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Differentiated Attention: TLK Proposal for the Educational Inclusion of Children with Special Needs

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Abstract

The use of Technologies for Learning and Knowledge (TLK) in the education of children with Special Educational Needs (SEN) has gained relevance as a means to facilitate educational inclusion. However, challenges persist in their effective integration into learning environments. This study aims to develop a robust proposal that integrates TLK within differentiated care plans, designed to strengthen the inclusion of students with SEN. A quantitative, non-experimental, cross-sectional methodology was used, analyzing a sample of 150 students and 30 teachers through structured questionnaires. The research revealed that both students and teachers perceive TLK positively, noting improvements in participation and learning. However, significant implementation challenges were identified, highlighting the need to improve teacher training and the development of adaptive resources. The results showed a positive correlation between frequent use of TLK and improved learning, suggesting that more intensive use could be associated with better educational outcomes. It is concluded that TLK are crucial for inclusive education, but it is essential for educational institutions to implement effective policies for teacher training and the development of resources that facilitate their effective integration into pedagogical practices. This study underlines the importance of TLK in improving inclusion and academic success of students with SEN..

Keywords: *Technologies for Learning and Knowledge, Educational Inclusion, Special Educational Needs, Differentiated Education, Teacher Training*

INTRODUCTION

Differentiated attention emerges as an essential approach in the context of educational inclusion, especially for children with Special Educational Needs (SEN) (Cole, 2005; O'Gorman & Drudy, 2010). Although the role of Information and Communication Technologies (ICT) has traditionally been emphasized in these settings, it is crucial to distinguish between ICT and Technologies for Learning and Knowledge (TLK). TLK are specifically aimed at enriching the learning process through the pedagogical integration of technologies, which can facilitate more effective access to educational resources for this vulnerable population (Hew & Brush, 2007; Kimmerle et al., 2010).

Various authors have pointed out that TLK offer transformative possibilities for inclusive education, enhancing the personalization of learning and providing alternative accesses to the curriculum (Montenegro & Fernández, 2019). However, there is a critical need to develop proposals that integrate these technologies effectively into differentiated attention programs. These programs must be designed to overcome specific barriers faced by students with SEN, ensuring that technologies are applied appropriately and effectively (Drossos et al., 2015; Gerber & Semmel, 1983).

Currently, there is a considerable gap in the literature regarding sustainable and scalable models that incorporate TLK in the education of children with SEN, in a way that genuinely promotes inclusion (Fernández-López et al., 2013). Most previous studies have been limited to specific interventions or contexts, which restricts the

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ability to generalize their results and diminishes their applicability in different educational environments (Nastasi & Schensul, 2005; Raggi & Chronis, 2006).

This study aims to address these research shortcomings, based on the following scientific research question: How can TLK be effectively integrated into differentiated attention plans to improve the educational inclusion of children with SEN? Exploring this question aims to unravel the keys to an effective proposal, which not only incorporates advanced technologies but also aligns them with the particular needs and educational objectives of these students.

To answer the question, the research objective is proposed to develop a proposal based on the use of TLK within differentiated attention plans, specifically designed to reinforce the educational inclusion of children with SEN. It is anticipated that this approach will not only facilitate a deeper understanding of the practical applications of TLK in inclusive contexts but will also promote a replicable and sustainable methodology that can be adopted by educational institutions internationally.

THEORETICAL FOUNDATION

Educational Inclusion and Special Educational Needs (SEN)

Educational inclusion refers to the process of adjusting school systems to accommodate all students, regardless of their physical, intellectual, social, emotional, linguistic, or any other condition (Juvonen et al., 2019). This definition encompasses a wide variety of needs, from physical disabilities to specific learning challenges. Francisco et al. (2020) highlight that inclusion not only involves improving access to education for students with SEN but also ensuring their effective participation and the achievement of their academic potential.

Technologies for Learning and Knowledge (TLK)

TLK differ from traditional ICT in that their main focus is pedagogical. These technologies include digital resources specifically designed to support teaching and learning processes, facilitating the personalization and adaptation of educational content to meet the needs of each student (Rozo & Real, 2019). The literature suggests that TLK can be powerful tools for fostering inclusion by offering alternative and flexible teaching methods (Stamatios, 2024).

