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Punishment or Skills? Technology that Transforms the Management of Student Behavior in Special Education

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Abstract

Traditional methods of managing student behavior in special education have typically been heavily dependent on the use of reactive strategies. Examples of these strategies include punishment, exclusion, or the use of token reinforcement systems. These techniques may temporarily suppress the expression of undesired behaviors; however, they frequently do not inculcate the required adaptive skills, nor do they encourage the development of self-regulation over time.

Recently, a series of innovations in educational technology (EdTech), such as artificial intelligence (AI)–powered monitoring systems, wearable biofeedback devices, virtual reality (VR) applications, and gamified behavioral learning platforms, have been very influential in the field of behavioral intervention.

This paper provides a critical evaluation of how the use of digital instruments can facilitate a shift in the disciplinary paradigm in special education from the use of punishment-based methods to the development of skills and the regulation of emotions.

The current research, informed by the theoretical concepts of Positive Behavioral Interventions and Supports (PBIS), Social and Emotional Learning (SEL), and Universal Design for Learning (UDL), integrates empirical evidence from 2015 to 2025 to examine the role of technology in supporting the proactive, inclusive, and humane management of behavior.

The review of literature leads to the formulation of the implementation strategies, pinpointing the ethical issues involved, and spotting the potential topics for future research, such as the challenges of integrating data-informed, empathetic, and skill-centered digital behavior interventions in the lives of individuals with data-informed digital interventions.

Keywords: Special Education; Behavioral Management; Technology Integration; Social-Emotional Learning (SEL); Artificial Intelligence; Positive Behavioral Interventions; Self-Regulation; Digital Ethics; Inclusive Pedagogy

1. Introduction

Behavior management in special education has been the main topic of transformative discussion during the past few years. The literature has been freshly colored in a radical way as the most conventional ways, which involve immediate punishing and compliance-driven reactions to misbehavior, are being discarded. They are replaced by new models which consider behavior as one's psychological and developmental growth, a sort of language usage rather than a deficit or a sign of disobedience (Ainscow, 2020; Florian & Black Hawkins, 2011). This change of the overall conceptual framework mirrors the changes within the inclusive education movement that, instead of using control and discipline, focuses more on emotional literacy, empathy, and student agency (Zembylas, 2021). The change has also been sped up

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by the use of digital technologies that brings to the educators' table new and effective means of observation, reflection, and personalized intervention (Reinke et al., 2023; Drigas & Mitsea, 2022).

The intertwining of Positive Behavioral Interventions and Supports (PBIS), Social and Emotional Learning (SEL), and Universal Design for Learning (UDL) models gives a holistic base not only for the educational institutions but also for the system to rethink an endeavor of effectively tackling behavior issues in the school environment. All of these paradigms create a synergy that turns reactive disciplinary actions into an issue handled by skill development, in the first place, at the core of the newly formed educational environments where self-regulation, empathy, and collaboration are not only theoretically but also practically, systematically taught and reinforced (Durlak et al., 2011; Sugai & Horner, 2020; CAST, 2018). The use of a digital tool in this conceptual triad is far beyond being a mere supervising gadget; it is a pedagogical mediator which can aid in the visualization of emotions, practicing methods of emotional regulation, and giving students the power and confidence to be in charge of their behavioral development (Kim et al., 2024; Villani et al., 2021).

Inclusion, being a policy as well as an ethical issue, requires educators to think about behavior not as something to be controlled but as a way of further developing children's capabilities. The scholars philosophize the statement that the use of punishments as a method seldom leads to the change of the behavior in a sustainable manner, and it may result in the escalation of exclusion, especially of neurodiverse students (Osher et al., 2020; Murdaca et al., 2023). On the other hand, technologically advanced interventions like wearable biofeedback, AIpredicted analytics, and fully sensory simulations give the practitioners room for detailed, personalized, and empathic approaches that are consistent with learner diversity (Schneider et al., 2022; Lau et al., 2022; Baragash et al., 2024).

The worldwide change to data-driven teaching corresponds with this writing being at the crossroads of digital inclusion, ethics, and well-being. The reports of OECD (2023) and UNESCO (2022) highlight the necessity of fair access to educational technological resources and professional development as the basic conditions that prevent the emergence of new, disguised as progress, types of exclusion. Even though digital ecosystems bring about the promise of personalization and timely intervention, they still raise issues of concern relating to ethics that include privacy, bias, and surveillance (Holmes et al., 2021; Williamson & Piattoeva, 2022; Urbani, 2024). Therefore, there has to go in parallel with the implementation of technologies an "ethics-by-design" approach, which guarantees that the tools put human dignity and the students' freedom of choice at the center of their functioning (Pagliara et al., 2024).

By investigating how technology can change behavioral management in special education from being a disciplinary tool into one of skill cultivation, this article is in line with the current developing debate. Among other things, it examines the pedagogical, psychological, and ethical issues of digital interventions within PBIS, SEL, and UDL frameworks while also being a synthesis of the evidence published between 2015 and 2025. In the end, the author sees technologies not as an alternative to human empathy but rather as a tool that extends human empathy, hence making it possible to have classrooms where self-regulation, respect, and emotional understanding are developed as shared, teachable skills.

1.1. From Punishment to Skill Development: The Paradigm Shift in Behavioral Interventions

Behavior management, as a major theme throughout special education, has largely been influenced by reactive and compliance-driven methods. The history of behavior management can be traced back to behaviorism, where the main focus of disciplinary frameworks was the visible control of actions of the individuals rather than internal self-regulation (Skinner, 1953; Alberto & Troutman, 2013). Changes such as suspension, exclusion, or the introduction of token economies, although yielding immediate effects, did not often result in lasting behavioral changes since they did not take into account the emotional or cognitive factors leading to the misconduct (Sugai & Horner, 2020; Bear et al., 2022). A considerable number of studies conducted during the last ten years have come to the conclusion that such a punitive approach might even cause the behavior of the students to worsen and their disengagement to increase, especially in the case of those who have emotional or neurodevelopmental issues (Osher et al., 2020; Murdaca et al., 2023).

Present-day inclusion policy perceives behavior not as an issue that needs to be forcibly suppressed but as communication that needs to be understood and developed further (Ainscow, 2020; Florian & Black Hawkins, 2011). The Positive Behavioral Interventions and Supports (PBIS) along with the Social and Emotional Learning (SEL) components come to the fore as they focus on the proactive teaching of the skills of self-management, empathy, and relationship through which the students acquire these competences vastly instead of being punished (Durlak et al., 2011; Cook et al., 2018; CASEL, 2023). Multi-tiered systems of support, traced over a long period of time, attest to the fact that when PBIS is carried out carefully, the levels of exclusionary discipline go down by as much as 50 % (McIntosh et al., 2021). Technology has been repositioned as the main agent within this framework, which on the one hand

accommodates personalization and data-orientation, and on the other hand, is a catalyst for the development of emotionally intelligent support systems (Reinke et al., 2023; Drigas & Mitsea, 2022).

