Behavioral Changes and the Use of Social Technologies in Education

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ABSTRACT – Behavioral Changes and the Use of Social Technologies in Education. Social Technologies (ST) are the result of advancing the process of solving everyday problems in society. This work seeks to capture and identify the effect of ST on the behavior of students at a municipal institution of the state of Sergipe. The research makes use of focus groups for data collection. The results showed that the TS under examination were important tools for social transformation, contributing positively to the participants' interpersonal behavior and socioemotional skills. The conclusion obtained at the end of the investigation is that ST are relevant in the personal development process of students but there is a need to advance strategies that bring the institution closer to the community.
Keywords: **Education. Social Technologies. Socioemotional Skills. Empathy.**

RESUMO – Mudanças Comportamentais e o Uso de Tecnologias Sociais na Educação. As Tecnologias Sociais (TSs) são resultantes do avanço do processo de resolução dos problemas cotidianos da sociedade. Este trabalho busca captar e identificar o efeito das TS sobre o comportamento de alunos de uma instituição municipal do estado de Sergipe. A pesquisa faz uso de grupos focais para a coleta de dados. Os resultados demonstraram que as TS se apresentam como importantes ferramentas de transformação social, contribuindo positivamente no comportamento interpessoal dos participantes e nas competências socioemocionais. A conclusão obtida na investigação é a de que as TS são relevantes no processo de desenvolvimento pessoal de alunos, mas necessitam avançar com estratégias que aproximem a instituição da comunidade.
Palavras-chave: **Educação. Tecnologias Sociais. Competências Socioemocionais. Empatia.**

Introduction

Social Technologies (ST) are important tools developed from popular knowledge and local problems, based on creativity and the availability of resources (Dagnino, 2014). STs emerge in opposition to Conventional Technology (CT), and the evolution of this has added more complex characteristics and elements to the technology, with greater potential to transform the reality of marginalized societies (Dagnino, 2004; Kahlau; Schneider; Souza-Lima, 2019). STs' commitment to social transformation is established by creating a space for discovery and listening to social demands and needs, always seeking dialogue between different forms of knowledge to promote participatory actions in planning, monitoring, and evaluating the democratic process (ITS, 2005).

The set of ST techniques and methodologies, applied in interaction with the community and appropriated by it, can represent solutions for improving many aspects of life in beneficiary communities. STs are promoters of education, citizenship, inclusion, accessibility, sustainability, participation, and culture (ITS, 2004). Thus, we ask: have the Social Technology projects developed by the Institute for Research in Technology and Innovation (IPTI) contributed to a change in the behavior of students, especially regarding empathy and socio-emotional competencies?

The institution expects that the union of Art, Science, and Technology, together with society will transform education, stimulate youth leadership, and expand the entrepreneurial vision of society, thus offering project participants a new opportunity in life (Barreto, 2021). In this context, the following ST projects were developed: Arte Naturalista (illustration/fashion/design), which trains young talents in illustration techniques; CLOC (Creativity, Logic, Opportunity, Growth), which qualifies students in web programming; and PLOC, which explores the local soundscape as a possibility for cultural and economic development. The name PLOC is onomatopoeia, not an acronym, referring to the sound of tides hitting the mangroves (IPTI, 2021).

Given the above, our aim is to verify the contribution of STs to the behavior of students at a municipal institution located in the interior of the state of Sergipe. To answer the question guiding this research, the present study seeks to find evidence, through an ex-post facto evaluation, of key information in the individual perception of each student participating in IPTI's ST projects. More specifically, we seek information that represents any indication of changes in particular characteristics as perceived by the students.

To this end, focus groups were formed, with speech excerpts selected to represent significant moments. These moments should, in some way, confirm whether there have been relevant changes in individuals' interactions with each other, their communities, and their families, as well as with the world around them. This symbolizes the evolution of their socio-emotional skills and more empathetic actions.

According to the National Education Council – CNE (MEC, 2013), the intentional inclusion of pedagogical practices aimed at developing socio-emotional skills and empathy is a path to academic success in basic education, as these competencies drive results throughout an individual's life. Ventura et al. (2012) emphasize, among many other effects of ST, the promotion of human development, social responsibility, the evolution of emotional skills (such as feelings of security and confidence), and improvements in the quality of family and collective relationships (Bonilha; Sachuk, 2011).

For Santos and Primi (2014), during the stages of pre-adolescence and adolescence, schools, social groups with which young people interact, and their community represent relevant factors in modifying the set of skills acquired. Therefore, the school plays a fundamental role in developing abilities that go far beyond knowledge transmission, as it is urgent and necessary to strengthen many varied competencies in children and young people. These skills should enable them to build a productive and happy life in a society marked by the speed of change (Abed, 2014), a fact that justifies the relevance of this investigation.

Theoretical Framework

Social Technologies (ST) are innovative solutions, socially and environmentally sustainable, developed with the participation of the community and based on local knowledge, expertise, and practices with the aim of solving problems and promoting social development from a local territorial perspective (Dagnino, 2014). They differ from Conventional Technologies (CT) in several aspects. First, STs focus on solving social problems and promoting social development, while conventional technologies generally focus on generating profit. Second, STs are developed with community participation, whereas CTs are usually developed by specialists without community involvement. Third, STs are environmentally, socially, and economically sustainable, while conventional technologies are not always so. Furthermore, STs are accessible to all members of the community, while CTs are not always accessible. All these characteristics make STs a democratic pedagogical tool (Reynoso Ângulo, 2023).