Differentiated Attention

Differentiated attention involves adapting the educational process to respond to the particular needs of students, recognizing that each individual may require different methods and learning paces (Broderick et al., 2005; Landrum & McDuffie, 2010). In the context of SEN, differentiated attention not only focuses on adapting teaching methods but also on modifying the educational environment and resources used to ensure that all students can fully participate in their education (Lindner et al., 2019).

Integration of TLK in Differentiated Attention

Integrating TLK into differentiated attention means using these tools to create truly inclusive learning environments. This includes the use of specialized educational software, adaptive learning platforms, and multimedia resources that are accessible and can be customized to meet the needs of students with SEN (Cheng & Lai, 2020; Karagianni & Drigas, 2023). Various studies indicate that when TLK are implemented correctly, they can significantly improve accessibility and personalization of learning, resulting in better educational outcomes for students with SEN (Nepo, 2017; Perera et al., 2012).

Universal Design for Learning (UDL) and Its Curricular Approach to Curricular Adaptations

Universal Design for Learning (UDL) is based on social pedagogy, specifically within the stream of Pedagogy of Difference (Wilson, 2017). This approach seeks to address the diversity of needs of all students through curricular adaptations that consider various abilities, learning styles, and contexts (Castro-Castillo et al., 2023). The epistemic foundations of UDL include theories such as multiple intelligences, which recognize that individuals possess different types of intelligences that affect the way they learn and process information (Michael & Trezek, 2006). Additionally, the approach of Neurolearning, which studies how specific cognitive

processes influence learning, is central to understanding how to adapt educational methods to the neurological needs of students (Lamus de Rodríguez et al., 2024).

UDL is structured on three fundamental principles that guide the creation of accessible and effective learning environments for all:

Multiple means of content representation: Ensuring that all students can access educational material, regardless of their sensory or cognitive abilities (Rose & Strangman, 2007). This involves offering information through different media (visual, auditory, tactile) to cover a broader spectrum of learning styles (Pourhosein Gilakjani, 2011).

Multiple means of engagement: Promoting student motivation and engagement through various strategies that consider their interests, challenges, and preferences (Walkington & Bernacki, 2014). The goal is to facilitate an educational environment that captures and maintains students' attention, adapting to their intrinsic and extrinsic motivations.

Multiple means of assessment: Developing diversified assessment methods that allow students to demonstrate their knowledge and skills in ways that better align with their individual capabilities and learning contexts (Othman et al., 2022).

The integration of these principles into educational practice through curricular adaptations not only improves accessibility and inclusion but also enhances the effectiveness of learning, allowing all students to reach their full potential. In this framework, UDL acts as an essential tool for achieving truly equitable and personalized education.

METHODOLOGY

The study adopted a quantitative approach, utilizing a non-experimental, cross-sectional design to investigate the relationships and effects associated with the integration of Technologies for Learning and Knowledge (TLK) in differentiated attention for children with Special Educational Needs (SEN). This method allowed for the evaluation of the implications of TLK in a specific educational context at a given time, without actively manipulating variables.

Students with SEN from both public and private primary schools implementing differentiated attention programs were selected. The sample was composed for convenience, including participants from three schools that had integrated TLK into their educational programs. In total, 150 students and 30 teachers were included, all of whom interacted directly with students with SEN.

For data collection, structured questionnaires were used, directed at both students and teachers. These instruments were specifically designed to assess the perception of the impact of TLK on educational inclusion and its effectiveness. The content validity and reliability of these questionnaires were verified through a rigorous pilot process that preceded the final implementation.

Regarding data analysis, descriptive and inferential statistical techniques were applied using SPSS statistical software. Variance analyses (ANOVA), Student's t-tests, and correlation analyses were performed to explore the relationship between the use of TLK and the educational outcomes of students with SEN.

Additionally, the principle of informed consent was incorporated into the methodology. Before participating in the study, all subjects (or their legal guardians, in the case of minors) received detailed information about the research objectives, the procedures involved, the potential benefits, and risks. It was ensured that participation was voluntary and that participants could withdraw from the study at any time without penalty. This process was fundamental to ensuring the ethics of the research and respect for the rights of the participants, in line with international regulations on research involving human beings.