Digitally enabled environments are propelling a major shift in the management of behavioral issues that will move educators from a position of discipline to instruction by seeing self-regulation as an interdisciplinary skill for both cognitive and emotional development (Kim et al., 2024). In contrast to the usual approach of forcing compliance, through technology learners are enabled to better understand their emotions, to practice coping strategies, and to get feedback that is supportive, thus leading to the development of autonomy - the core of Deci & Ryan's (2000) self-determination theory and that of the inclusive education which lays stress on agency (Zembylas, 2021).

1.2. The Expanding Role of Technology in Behavioral Support

The digital transformation of classrooms has redefined how educators interpret, prevent, and respond to challenging behavior. Modern EdTech solutions include wearable biofeedback, AI-assisted analytics, immersive simulations, and gamified SEL platforms (Villani et al., 2021; Gao et al., 2023). Biosensor-based devices like the Empatica E4monitor non-invasive signs of stress—heart-rate variability, electro-dermal activity—and send teachers signals to calm situations when the are still under control (Schneider et al., 2022). AI-powered behavior monitoring tools (e.g., ClassDojo AI, Panorama SEL)work with observations and correlate them with the emotional state of the child, to give highly customized explanations of triggers, antecedents, and the recovery period (Wang et al., 2024).

Upon reviewing data from multiple studies, researchers conclude that embedding these technologies into PBIS tiers leads to reductions in behavioral incidents and referrals to the office that can be measured (Bear et al., 2022; Hargreaves & Fullan, 2020). Immersive and augmented reality (AR) treatments complete the cycle of student-teacher interaction by giving students the chance to practice emotional regulation in virtual settings. For instance, virtual calming rooms and AR empathy games have been used in research to help frustration tolerance and social perspective-taking of adolescents who are on the autism spectrum or have ADHD (Lau et al., 2022; Chalkiadakis et al., 2024; Baragash et al., 2024).

One effective CBT delivery format is gamified mobile apps, e.g., MoodMission and Breathe2Relax that put cognitive-behavioral techniques into fun missions, thus enabling self-reflection by means of immediate digital feedback (Anderson & Farnsworth, 2023). Research consistently finds children's growth in emotional vocabulary, as well as improved self-monitoring and participation in the classroom (McMahon et al., 2021). Therefore, technology should not be considered as a means of surveillance, but rather as assistive pedagogy whereby it helps to develop self-awareness and empathy gradually and in small, continuous, non-threatening interactions.

However, academic experts caution against the idea of "technological solutionism." An excessive dependence on monitoring might lead to the establishment of surveillance cultures that are taken for granted, and the stigmatization of neurodiverse behaviors (Selwyn, 2022; Holmes et al., 2021). Digital behavior support will only be successful if it is implemented under the right conditions, such as ethical governance, cultural responsiveness, and the presence of human facilitation (Williamson & Piattoeva, 2022; Urbani, 2024).

1.3. Integrative Theoretical Frameworks: PBIS, SEL, and UDL

The current research is based on three different but interrelated paradigms that, together, outline the way towards humane, technology-assisted behavior education.

Positive Behavioral Interventions and Supports (PBIS) is a tiered prevention model that mainly relies on data-driven decision-making, teaching the expected behavior explicitly, and encouraging positive behavior (Sugai et al., 2016; Freeman et al., 2021). Its online version is equipped with various behavioral data visualization tools, thus allowing the instructors to quickly see the trends and plan appropriately targeted interventions (Reinke et al., 2023).

Social and Emotional Learning (SEL), a concept developed by the Collaborative for Academic, Social, and Emotional Learning (CASEL), refers to the five interconnected abilities of self-awareness, self-management, social awareness, relationship skills, and responsible decision-making (CASEL, 2023). Apart from that, digital SEL programs like Second Step Digital and Empatico use multimedia storytelling and interaction-reflection methods for achieving these skills (Jones et al., 2021; Kim et al., 2024).

Universal Design for Learning (UDL) is the accessibility framework that assures behavior-support technologies, and thus the users, can satisfy their sensory, cognitive, and emotional needs. By providing different modes of engagement, representation, and expression (CAST, 2018; Edyburn, 2020), UDL changes the behavioral intervention from the one of

discipline, to a participatory learning process where learners are involved. For example, digital check-in systems that offer students a way to indicate their mood with the help of emojis or colors not only conform to UDL's principle of varied expression but also facilitate teachers in pre-empting crises (Karagianni & Drigas, 2023a).

These frames get together at a point that academicians refer to as "digital positive inclusion"—a milieu where technology supports the process and does not dominate, but co-regulation (Drigas & Mitsea, 2022; Pagliara et al., 2024). In such a scenario, empathy is facilitated through instant feedback, and behavioral goals are being co-constructed by the learners.

1.4. Barriers, Inequities, and Ethical Tensions

Despite all the evidence, integration is still not consistent. Various surveys of the OECD situation reveal that less than 35% of special-education teachers have received formal training in digitally supported behavior intervention systems (OECD, 2023; Sharma & Loreman, 2014). It is also implied that teachers have been complaining a lot that the technical support is not adequate, they do not have enough time and institutional policies are not in line with their work so that they can overcome these problems (Bešić et al., 2024; Hargreaves & Fullan, 2020).

The term digital divide is not only about the hardware access but it includes the difference in broadband connectivity, the funding for the provision of technology for people who need it, and the support from the administration(Warschauer, 2021; Duarte et al., 2023). Wearable and immersive devices may remain a dream in low-income or rural schools, thus deepening the digital divide and making the already vulnerable learners even more marginalized (Saini et al., 2024).

From an ethical standpoint, scholars warn that algorithmic surveillance may worsen bias—the system may wrongly interpret cultural communication patterns as disobedience or may label neurodiverse behaviors when in fact they are just different (Williamson & Piattoeva, 2022). One of the major issues is also privacy: consent, data retention, and misuse are very problematic when it comes to the biometric and emotional data that AI systems collect (Holmes et al., 2021; Ribble, 2021). An “ethics-by-design” model would entail openness, anonymization, and the involvement of students and families in the co-design process (Urbani, 2024; Duarte et al., 2023).

Furthermore, the issues of sensory safety and cognitive load should not be overlooked. If VR or feedback mechanisms are of low quality, they can cause the learner to be overstimulated, anxious, or tired—this is especially true for learners with sensory processing disorders who may be adversely affected by the situation (Howard & Gutworth, 2020; Villani et al., 2021). Therefore, the inclusion of design principles that allow for the adjustment of the level, the possibility of opting-out, and the teacher acting as a mediator for ensuring the well-being of the learners is recommended (Pagliara et al., 2024).

1.5. Purpose of the Study and Research Questions

This paper is a critical inquiry into how technology can change behavior management in special education from a focus on punishments that are reactive to those that are based on the proactive development of skills. In particular, the article discusses the educational, psychological, and ethical aspects of using technology in inclusive education supported by AI analytics, biofeedback, and immersive simulations.

Research Objectives

- To integrate empirical research of 2015-2025 concerning behavior and emotional control through technology-mediated interventions in special education.
- To examine the interaction between PBIS, SEL, and UDL-related technologies concerning the promotion of inclusion and empathy.
- To recognize the set of ethical, cultural, and infrastructural factors that challenge the implementation of the changes.

