom, emphasizing the crucial role of family in student development.

Following a workshop on interactive platform strategies for teachers, there was a notable increase in their interest and readiness to incorporate these tools into their teaching practices. Observations during personalized classes with Kevin highlighted important interactions that fostered student engagement.

The research also uncovered feelings of insecurity and fear among some students, stemming from a fear of rejection and a need for social approval exacerbated by negative attitudes from teachers, representatives, and peers. This highlighted a disconnect between teachers, representatives, and students, hindering the socialization process.

CONCLUSIONS

Upon completion of the action plan, the following conclusions emerge:

The motivation of students with autism is greatly influenced by their environment, reacting to both positive and negative stimuli. Implementing interactive activities in English classes holds significant power in shaping this motivation.

Fostering a climate of trust, respect, and open communication heightens motivational levels, while also acknowledging students' abilities and integrating ICTs into English classes.

Emphasizing interactive activities and providing constructive feedback promotes student achievement.

It is essential for English teachers to stay updated on interactive applications tailored for students with Special Educational Needs.

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