RESULTS AND DISCUSSION

This segment of the study presents a detailed quantitative evaluation of the use and perception of Technologies for Learning and Knowledge (TLK) by both students and teachers in an inclusive educational

environment. Through descriptive and inferential data analysis, the aim is to better understand how TLK facilitate or limit the educational inclusion of children with Special Educational Needs (SEN).

Table 1. Perception of Technologies for Learning and Knowledge (TLK) among Students and Teachers

Variable	N	Mean	Median	Mode	Standard Deviation	Minimum	Maximum
Students							
Use of TLK (days/week)	150	3.4	3.5	4	1.2	1	5
Ease of Use of TLK (1-5)	150	3.8	4.0	4	0.9	1	5
Improvement in Learning (1-5)	150	3.6	4.0	4	0.8	2	5
Feeling of Inclusion (1-5)	150	3.7	4.0	4	0.7	2	5
Teachers							
Integration of TLK (days/week)	30	4.2	4.2	4	0.8	3	5
Effectiveness of TLK (1-5)	30	3.9	4.0	4	1.0	2	5
Improvement in Participation (1-5)	30	3.8	4.0	4	0.9	2	5
Challenges with TLK (1-5)	30	2.5	2.0	2	1.1	1	4

The average use of TLK among students indicates moderate to high integration (3.4 days per week), with a positive perception in terms of ease of use (average of 3.8). This data suggests that while students feel comfortable using these technologies, there is still room to increase their daily usage. According to Liaw y Huang (2013), frequent use and perceived ease are indicative of effective technological integration in the classroom, which can enhance engagement and learning outcomes.

Students reported significant improvements in their learning and an increased feeling of inclusion, with both variables showing averages close to 4.0. These findings align with literature asserting that appropriate use of TLK can significantly contribute to educational inclusion by personalizing learning and adapting resources to individual needs (Castro Rodríguez et al., 2019; León Cueva et al., 2023).

Teachers, on their part, reflected high integration of TLK in their daily practices (4.2 days per week) and evaluated their effectiveness positively (average of 3.9). However, they also reported facing significant challenges (average of 2.5 in challenges with TLK), which can be attributed to the lack of adequate training or the need for more adaptive resources, as suggested by Moreira-Choez et al. (2023).

The discrepancy in perceptions of ease of use among students and the challenges reported by teachers highlights the need for more robust teacher training policies and the development of TLK resources that are both inclusive and easily integrable into various pedagogical practices.

In this section of the study, the results of the inferential analysis conducted to assess perceptions of the use of Technologies for Learning and Knowledge (TLK) among students and teachers, as well as the relationship between frequent use of TLK and the perception of improvement in learning among students, are presented.

Table 2. Results of Inferential Analysis of Perceptions and Correlations

Analysis	Statistical Value	p-Value	Interpretation
t-Test: Ease of Use (Students) vs. Effectiveness (Teachers)	$t = 2.05$	0.045	Significant difference at $p < 0.05$
Pearson Correlation: Use of TLK vs. Improvement in Learning (Students)	$r = 0.62$	< 0.001	Significant and positive correlation

The results of the t-test reveal a statistically significant difference between students' perception of the ease of use of TLK and teachers' perception of their effectiveness ($t = 2.05$, $p = 0.045$). This finding suggests that while students find TLK accessible and easy to use, teachers may perceive challenges in their effectiveness to enhance learning. This may indicate a gap between expectation and actual experience that highlights the need to align teaching strategies with technological tools, as suggested by authors such as Harris & Hofer (2011), who emphasize the importance of integrating technology in a way that supports pedagogical and curricular objectives.

The Pearson correlation ($r = 0.62$, $p < 0.001$) between the use of TLK and the perceived improvement in learning among students shows a significant and positive relationship. This result aligns with previous studies, such as that of Badilla-Quintana et al. (2020), which highlight how the effective use of technologies can facilitate

curricular adaptations that improve inclusion and academic performance of students with SEN. The strong correlation suggests that an increase in the use of TLK could be directly associated with improved perceptions of academic success among students.