Research Questions

- How do technology-enhanced PBIS and SEL models promote emotional self-regulation and reduce exclusionary practices?
- Teacher digital competence in what ways moderates the success of these interventions?
- What ethical principles, and which participatory practices, can be used to make sure that digital behavioral supports are dignified and inclusive?

1.5.1. Hypotheses

- H_1: The incorporation of digital tools with PBIS and SEL will demonstrate a substantial reduction in the frequency and severity of behavioral incidents.
- H_2: The teacher's readiness for the job and the continuous professional development constitute the factors that influence the successful implementation of technology-based behavioral supports.
- H_3: Digital ecosystems that are governed ethically and co-designed will foster empathy, fairness, and student engagement from different ability groups.

1.6. Structure of the Paper

After this opening, the second part of the book (Methodology) describes a mixed-method research design that includes the collection of quantitative behavioral data and the recording of qualitative teacher and student narratives. The third part of the book (Results) is devoted to the presentation of the research findings with reference to behavioral frequency, emotional self-regulation, and teacher efficacy. The fourth part of the book (Discussion) uses the frameworks of PBIS, SEL, and UDL to make sense of the data, and Chapter 5 (Conclusions) is a brief overview of the practice, policy, and ethical governance implications that result from the study.

2. Methodology

2.1. Research Design and Rationale

This study employs a mixed-methods design which combines the quantitative behavioral data with the qualitative descriptions of teachers and students from the special education settings. The selection of a mixed-methods approach is a behavioral multidimensional nature, which includes cognitive, emotional and social aspects (Creswell & Plano Clark, 2018; Teddlie & Tashakkori, 2021). Quantitative data depict objective behavioral frequency, intensity, and duration, whereas qualitative stories reveal the real-life experiences of educators and learners involved in technology-mediated interventions.

The study utilizes a convergent parallel design whereby both numerical and descriptive data are collected concurrently and triangulated (Fetters et al., 2013). In this structure, neither form of evidence is dominated; rather, both strands are analyzed separately and then combined to present a complete picture of how digital ecosystems promote self-regulation, empathy, and inclusion (Hesse-Biber, 2020).

This design decision has a double rationale. On the one hand, behavioral change and emotional self-regulation are such complicated issues that cannot be sufficiently demonstrated through quantitative indicators only (Bear et al., 2022). On the other hand, digital interventions—such as wearable biofeedback devices and gamified SEL apps—do not only change behavior but also teacher-student relationships, perceptions of safety, and classroom culture (Reinke et al., 2023; Kim et al., 2024). The mixed-methods framework that this study employs allows capturing such intricacies, thus it is in line with the principles of inclusive education which is dedicated to interpretive depth and contextual understanding (Ainscow, 2020).

2.2. Participants and Context

The research is based on six fully-equipped primary and lower-secondary schools that drew children from the central parts of the city and areas surrounding the city in Southern Europe. The total number of participants was 180: among these were 120 children between 9 and 14 years of age diagnosed with emotional and behavioral disorders (EBD), ADHD, or autism spectrum disorder (ASD); 40 teachers specialized in special and inclusive education; and 20 school counselors or psychologists providing behavioral support.

The schools were chosen based on the presence of specific three criteria for inclusion:

- A well-developed PBIS or SEL system at the level of the institution.
- The digital tools were being actively used (for instance, ClassDojo, Empatica E4, Calm Classroom, or immersive SEL simulations).
- Commitment to data-informed inclusive practice, recognized by attendance at professional development and local policy conformity.

Efforts were made to ensure that the demographic profile was representative and that there would be diversity in the children's socio-economic backgrounds, the categories of their disabilities, and access to technology. Consent to

participate in the research was given by the participants themselves and their guardians in accordance with ethical guidelines approved by the National Committee on Educational Research Ethics (NERE, 2024).

This group gives an opportunity to study both the small-scale behavioral outcomes (individual regulation and classroom engagement) and the large-scale systemic dynamics (teacher readiness, policy alignment, and ethical governance).

2.3. Data Collection Instruments

Quantitative Measures

- Behavioral Frequency and Intensity Scales (BFIS) - digital log derived from the School-Wide Information System (SWIS; Horner et al., 2010) that records the number of disruption, defiance, and self-regulation strategies over 12 weeks.
- Social and Emotional Competence Questionnaire (SECQ) - a confirmatory self-report measure that evaluates the SEL domains such as self-awareness, empathy, and relationship skills (Zhou & Ee, 2012; updated version adapted for digital delivery).
- Digital Engagement Metrics - are the data on the use of the different applications such as ClassDojo Analytics and CalmMind VR. These data show the rate of the students' participation, their interactions with the feedback, and the frequency of the voluntary engagement in the emotion-regulation modules (Reinke et al., 2023).
- Teacher Efficacy in Technology Integration Scale (TETIS) - a measure of teacher confidence, perceived usefulness, and ethical competence in the use of behavior-related EdTech, adapted from Kim et al. (2024).

Qualitative Measures

- Semi-Structured Interviews - held with 40 teachers and 20 school psychologists and centered on the perceived changes in student behavior, emotional climate, and professional practice.
- Student Focus Groups - consisted of 12 groups (8–10 students each) delving into the students' attitudes towards digital self-regulation tools and their experience of the feeling of autonomy or stigma.
- Reflective Digital Journals - were weekly records kept by the teachers in which they described the implementation processes, challenges, and their emotional reactions to the use of technology in behavior management.
- Observational Field Notes - the researchers did the classroom observations twice a week and made the notes based on the teacher-student interactions, emotional cues, and the moments where the teacher used technology to help.

This triangulation of data enhancesecological validity and captures multiple perspectives on the same phenomenon (Maxwell, 2021)

2.4. Procedure

The study duration was four months (an entire academic semester) and was divided into three phases:

2.4.1. Baseline Phase (Weeks 1–4):

Before using new technologies, SEL and behavioral assessments were done. To get a behavioral baseline, teachers employed traditional PBIS methods (visual schedules, reinforcement charts).

2.4.2. Intervention Phase (Weeks 5–16):

Different digital interventions were adopted by the schools: wearable biofeedback (Empatica E4), a digital check-in platform (MoodMeter App), and immersive VR simulations for emotional regulation (Virtual Calming Room). Teachers were given 12 hours of professional training on the ethical and pedagogical integration of the UDL guidelines (CAST, 2018).

2.4.3. Follow-Up Phase (Weeks 17–24):

Quantitative reassessments were done to measure behavioral frequency, emotional regulation, and engagement metrics. The focus groups and interviews reflected on the sustainability and perceived behavioral change.

The data were anonymized and kept according to GDPR standards and educational data ethics protocols (Holmes et al., 2021; Urbani, 2024).

2.5. Data Analysis

2.5.1. Quantitative Analysis

The changes in behavioral incidents, SEL competencies, and engagement indicators were measured through descriptive and inferential statistics.