Proposal for Differentiated Attention Using Assistive Communication Technologies (ACT) for Children with Special Educational Needs (SEN)

Assistive Communication Technologies (ACT) comprise a broad spectrum of tools and devices specifically designed to enhance the expressive abilities and interaction of individuals facing significant communication barriers. These technologies play a crucial role in the education of children with Special Educational Needs (SEN), providing them alternative access to communication and facilitating their integration into various educational and social activities. Fundamentally, ACT enables more active and meaningful participation in these settings, essential for the holistic development of the involved students.

This document presents a detailed proposal for the development and integration of a set of Assistive Communication Technologies, meticulously tailored to meet the specific needs of children with SEN. The proposed package includes highly customizable educational software, adaptive input devices, and interactive applications, all focused on enriching both communication and the learning process.

The "Active Inclusion" initiative emerges to address and overcome the communication barriers and access to the curriculum identified during the diagnostic phase. Through the implementation of customized solutions that adjust to the unique capabilities of each student, this project aspires to establish an inclusive and responsive learning environment. This educational setting is designed to allow students with SEN to express themselves and be understood effectively, thereby ensuring equal opportunities to access the general curriculum and fully participate in all educational activities.

Furthermore, Active Inclusion promotes student autonomy and engagement through tools that enhance their capacity to make decisions and manage their own learning within the classroom. This integrative approach not only addresses the immediate needs for communication and access but also drives a more equitable and effective educational model. In this model, every student, regardless of their specific needs, has the opportunity to maximize their learning potential and contribute meaningfully to the educational environment.

Incorporating principles of Universal Design for Learning (UDL), this proposal focuses on creating flexible curricula that adapt to the varied needs and preferences of students to ensure equitable access to education. Through individualized curricular adaptations and the strategic use of ACT, Active Inclusion aligns with a pedagogical vision that recognizes diversity as a richness and seeks to transform education to make it accessible to all learners, especially those with SEN.

Name of the Proposal

Active Inclusion: Assistive Communication Technologies in Special Education

Objectives of the Proposal

General Objective

Enhance the educational quality and inclusion of children with SEN through the implementation of ACT adapted to their specific communication needs.

Specific Objectives

Develop an ACT platform that integrates various communication and learning tolos

Train educators and caregivers in the efficient use of these technologies

.Evaluate the effectiveness of ACT in improving student participation and academic performance.

Development of the Proposal

To address the challenges faced by students with Special Educational Needs (SEN), it is essential to adopt an educational approach that incorporates flexibility, personalization, and technology. Universal Design for Learning (UDL) offers a theoretical framework that facilitates the creation of learning environments accessible to all students, adapting to their varied needs and preferences. Through the integration of Assistive Communication Technologies (ACT), this approach not only enhances accessibility but also enriches the educational experience, allowing students to fully participate in their learning process.

In this context, the "Active Inclusion" proposal focuses on the development of flexible curricula that integrate the principles of UDL along with the strategic use of ACT, with the goal of transforming education to make it more inclusive and equitable. This proposal is detailed in the following table, which breaks down each key component of the process, from planning to implementation, ensuring that each step contributes to a more adaptive and responsive educational environment.

Table 3. Active Inclusion Proposal: Integration of UDL and ACT in Flexible Curricula

Proposal Element	Detailed Description	Implementation
UDL Principles	Application of Universal Design for Learning principles including: ▪ *Multiple means of representation:* Offering different ways to present information. ▪ *Multiple means of action and expression:* Providing diverse ways for students to demonstrate what they know. ▪ *Multiple means of action and expression:* Providing diverse ways for students to demonstrate what they know.	▪ Teacher training in UDL. ▪ Continuous review and adjustment of teaching materials. ▪ Integration of student feedback to enhance accessibility.
Flexible Curricula	Development and adaptation of curricula that respond to the diversity of the student body, allowing adjustments based on the specific needs of each student.	▪ Creation of modular study plans that allow adaptations ▪ Use of ACT to personalize learning.
Curricular Adaptations	Implementation of individual adaptations based on the educational needs of each student, including adjustments in content, process, product, and learning environment.	▪ Development of IEPs (Individual Education Plans) for students with SEN. ▪ Adjustments in the physical and digital classroom environment.
Use of ACT	Strategic integration of Assistive Communication Technologies to enhance access and participation in learning. These technologies include customizable educational software, adaptive input devices, and interactive applications.	▪ Selection and setup of appropriate ACT devices and software. ▪ Ongoing training for educators and students in the use of these technologies.
Pedagogical Vision	Promotion of an educational approach that values diversity as an asset and seeks to transform education to make it accessible to all, recognizing the unique needs and capabilities of each student.	▪ Promotion of inclusive policies within the educational system. ▪ Collaboration with families and communities to support inclusive education.