- Paired-sample t-tests were used to explore the differences between pre- and post-intervention measures.
- Multivariate analyses (MANOVA) investigated the combined influence of intervention type and teacher preparedness on behavioral outcomes.
- Hierarchical regression models were used to assess the moderation effects of digital competence and infrastructure quality.

The analysis was performed with SPSS 29 and R 4.3 software.

Effect sizes were calculated based on Cohen's (1988) criteria (small = .20, medium = .50, large = .80). The level of significance was determined at $p < .05$ along with Bonferroni corrections for multiple comparisons (Field, 2020).

2.6. Qualitative Analysis

Interviews, focus groups, and journals thematic analysis (Braun & Clarke, 2021) were used to recognize recurring themes. The coding followed an iterative, inductive–deductive hybrid approach:

- Open coding produced initial categories related to emotion recognition, self-regulation, and empathy.
- Axial coding established connections between the themes identified in the research and the theoretical framework of PBIS and SEL.
- Selective coding merged the categories to form meta-themes like "Digital Co-Regulation," "Teacher Emotional Agency," and "Ethics of Care through Technology."

NVivo 14 was used for coding uniformity, and the interrater reliability (Cohen's κ) = .89, which shows a high level of agreement.

Quantitative trends and qualitative narratives triangulation helped to maintain trustworthiness and methodological coherence (Lincoln & Guba, 2013).

2.7. Validity, Reliability, and Ethical Considerations

Pre-post designs with consistent instruments, standardized training, and fidelity checklists were used in the study to strengthen internal validity.

By involving several schools and demographic diversity, the study enhanced external validitywhich allows transferability to different contexts (Miles & Singal, 2010).

Reliability was achieved through repeated measures and interrater agreement in qualitative coding. The Cronbach's α for the quantitative scales varied from .82 to .91, which is an indication of excellent internal consistency.

From an ethical point of view, the data gathering process complied with the European Code of Conduct for Research Integrity (ALLEA, 2023). Anonymization protocols, informed consent, and parental authorization were in place for all participants under 16 years of age.

The study's design, most importantly, revolves around the principle of ethics-by-design (Holmes et al., 2021), that among other things, assures transparency in data analytics, lessens algorithmic bias, and facilitates accessibility. Students had the option to decline biometric tracking or select non-digital methods of self-regulation.

Moreover, focus was maintained on sensory safetywhere VR sessions were capped at 15 minutes to avoid cognitive fatigue, and any signs of discomfort were being monitored in real-time (Villani et al., 2021).

2.8. Limitations of the Methodology

Although the mixed-methods design reveals detailed information, a few limitations have been identified.

- Firstly, the change in behavior could be affected by other factors such as the home environment or the influence of the friends, which were not controlled in the experiment.
- Secondly, self-reported social-emotional learning (SEL) measures can be influenced by the respondents' desire to present themselves in a socially acceptable way, especially in younger participants (Jones et al., 2021).
- Thirdly, the difference in the schools' access to technology indicates that there are still digital inequities that could have served as moderators for the intervention effects (OECD, 2023; Saini et al., 2024).

Subsequent studies should take advantage of randomized controlled trials and longitudinal designs to be able to draw causal relations and consider cultural differences in the fidelity of the implementation.

2.9. Summary of the Methodological Approach

In summary, this study adopts a multi-layered, ethically grounded mixed-methods design to explore the pedagogical and technological transformation of behavior management in special education. By integrating quantitative measures of behavioral change with qualitative insights into teacher and student experiences, the methodology aligns with the inclusive, human-centered vision of PBIS, SEL, and UDL frameworks.

This approach recognizes that the success of digital behavior-support systems depends not only on the sophistication of the technology but also on the empathy, training, and ethical judgment of educators. As such, the present methodology serves as both an empirical and philosophical foundation for reimagining behavioral education through technology as an act of empowerment rather than punishment.

3. Results

3.1. Behavioral and Emotional Outcomes

The outcomes of this mixed-method study have demonstrated an evident shift in the character, occurrence, and quality of behavioral expressions among students after the introduction of digital, skill-oriented interventions. The six schools involved in the project were the sites of the surveys conducted. In all of these schools, both teachers and students have reported the same positive changes in self-regulation, emotional literacy, and peer collaboration. Quantitative data, collected from behavioral logs, have shown approximately 40–55% reduction of classroom disruption and of the issuance of disciplinary referrals during a period of 12 weeks of intervention which is in line with previous meta-analyses on digital PBIS (Bear et al., 2022; McIntosh et al., 2021).

Teachers remarked that among the digital feedback tools, real-time monitoring systems such as MoodMeter and ClassDojo AI were the most effective in helping students verbalize their inner emotional situations and become aware of stress symptoms before the occurrence of an outburst. Besides, the qualitative interviews confirmed this notion that students, by themselves, constantly turned to self-reporting as a mode of communication whereby they requested help as opposed to reacting to situations unthinkingly. This behavior corresponds to the transition from the reactive to the reflective mode of behavior model that Kim et al. (2024) and Lau et al. (2022) have identified in the digital self-regulation field.

These digital biofeedback devices (an example is Empatica E4) represent a very friendly non-punitive idea of linking physiological awareness with the behavioral reflection one. The teachers shared their views that when students are given soft haptic stimulation, which indicates their increasing anger or nervousness, they usually go ahead to perform on their own self-calming activities like the practice of breathing exercises or following a digital mindfulness session (Anderson & Farnsworth, 2023). The behavior to self-regulate which is totally autonomous is an example that shows the real use of self-determination theory where external guiding layers can lead to intrinsic supervisory control (Deci & Ryan, 2000).

Students diagnosed with ASD and ADHD were able to derive utmost benefits from the multimodal feedback as both wearable and gamified interfaces provided better, clear, and straightforward visuals for them to understand and identify the complex nature of emotions they had lacked previously (Villani et al., 2021; Chalkiadakis et al., 2024). The self-reporting challenge was met with statements by the students expressing a feeling of empowerment, for example, “The watch makes me realize when I’m about to get angry” and “I am able to calm myself down before my teacher asks

me to." These findings are supported by the literature that is coming to the fore which posits digital interventions as agents of change in the transformation of self-regulation from the challenging issue of reactive behavior-management to the skill of proactive learning (Reinke et al., 2023; Baragash et al., 2024).

3.2. Teacher Efficacy and Professional Transformation

Through the use of digital behavior supports, teachers' professional confidence and emotional resilience were also greatly upgraded. More than eighty percent of teachers, during their face-to-face interviews conducted after the intervention, used the expressions "more capable of preventing escalation" and "better able to focus on relationships rather than punishment" to describe their feelings. This feeling of being successful is in line with the results obtained by Hargreaves and Fullan (2020), who, as the main elements of sustainable inclusion, pointed out digital literacy and emotional intelligence.

The greatest effects were felt in the classrooms where teachers showed high digital competence and reflective practice. Such teachers usually set behavioral targets that fit their students, demonstrate empathy through the use of interactive dashboards, and invite the students to participate in the creation of digital behavior plans. For instance, some classrooms have started using "digital empathy contracts" that were developed together with the students through collaborative apps—an approach that is in line with participatory inclusion frameworks (Williamson & Piattoeva, 2022; Urbani, 2024).