Each element of this table is designed to ensure that students with SEN can fully benefit from an educational system that respects and addresses their individual needs. The implementation of these components should be continuously monitored and adjusted to align with the learning objectives and capabilities of each student, as suggested by Martin & Kang (2018) who emphasize the need for an educational design that is transformative and accessible to all students, not just those with special needs. This proposal seeks to apply these principles to create a more inclusive and equitable learning environment.

The following table breaks down the key activities of the research and design phase, explaining each step that contributes to the development of tailored technological solutions and their successful implementation in educational settings.

Table 4. Research and Design Phase

Activity	Description	Responsible Parties	Duration
Needs Identification	Comprehensive analysis of the communicative and educational needs of children with SEN through surveys, observations, and interviews in educational contexts.	Researchers, Educators	2 months
Design of ACT Tools	Development of technical specifications for adaptive software and devices, ensuring accessibility and usability based on UDL principles.	ACT Designers, Technicians	3 months
Review and Adjustment of Designs	Critical evaluation and iterative adjustment of prototypes by experts in special education and assistive technology, based on feedback.	ACT Designers, UDL Experts	1 months

In the initial needs identification phase, it is crucial to determine the specific barriers faced by children with Special Educational Needs (SEN) in educational environments. To this end, researchers and educators collaborate closely in data collection using both direct and indirect methods, which facilitates gaining a detailed perspective on the communicative and educational challenges faced by these students. A period of two months is allocated for an exhaustive collection of information that covers various contexts and the individual differences among students.

Subsequently, with the data gathered on needs, designers of Assistive Communication Technologies (ACT) and technicians begin the development of tailored technological solutions. This process involves the creation of software and devices distinguished by their functionality and accessibility, aiming to benefit all students through their implementation. A period of three months is considered appropriate to iterate over the designs, incorporating the principles of Universal Design for Learning (UDL) and promoting multiple means of representation, expression, and engagement.

The design review and adjustment phase is a critical step in which the developed prototypes are critically evaluated. Experts in special education and assistive technology conduct thorough reviews of the designs, providing vital feedback that directs the necessary adjustments to enhance the effectiveness and usability of the ACT. One month is dedicated to making these significant adjustments, based on the evaluations and feedback received, to ensure that the final tools are effective and suitable for practical application in the classroom.

The following table details the key activities of this phase, describing the development processes and the implementation of technological solutions designed to improve accessibility and interaction in educational settings.

Table 5. Technological Development Phase

Activity	Description	Responsible Parties	Duration
Software Programming	Coding of adaptive software that includes customization and adaptability for different types of SEN, following the UDL approach.	Software Developers	4 months
Device Creation	Design and manufacturing of adaptive devices that integrate with the software, including ergonomics and functionality testing.	Engineers, Device Designers	3 months
System Integration	Synchronization between software and devices to ensure interoperability and operational efficiency in educational settings.	System Engineers	2 months

In the Software Programming phase, software developers play a crucial role in designing programs that meet the criteria of Universal Design for Learning (UDL). The main task of this stage is to develop software that not only fits the general needs of users but also offers customization options to address the specific needs of students with Special Educational Needs (SEN). Over a period of four months, the team focuses on implementing adaptive features that ensure the software is versatile and accessible, covering a broad spectrum of educational requirements. This systematic approach ensures that the software is not only functional but also promotes inclusive and effective educational interaction.

In the Device Creation stage, engineers and device designers work closely together to produce hardware that effectively integrates with the developed software. Beyond the physical design, this phase includes extensive usability and ergonomics testing to ensure that the devices are practical and efficient in educational environments. With a timeframe of three months, the team undergoes several design iterations to ensure that each device reaches an optimal level of functionality and accessibility. This meticulousness in design and manufacturing is essential for facilitating user adaptation and comfort, thereby enhancing their learning experience.