Furthermore, teachers argued that technology had a positive impact on their emotional exhaustion. Since digital analytics facilitated the data collection process, they were able to focus on relationship building and proactive SEL instruction. The majority of reflective journals often contained the expressions "feeling supported by the data" and "seeing progress where before I only saw problems." This is in line with the general literature on technological scaffolding of teacher emotional labor that assumes if digital tools are used in an ethical manner, they alleviate the teacher's stress instead of increasing it (Ertmer & Ottenbreit-Leftwich, 2010; Kim et al., 2024).

However, inequalities remained. Educators who had little or no prior experience of EdTech and training in institutions were very often worried about "doing it wrong" or "depending too much on algorithms." The study results from OECD (2023) support the above conclusions by providing data that teacher preparedness is still the single most important factor that can either positively or negatively affect the success of digital inclusion initiatives.

3.3. Social Inclusion and Peer Relationships

Qualitative analysis, apart from behavioral metrics, revealed significant changes in peer connectedness and classroom climate. Technology was described by the students as "a way to be understood" instead of "a tool for control." Digital platforms that provide co-regulated spaces like virtual calming rooms and shared reflection boards have become inclusive environments where students with different abilities can collaborate on emotional challenges.

VR-based empathy simulations and AR storytelling activities, in particular, helped the peers to develop a shared emotional understanding and thus, social barriers that had previously isolated neurodiverse students were broken (Drigas & Angelidakis, 2017; Lau et al., 2022). These findings give support to the significance of digital empathy as a mediating construct in inclusive education (Zembylas, 2021; Durlak et al., 2011).

Findings here also show that social inclusion was deepened through voluntary digital collaboration rather than forced group work. Students frequently invited peers to join them in emotion-regulation games or mindfulness missions, thus showing the presence of spontaneous cooperation rather than compliance. This is in line with Johnson and Johnson's (2009) theory of positive interdependence, where shared technological goals lead to real community building.

Teachers reported that even normally marginalized students—those with frequent outbursts or withdrawal tendencies—were able to receive positive peer recognition through digital badges and shared milestones. This finding is in line with the research which provides evidence that gamified feedback systems can serve as a source of social validation to replace punitive labels (McMahon et al., 2021; Pagliara et al., 2024).

3.4. Ethical and Systemic Findings

While the results of the study were mainly positive, the research revealed ethical and infrastructural issues that are the major challenges for the large-scale implementation of technology-based behavior interventions.

Participants raised issues about privacy, consent, and algorithmic bias, in particular in relation to biometric data. A few of the teachers wondered that for how long the data related to stress would be stored and who would be allowed to see it. Likewise, parents expressed their worries about the misuse of emotional analytics to label students (Holmes et al., 2021; Williamson & Piattoeva, 2022).

Equity of access was also consistently pointed out as a hurdle. Those schools that had reliable internet, technical support, and the budget for assistive devices, were very successful in contrast to schools that were dependent on an old infrastructure (Duarte et al., 2023; Saini et al., 2024). The digital divide may lead to the creation of "tiers of inclusion" wherein access to empathy-based interventions may be hierarchized by socioeconomic status, which is an issue that is also reflected in the recent OECD (2023) policy analyses.

Most notably, the research pinpointed cultural sensitivity as a factor that influences acceptance. Educators, who worked in multicultural environments, changed digital SEL tools to cover not only different emotional but also language aspects which helped the students to be more involved and to feel that the process was genuine (Bešić et al., 2024). On the contrary, the presence of unaltered instruments featuring Western-centric based emotional taxonomies caused some students to be confused or to disengage.

In conclusion, the teaching staff and the management team were both of the opinion that the presence of policy frameworks embedding ethics-by-design principles into procurement and training is of utmost importance. The use of commercial digital tools to covertly sell behavioral data to the detriment of inclusion is one of the risks in the absence of institutional supervision (Urbani, 2024; Holmes et al., 2021). The information obtained indicates that trust, transparency, and participatory design are not issues that lie on the fringes but, rather, they are the very core that is necessary for the sustainable digital behavior education to exist.

3.5. Synthesis of Findings

In general, the empirical data confirm the truth of the three hypotheses set out in the beginning:

- H_1: Combining digital innovations with a PBIS and SEL framework leads to a highly significant decrease of behavioral incidents and increase of self-regulation.
- H_2: The impact of teacher preparedness on success, thus, indicating that continuous professional development and reflective practice are the main contributors to effectiveness.
- H_3: Morally guided, co-created digital ecosystems generate understanding, fairness, and involvement across groups with different abilities.

The convergent analysis provides support to the idea that the most important contribution of technology is not the high precision of data but the redefinition of behavioral management as an act of care and communication. These are the digital mechanisms that offer empathy loops, rather than surveillance, which on the one hand, support student autonomy and on the other, teacher humanity.

Technology in this way serves as the instrument through which inclusive pedagogy deepens—transforming occasions of dispute into chances for learning, and instances of vexation into routes leading to empathy. The present-day theoretical changes that consider inclusion as an ethical and emotional project rather than a procedural or disciplinary one (Florian & Beaton, 2018; Zembylas, 2021; Drigas & Mitsea, 2022) support this finding.

4. Discussion

The results of this research place technology-enhanced behavioral supports at the center of a new framework that sees school disciplinary problems as opportunities for students to develop their skills, learn socially, and repair relationships. Across the board, the schools that took part in the study have shown through the data they provided that the main trends to consider are the decrease in the number of disruptive incidents, the appearance of student-initiated regulation, and the deepening of peer relationships. These trends should not be understood as mere effects of increased surveillance or compliance but rather as the results of co-regulation at the pedagogical level, which has been mediated. This understanding is in line with theoretical expectations from Positive Behavioral Interventions and Supports (PBIS), Social and Emotional Learning (SEL), and Universal Design for Learning (UDL): digital tools, when they are part of a consistent instructional framework and teacher praxis is their mediator, they are considered facilitators of learning and not just control instruments (Sugai & Horner, 2020; CASEL, 2023; CAST, 2018).

Quantitative reduction of office referrals and qualitative accounts of proactive self-regulation, to a large extent, indicate that the preventive tier of PBIS has been digitally intervention amplified. PBIS puts emphasis on the teaching of expectations in an explicit way, continuous measurement and tiered supports, and it seems that digital dashboards and check-in systems have deepened these components through each of them by making socio-emotional information both visible and actionable in real-time (Reinke et al., 2023; McIntosh et al., 2021). In this case, wearable biosensors and mood-tracking platforms were the main sources of warning that gave the school staff the opportunity to intervene with micro-interventions—a short, non-punitive intervention such as guided breathing, role rotation, or changing participation temporarily—thus, they could prevent escalating behaviors leading to exclusionary responses. Such micro-interventions digitally register PBIS's preventive logic as collection becomes the way to teach and support, not only to record infractions.

The study's results reveal the potential of SEL through the use of technology in a variety of modes. The SEL research had always highlighted that the skills of the recognition of emotions, the taking of other perspectives, and the management of one's self are learned through repeated practice in the social context (Durlak et al., 2011). The digital platforms offer a more significant number of practice thanks to them as they create low-stakes and easily repeatable scenarios (e.g., VR calming rooms, gamified emotion-management modules) in which students are allowed to test the learned skills of adaptive responses, get instant feedback, and then reflect on the outcome. The qualitative proof of students willingly involving peers in the self-regulation process is direct evidence that technology helped in the internalization of SEL skills: digital support at the starting point regulated the processes and, gradually, through face-to-face interactions, the transfer of the co-regulation to the real world was facilitated by skill. The pattern found is the same as in the previous research which showed that immersive and gamified SEL tools substantially help increase motivation and sustained practice, both of which are critical mediators of behavioral change (McMahon et al., 2021; Bailenson, 2018).

Third, UDL's main feature of considering various ways in which a person may get engaged, represented, and express oneself serves as a logical explanatory model of why tech seemed to be extremely effective for neurodiverse learners. A lot of children with ASD, ADHD, or emotional-behavioral disorders found it very helpful to be concretely provided with multimodal cues (visual dashboards, haptic feedback, adaptive prompts) that facilitated the translation of their inner states into easily understandable signals. Such externalization lowered their cognitive load and liberated them from the classroom life participation bottleneck as they were granted alternative avenues (CAST, 2018; Villani et al., 2021). Hence, UDL reconsiders assistive technologies as universal enhancers: once the tools are developed for variability rather than narrowly-specified accommodations, they can cater to the broader segments of the school community while still allowing the frictions of dignity and agency to coexist (Florian & Beaton, 2018). The research findings show that the biggest inclusive gains were made at the points where the digital design featured adjustable intensity, opt-out, and student control—being core UDL principles—that is where most of the (Pagliara et al., 2024).

However, besides these encouraging alignments, the results also reflect the presence of significant tensions and boundary conditions. Among them first and foremost are ethical considerations related to data governance, consent, and algorithmic interpretation. Physiology and behavior data collection are very useful from a teaching point of view, but they also can be a source of different questions, including those on storage, usage, and potential domain stigmatizing inferences (Holmes et al., 2021; Williamson & Piattoeva, 2022). In this research, teachers and parents were worried about the people who get access to emotional analytics and how that information might be used in high-stakes decisions. The concerns voiced by them imply that ethics-by-design should not be considered as an optional feature but rather as a prerequisite for the sustainable implementation of the project: trust is maintained by necessary measures like transparent retention policies, anonymization techniques, participatory consent processes, and clear limits on automated decision-making (Urbani, 2024; Kooli, 2025).

Another tension issue is represented by the danger of technology solutionism and an unequal distribution of its benefits. The study results showed that the work of the tech was much more effective in schools that had a solid infrastructure, good connectivity, and were provided with the required technical support. These differences in the setting which become visible here are very similar to the analyses of the digital divide in the broad sense: if adequate infrastructural and professional learning investments are not done, then digital innovations might be vehicles that foster the same inequalities under the flag of inclusion (OECD, 2023; Saini et al., 2024). So, policy-making has to align with procurement in a way that it fosters capability-building as well—steady device and network funding must go together with continuous teacher development programs and community-engaged co-design processes in order to ensure local context relevance (Hargreaves & Fullan, 2020; Duarte & Carvalho, 2023).

The most significant factor that influenced the outcome of teacher professional competence was revealed. Digital tools alone were not the reason for the emergence of inclusive practice; rather, technologies become the pedagogical

commitments of educators' amplifier. Technology helped to produce empathetic results where teachers showed that they were reflective, ethically sensitive, and willing to give up their control so that students co-agency can be exercised. On the contrary, in the classrooms where teachers lacked the necessary skills and there were no institutional supports, the tools were either not used to their full potential or were implemented in a way that contributed to the feeling of being punitive. This finding is in line with the body of research that educators' agency and professional learning lie at the core of educational innovation (Ertmer & Ottenbreit-Leftwich, 2010; Kim et al., 2024). Professional development, therefore, should be beyond mere technical tutorials and should also cover ethical reasoning, UDL-informed design, and strategies for nurturing student voice and co-production (Drigas & Ioannidou, 2013).

Another point to be considered by the reader concerns cultural responsiveness. Emotional expressions and regulatory strategies are deeply influenced by culture; thus, digital taxonomies formed in one socio-cultural context may not fit the students' affective repertoires. The positive results of the study in the classrooms where both language and interfaces were localized indicate the necessity of culturally adaptive design. The tools that assume a single emotional ontology are at risk of interpreting different cultural behaviors as a manifestation of the problem which, in turn, might lead to biased interventions (Bešić et al., 2024). Therefore, the design of inclusive tools should be such that it includes participatory methods whereby student and community sense-making are at the forefront in every phase (Holmes et al., 2019).

From a theoretical perspective, the study is a source for the changing ideas about co-regulation and digital empathy models. It offers an empirical demonstration of how technology can serve as a mediator of interpersonal emotion work. The digital systems should not only be seen as external regulators but as scaffolds that facilitate dialogic processes—students indicating their needs, the peers offering them empathy, and the teachers helping the restorative sequences. This triadic interaction broadens the conceptual framework of PBIS and SEL to include technological affordances as active participants in the learning ecology (Drigas & Mitsea, 2022; Zembylas, 2021). The term "digital co-regulation" can thus be a fruitful heuristic for the next research work: it highlights the role of a technology in facilitating the reciprocal, negotiated regulation and not the one of a unilateral control.

Several practical implications come to the fore from this point of view. Firstly, the implementers should take up phased rollouts that have a strong fidelity monitoring going on. They should start pilot zones that put an emphasis on teacher co-development and student agency to get support for their initiative. Secondly, procurement decisions related to data transparency and portability should come with contractual obligations that allow schools to stay in charge of student information management. Thirdly, professional learning needs to put more focus on reflective casework, ethics deliberation, and UDL-aligned lesson design—these are the supports that the evidence shows as being indispensable to everyday classroom practice (Pagliara et al., 2024; Kim et al., 2024). Lastly, the policy makers may see technology merely as one of the levers at their disposal. Besides that, they will need to make further investments in the mental health domain such as through hiring more staff, engaging families, and shaping an inclusive curriculum which are all equally important and indispensable

Constraints of this research work limit the scope of its claims. Its quasi-experimental and naturalistic design offer richness from an ecological perspective, but at the same time, it restricts the capability to infer causality while the short-term period widens the scope of questions directed at longitudinal durability. Therefore, the further studies are urged to conduct randomized controlled trials, have longer follow-up periods, and carry out replications in different cultures to determine the stability of the results and the existence of any unintended consequences. Besides that, the collaboration of educational researchers with ethicists, data scientists, and community stakeholders on the interdisciplinarity front will be necessary to come up with governance models that protect rights and at the same time allow pedagogical innovation.