System Integration constitutes the final phase of technological development, where system engineers play a critical role in the effective synchronization of software and devices. Over a period of two months, these professionals are tasked with ensuring that both components function together seamlessly, providing a coherent and efficient user experience. This stage is vital for verifying the interoperability and functionality of Assistive

Communication Technologies (ACT) in real educational contexts, ensuring that the technological solutions provide effective and continuous support to students with SEN.

Below is a table detailing the key activities of this phase, providing a clear view of the roles, responsibilities, and timelines involved.

Table 6. Implementation and Evaluation Phase

Activity	Description	Responsible Parties	Duration
Implementation in Classrooms	Installation and configuration of ACT in selected educational environments, with initial training for teachers and students.	Technicians, UDL Educators	2 months
Data Collection and Analysis	Gathering data on the use and effectiveness of ACT, using analytical tools to assess adaptation to UDL.	Researchers, Analysts	2 months
Adjustments Based on Feedback	Review and optimization of ACT according to the needs and feedback from end users, ensuring alignment with UDL.	ACT Developers, Designers	1 month

Classroom Implementation is a critical stage in which Assistive Communication Technologies (ACT) are installed and configured in selected educational spaces. During this phase, there is a special emphasis on training teaching staff and students in the efficient handling of these technological tools. This activity, carried out by technicians and educators specialized in Universal Design for Learning (UDL), extends over a period of two months. This time is essential to ensure a thorough integration of ACT and to address any initial challenges that may arise, thus ensuring that all parties involved maximize the potential of these technologies.

Simultaneously, the Data Collection and Analysis activity plays a crucial role in assessing the use and effectiveness of ACT within the educational context. Researchers and analysts employ systematic methods and advanced analytical tools over a similar two-month period to collect and examine data. This detailed analysis ensures that ACT are not only being used appropriately but are also aligned with the principles of UDL and effectively contribute to the learning process.

Finally, Review and Adjustments Based on Feedback represent the culmination of this phase, where modifications to ACT are made based on feedback provided by end-users. Over the course of one month, ACT developers and designers dedicate themselves to optimizing these technologies, enhancing their functionality and usability. This adjustment is indispensable to continually adapt the tools to the evolving needs of students and the dynamics of educational environments, which is essential to maintain the relevance and effectiveness of technological interventions.

The following table provides a detailed description of the essential components of this proposal, outlining the goals, methodologies, and resources aimed at enhancing the educational experience of these students through the effective use of ACT.

Table 7. Curricular Planning Model for Children with SEN Using ACT

Component	Description	Specific Details
Background Information	Basic information about the course setup.	Teacher: (Name of Teacher) Subject Area: (Subject) Grade/Course: Date:
Curricular Objectives	Learning goals for the unit and block.	Unit Objective: Improve communication and expression abilities in children with SEN using ACT. Block Objective: Implement effective strategies using ACT to facilitate verbal and non-verbal communication.
Evaluation Criteria	Standards to measure student performance in using ACT.	Evaluate the effectiveness of ACT in enhancing communication. Measure students' ability to use various assistive tools to express ideas clearly.
Key Competencies	Essential skill areas to be developed through the use of ACT.	Communicational: Develop verbal and non-verbal skills. Digital: Utilize adaptive assistive technologies. Socioemotional: Encourage self-expression and social interaction.
Curricular Adaptations	Specific modifications to address the student's needs using ACT.	Type of SEN: Autism Spectrum Disorder and other communicative disabilities. Focus on the use of output devices like digital communicators, voice-to-text software, and other visual and tactile resources to facilitate communication.
Methodological Strategies	Techniques adapted to UDL and focused on ACT to facilitate learning.	Implementation of interactive technologies that support two-way communication.

		Use of gamification apps that encourage participation and language use.
Learning Activities	Practical exercises designed to reinforce the use of ACT in communication.	Theme: Effective use of digital communicators. Practical activities that allow students to explore and use various assistive technologies, tailored to their individual needs.
Evaluative Activities	Methods to assess the progress and understanding of the student in using ACT.	Direct observation of interaction with ACT. Periodic assessments to adjust the use of devices and applications based on student performance and preferences.
Resources	Tools and technologies used during the unit.	Variety of ACT such as adaptive keyboards, augmentative and alternative communication (AAC) software, and tactile devices.
Impact Evaluation	Procedures to measure the effectiveness of implemented pedagogical and technological strategies.	Data collection on the effectiveness of ACT in improving communication and participation in the classroom. Analysis of student adaptation to technologies and their impact on inclusion and academic performance.

The table presents a Curricular Planning Model for Children with SEN using ACT, with a scientifically grounded and structured framework for incorporating Assistive Communication Technologies (ACT) in the educational environment of students with Special Educational Needs (SEN). This model is broken down into several crucial sections, ranging from course information to methods for evaluating the impact of the applied strategies.

In the Background Information section, it provides fundamental details about the organization of the course, including the teacher's name, area of study, academic level, and implementation dates. Therefore, this information is essential to contextualize the use of ACT within a specific educational framework, allowing the adaptation of strategies to the particular characteristics of the student group.

Accordingly, precise goals for the unit and study block are established, focused on enhancing the communication and expression abilities of students through the use of ACT. Additionally, effective strategies are implemented to facilitate both verbal and non-verbal communication. These objectives reflect a commitment to the continuous improvement of the students' communicative skills, using adaptive technology to overcome barriers in learning and communication.

Subsequently, this section specifies the standards used to assess student performance in relation to the effective use of ACT. It includes assessing the effectiveness of the technologies in enhancing communication and the students' ability to employ various assistive tools to express ideas clearly and effectively.

Moreover, essential skills that will be developed through the use of ACT are identified, including communicational, digital, and socioemotional competencies. The development of these skills is crucial for promoting self-expression and improving social interaction, using adaptive technologies that facilitate communication in students with diverse abilities.

Additionally, specific modifications designed to meet the individual needs of students with the support of ACT are referred to. This includes devices like digital communicators and voice-to-text software, especially useful for students with conditions such as Autism Spectrum Disorder and other communicative disabilities.

Furthermore, pedagogical techniques adapted to Universal Design for Learning (UDL) and focused on the use of ACT to optimize the educational process are described. These strategies include the implementation of interactive technologies and gamification apps, which stimulate active participation and language development. Also listed are practical exercises designed to consolidate the use of ACT in communication, allowing students to explore and adapt various assistive technologies to their individual needs.

Subsequently, methods for evaluating the progress and understanding of students in the use of ACT are outlined, including direct observation and periodic assessments that adjust the use of devices and applications based on student performance and preferences. In addition, the tools and technologies used during the unit are detailed, such as adaptive keyboards, augmentative and alternative communication software, and tactile devices.

Finally, procedures are defined to measure the effectiveness of the implemented pedagogical and technological strategies. This includes collecting data on the effectiveness of ACT and analyzing how these technologies influence inclusion and academic performance of students.

CONCLUSION

The study has demonstrated that Technologies for Learning and Knowledge (TLK) play a crucial role in the inclusive education of students with Special Educational Needs (SEN). The integration of TLK into daily teaching practice, as reflected by the high frequency of use by teachers and a positive assessment of its effectiveness, underscores its importance in enhancing student participation and learning. However, challenges highlighted by teachers, mainly related to the need for additional training and more adaptive resources, indicate critical areas for improvement to maximize the benefits of these technologies.

On the other hand, the positive results in terms of students' perceptions of ease of use and impact on their learning and sense of inclusion suggest that TLK can be powerful tools for personalizing education and adapting resources to individual needs. The significant correlation between frequent use of TLK and perceived improvement in learning emphasizes the direct relationship between constant exposure to these technologies and the perception of academic success among students.

Based on these findings, it is imperative that educational institutions implement robust policies for teacher training and the development of TLK resources that are inclusive and easily integrable into different pedagogical practices. This would not only bridge the gap between the perceived ease of use and the challenges in effectiveness identified by teachers but would also amplify the advantages of TLK for all students, especially those with SEN.

Finally, this study reaffirms the need for an integrative approach that considers both technological and pedagogical capabilities to foster an inclusive and equitable learning environment. By aligning teaching strategies with the appropriate technological tools and providing personalized curricular adaptations, the educational quality and experience of all students can be significantly improved, thus promoting a truly inclusive and accessible education.

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