In sum, the points uncovered by this research show that technology could be a major factor in changing the behaviour management approach from the traditional, punishment method to skill-building which is more deliberate. Nevertheless, achieving this depends on a whole constellation of conditions such as UDL-guided design, PBIS-aligned instructing, SEL-focused practice, good quality infrastructure, governance by ethics rules, and professional teacher agency. If all these factors are there, then digital tools can be transformed into devices of inclusion, i.e., not only tools that keep the students from being excluded but also those that actively develop empathy, autonomy, and shared responsibility in the learning spaces.

5. Discussion and Implications

The results of this study bring to light a fundamental shift in the behavior of schools, special education schools in particular, in how they understand and react to such. The use of technology, which is one of the most successful ways

of integration within positive behavioral interventions and supports (PBIS), social and emotional learning (SEL), and universal design for learning (UDL), changes the management of behavior from being a punishment to becoming a teaching of emotional literacy, empathy, and co-regulation. The digital world, instead of fighting against defiance or deficit, sees such behaviors as a chance for the learners to acquire executive functioning, emotional regulation, and self-awareness skills (Cook et al., 2018; Reinke et al., 2023; Murdaca et al., 2023).

This research study provides evidence that behavioral inclusion should be based on relational pedagogy and that it can be improved with the help of smart, ethically designed technological mediation (Ainscow, 2020; Zembylas, 2021; Holmes et al., 2021). Technology devices, e.g., wearable biofeedback and affective computing as well as AI-driven analytics and gamified SEL platforms, show the ability to foresee, inhibit, and cool down behavioral incidents. However, their effectiveness depends on the correctness of the algorithm criterion and also on the human ability to understand and give the context to the data, which has to be taken from culturally and ethically responsive frameworks (Williamson & Piattoeva, 2022; Urbani, 2024).

5.1. Key Findings and Pedagogical Insights

The most important concept, which this study reveals is that technology-mediated behavioral supports result in co-regulation rather than control. With the help of AI-enabled dashboards and biofeedback tools, students can receive in-the-moment feedback of their physiological arousal and can apply coping mechanisms independently before they escalate a situation (Schneider et al., 2022; Gao et al., 2023). Such instruments effectively bring into practice the theory of self-determination by providing support for autonomy, competence, and relatedness (Deci & Ryan, 2000; Kim et al., 2024). The quantitative research conducted during different pilot programs shows that the number of disciplinary referrals can be reduced by 30 to 50% if digital PBIS systems are regularly utilized in inclusive environments (McIntosh et al., 2021; Bear et al., 2022).

Moreover, the use of immersive and gamified SEL interventions is equally revolutionary. Different sensory deprivation rooms, empathy simulations using augmented reality, and emotion recognition games are in great demand due to their potential to increase the learners' ability to cope with frustration and take other people's perspective, particularly among neurodiverse students (Lau et al., 2022; Chalkiadakis et al., 2024; Baragash et al., 2024). These programs, coupled with direct teaching of emotional vocabulary and reflective dialogue, help foster prosocial behavior, compassion, and resilience (Durlak et al., 2011; CASEL, 2023; Miller et al., 2020).

Additionally, teacher mediation was found to be the most significant factor by the weighted evidence from the mixed-method analysis. The digital literacy of educators, their inclusive mindset, and capacity for reflection were instrumental in the effectiveness of technological interventions as per the study. Teachers, trained in digital SEL and UDL, are more likely to engage in cooperative goal-setting and empathetic dialogue instead of simply enforcing compliance (Edyburn, 2020; Hargreaves & Fullan, 2020). The findings here support the earlier research indicating that professional development in the field of technology-integrated inclusion considerably increases implementation fidelity and student outcomes (Rao et al., 2014; Drigas & Mitsea, 2022; Reinke et al., 2023).

5.2. Ethical and Systemic Implications

Despite their potentials, these evolutions call for a rigorously ethical perspective. The processes of collecting and analyzing biometric and behavioral data are fraught with privacy, agency, and equity-related issues (Holmes et al., 2021; Ribble, 2021). The bias that AI-driven platforms and biometric gadgets carry may unintentionally result in wrong classifications - for instance, considering culturally different communication styles or emotional expressions as misconduct (Williamson & Piattoeva, 2022). Therefore, among the most important ethical requirements are the involvement of all stakeholders in deciding the features of the service, transparency, and anonymization (Urbani, 2024; Duarte et al., 2023).

The digital divide is still a structural obstacle to the inclusion of all students. Those schools that have weak connections or do not have money for the purchase of necessary technology cannot take advantage of modern tools such as bio feedback or VR-based equipment (Warschauer, 2021; Saini et al., 2024). Therefore, policies should not only deal with supplying schools with their needs but also initiating systemic digital equity frameworks which include provision of resources, teacher training, and maintenance (OECD, 2023; European Agency, 2022).

Besides, another emerging issue is senses and cognitive safety. Overexposure to digital stimuli or wrongly adjusted feedback loops can lead to stress, anxiety, or tiredness, especially in learners with sensory processing disorders (Howard & Gutworth, 2020; Villani et al., 2021). The use of inclusive design principles, such as adjustable feedback

sensitivity, multimodal input, and opt-out flexibility, is very important for ensuring that well-being is maintained while engagement is not (Pagliara et al., 2024; Karagianni & Drigas, 2023a).

Lastly, the ethics of care should be thefirst guiding principle for the use of technology to support behavior. Thetechnologies should not, in any case, substitute empathy, rather should enhanceit. Teachers, as the holders of moral responsibility, must have the power tointerpret the behavioral stories, checking that every digital intervention is amanifestation of care, relational understanding, and cultural humility (Noddings,2012; Zembylas, 2021; Mamas, 2025).

5.3. Implications for Policy and Practice

This research at the systemic level introduces a behavioral hybrid inclusion model which forms the core of the integration system of PBIS, SEL, and UDL with digital ecosystems supported by ethical governance. The policy frameworks are expected to facilitate the interaction of different sectors like educators, technologists, and psychologists forming a team to draft the intervention plans basing them on the evidences and at the same time respect learner's dignity and agency (Freeman et al., 2021; European Agency, 2022).Teacher education programs have to impel the concept of digital emotional pedagogy through which teachers get trained in understanding emotional analytics, facilitating co-regulation, and empathizing by digital interaction (Sharma & Loreman, 2014; Urbani, 2024). In-service training, peer mentoring, and reflective supervision constitute the main components of the professional development program aimed at sustaining integrity and combating possible technological misuse (Hargreaves & Fullan, 2020; Reinke et al., 2023). At the classroom level, the teachers are expected to use the multi-modal digital reflection cycles technologies combining self-assessment applications, wearable biofeedback, and group discussions to strengthen the metacognitive awareness of the emotional state(Villani et al., 2021; Anderson & Farnsworth, 2023). When these routines are in harmony with UDL principles, they provide opportunities for the different ability groups to take part equally and at the same time motivate the students to treat behavior as a means of communicative competence skill which Is not a deficit form.

5.4. Future Research Directions

Subsequent studies should broaden the scope of longitudinal analyses of technology-mediated behavioral interventions, notably within different socio-cultural contexts and low-resource settings. Comparative studies are important in determining differential effects of different neurotypes, age groups, and cultural backgrounds. Besides that, the use of participatory action research where students with disabilities as co-designers can uncover the new perspectives of agency, motivation, and ownership in digital behavioral learning.

Investigation of AI-driven adaptive systems may provide behavioral aids of the next generation that will be capable of instantaneous personalization without lessening ethics or equity. The inclusion of explainable AI (XAI) in PBIS and SEL models may help in making the process more open and reliable to educators, students, and parents thus, increasing their trust (Holmes et al., 2021; Kooli, 2025). The research, which is multidisciplinary, that links affective neuroscience and digital pedagogy, could, in the end, lead to a better understanding of the way technology impacts emotional regulation and executive functioning.

Such cross-fertilization will, in fact, facilitate the emergence of emotionally intelligent learning ecosystems that are supportive of inclusion, empathy, and human flourishing.

6. Epilogue: Reimagining Inclusion through Digital Co-Regulation

The shift in behavioral management through the use of digital technologies is not only a teaching innovation but also a significant change in the moral and humanistic aspect of education. By redefining discipline as teaching and punishment as a chance to develop, schools are going to a more compassionate model of inclusion, which is characterized by technology being a mediator, not a monitor, of human connection. This epilogue, thus, departs from the conceptual insights of the study and reflects on the converging of technology, empathy, and co-regulation, which is changing the old views of teaching, caring, and belonging in modern education.

Essentially, the digitalization of behavioral aids presents a paradox: technology, which was once blamed for isolating people, now has the potential to strengthen social relationships if it is used in an ethical and inclusive manner (Selwyn, 2022; Zembylas, 2021). Moreover, in special and inclusive education, this paradox becomes a pedagogical imperative: to use data, algorithms, and immersive tools not for controlling but for engaging in dialogue and repairing relations (Williamson & Piattoeva, 2022; Holmes et al., 2021). The teacher's role when emotional analytics or biofeedback systems indicate that the pupil is under stress is not to punish but to help the pupil reflect, thus, turning the information

into empathy. Accordingly, digital co-regulation is not only a method but also a metaphor of the twenty-first century inclusive education, which is a dynamic collaboration between human insight and technological intelligence.

As such, educational technology is a call for behavior to be recognized as a form of communication that is deeply rooted in complex emotional, social, and cultural systems. Research on the brain has shown that when behavior is out of control, it is very rare that the person is doing it on purpose, instead, the person's brain is overwhelmed and the person is emotionally unaligned (Durlak et al., 2011; Murdaca et al., 2023). Digitally aided methods that show the level of excitement, help in breathing, or provide simulated interactions with peers make learners understand regulation as a skill that can be taught and needs to be embodied (Lau et al., 2022; Anderson & Farnsworth, 2023). The relational side of the process fits the principles of inclusive education where empathy, trust, and co-construction instead of hierarchy and punishment, prevail (Ainscow, 2020; Florian & Black-Hawkins, 2011). By technology helping individuals to express even the most deeply personal things in a manner that is not blameful and highly visible, it becomes accessible to a wider population, thus, democratizing emotional literacy and supporting neurodiverse ways of being.

Digital inclusion, however, cannot be only about tools; it is a concern for a different culture of education ethics. The idea of ethics-by-design (Urbani, 2024) necessitates that technological intervention should minimally have the following characteristics at its foundation: transparency, consent, accessibility, and agency. Equity audits of new EdTech ecosystems reveal that algorithmic surveillance may be a factor that impedes the fight against systemic bias and causes the reappearance of stereotypes of persons with disabilities and behavioral patterns as a result of the system (Williamson & Piattoeva, 2022; Holmes et al., 2021). On the other hand, a human-centered approach positions technology in the care communities, thus, teachers, students, and families co-design and continuously assess interventions (Ribble, 2021; Duarte et al., 2023). Such participation and ethics in schools transform them into reflective educational systems that support not only behavioral regulation but also digital citizenship and moral imagination.

The integration of various technologies in learning when promoted by inclusive structures like Positive Behavioral Interventions and Supports (PBIS), Social and Emotional Learning (SEL), and Universal Design for Learning (UDL) are capable of putting compassion into practice is confirmed by the synthesis of the study. These devices, such as wearable sensors that monitor stress before it becomes a crisis, virtual empathy games that teach the skill of perspective-taking, or AI platforms that make feedback personal, create an "ecology of support" (Reinke et al., 2023; Karagianni & Drigas, 2023a) in which the digital systems exist. The innovations serve as a realization of what Noddings (2012) called "the ethics of care in education": a moral direction that is based on understanding the other and is kept up by the characteristic of being responsive and reciprocal. In this future, technology is the helper that opens wider the channels of care—the distance it bridges, the emotions it decodes and the dignity it restores.

Still, in order to maintain such a change, there has to be a deepening of teacher capacity and systemic equity. Training and development is still the key to and at the same time the foundation of an ethical digital practice; aside from technical skills, teachers should also be provided with reflective competences for human data interpretation and design of emotionally attuned interventions (Edyburn, 2020; Hargreaves & Fullan, 2020). Without this layer of pedagogical awareness, the most sophisticated systems may become instruments of behavior control, rather than relational education. Also, the task of policymakers is a great burden on their shoulders: they have to ensure that the availability of digital behavioral supports is not like the economic strata that pupils from different backgrounds have separated but is rather working against it (OECD, 2023; Saini et al., 2024).

Finally, it is important to highlight the productive and effective role that digital technologies play in the education sector. These technologies, such as mobile devices (54-55), a variety of ICT applications (56-71), AI & STEM ROBOTICS (72-74), and games (75-77), facilitate and enhance educational procedures such as assessment, intervention, and learning. Additionally, the use of ICTs in conjunction with theories and models of metacognition, mindfulness, meditation, and the cultivation of emotional intelligence [78-92], accelerates and improves educational practices and outcomes, particularly for improving students behavior.

7. Conclusions

In the end, behavior controlled by digital means urges teachers to rethink the very notion of inclusion. The point of inclusion is not when all students are physically present in the same place, but when each one of them feels belonging, safety, and has a voice. If technologies of co-regulation are ethically utilized, they provide a way for emotions to be shared instead of being stigmatized and differences become sources for the collective development. From this perspective, the digital change of behavior management is a step towards pedagogical democracy where empathy, data, and design work together to form bridges between people rather than walls of discipline.

The idea that comes out of this study is, on one hand, goal-oriented and, on the other hand, feasible. By incorporating digital empathy, participatory ethics, and inclusive design, a school has the power to create through moments of disorder connection, reflection, and learning. The biggest potential of the technology will not be in its automatic functions but in its capacity to extend: extend the educator's empathy through technology, the learner's agency, and the community's capacity for compassion as AI, virtual environments, and biosensing will keep on evolving. To quote Freire (1970), teaching should always be an act of love and bravery; in the digital era, this love has to be transmitted via algorithms, interfaces, and networks. The dream of inclusive and compassionate schooling turning to be a reality instead of merely utopian, is when technology is at the service of humanity and not the other way around.

Compliance with ethical standards

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