As STs create solutions tailored to the specific needs and realities of each community, they also ensure inclusion and the addressing of demands from different social groups. Thus, the barriers overcome by STs enable individuals from various socio-economic and cultural backgrounds to access knowledge and actively participate in the educational process, combating social exclusion and promoting equity (Gallardo; Pérez; Olivera, 2021). In this process, there is the promotion of empowerment and autonomy, as active participation in knowledge construction makes individuals the protagonists of their own learning, and consequently, autonomous and critically minded. In the learning process, STs increase student engagement and motivation through dynamic methodologies that use Art, Science, and Technology in pedagogical practices (Martínez; Miranda, 2023). The result can be seen in

the acquisition and modification of skills developed by children and young people in schools, especially socio-emotional competencies.

Socio-emotional competencies are understood as individual capacities that can be manifested through a consistent pattern of thoughts, feelings, and behaviors and developed through formal and informal learning experiences. According to Goleman (2018), socio-emotional competencies are as important as cognitive skills for success in life, as they are skills that allow individuals to become aware of their own emotions through the recognition and understanding of what is felt. In this way, people are provided with effective means to manage emotions, regulating and directing them toward achieving goals. On a collective level, the perception and understanding of others' emotions through socio-emotional competencies foster positive and constructive interaction. Therefore, socio-emotional competencies are essential for personal and professional success, with communication, empathy, collaboration, and problem-solving among the most important (Álvarez Bolaños, 2020).

Empathy is the ability to put oneself in another's place, to understand their feelings and thoughts, and it is one of the main socio-emotional competencies. Additionally, empathy, in theoretical terms, can be conceived as a psychological construct referring to the functional disposition of people to interact in unconditional exchanges of experiences with others. An empathetic person is capable of: experiencing different emotions/thoughts felt by others; adopting the perspective of others; understanding their motivations and needs; all with the purpose of providing help, care, justice, and solidarity (Formiga, 2015).

Effective communication is the ability to transmit and receive information clearly, concisely, and comprehensibly, while problem-solving is a process that involves identification, analysis, and monitoring of results. These three skills are complementary and essential for success in various areas of life (Mizael et al., 2023). Effective communication allows for the clear exchange of information and ideas; empathy facilitates the understanding of others' needs and motivations; and problem-solving allows for challenges to be addressed effectively. By developing and refining these skills, relationships, job performance, and decision-making abilities can be improved (Dutra, 2020).

Piaget (2020) recognizes that social and emotional development is intrinsically linked to cognitive development. His theory offers a solid foundation for understanding how socio-emotional skills develop in children. Although Piaget did not directly study socio-emotional skills, his work on child cognitive development provides specific insights into how these skills evolve. First, children learn through sensory and motor exploration of the world; then, they develop language and the ability to think symbolically, although they are still egocentric and struggle to understand others' perspectives. Next, children develop the ability to think logically about concrete objects, although abstract thinking remains difficult; finally, in adolescence, the ability to think abstractly, hypothetically, and more generally about the future develops.

Socio-emotional skills can be learned, designed, and enhanced through socio-emotional education programs, which should be implemented in schools with the goal of teaching students the skills to manage their emotions effectively (Silva, 2022). For adults, specific training can be offered in the workplace to help them develop their socio-emotional skills (Cedeño Sandoya et al., 2022).

The development of socio-emotional skills in school is a continuous process that requires the engagement of the entire school community (Seligman, 2018). The joint efforts of teachers, students, parents, and administrators can contribute to a more holistic and humanized education, preparing students for the challenges of personal and professional life. In Brazil, the National Common Curricular Base (BNCC), a document that defines essential competencies and skills for basic education in the country, includes the development of socio-emotional skills as part of the curriculum (Carneiro; Lopes, 2020). The BNCC defines ten general competencies, three of which are directly related to socio-emotional development: self-knowledge and self-management, empathy and communication, social awareness, and social responsibility (Brazil, 2018). The Law of Guidelines and Bases of Education, which regulates the Brazilian education system, also highlights the importance of developing socio-emotional skills. In its Article 22, it is clear that basic education must promote the integral development of students, including the development of ethical and social values.

In this context, there are challenges that the country needs to address, not only regarding teacher training, as it is necessary to invest in their continuous development so that they can foster students' socio-emotional skills, but also to invest in the development of teaching resources for the advancement of these skills. In this regard, when Social Technologies (STs) are used intentionally and strategically, they serve as an alternative tool for developing socio-emotional skills in education.

Socio-emotional skills are essential for both individual and collective well-being, contributing to the construction of happier and more prosperous societies (Seligman, 2018). This author proposes the concept of "human flourishing" as a state that goes beyond happiness and can be achieved through the use of STs. STs transcend mere tools, becoming bridges for human transformation and the enhancement of socio-emotional competencies. Through their potential to connect, empower, and foster engagement, STs open doors to a more positive and inclusive future. By strategically and intentionally integrating STs into the educational process, it is possible to help form more complete individuals, prepared to face the challenges of personal and professional life, and to build a more just and inclusive society.

In the case under study, Arte Naturalista, which trains young talents in illustration techniques, provides a valuable space for young talents in illustration, fashion, and design to develop their skills and dis-

cover their creative potential. Through artistic expression, students explore their emotions, develop self-confidence, resilience, and teamwork skills. Thus, Arte Naturalista, as an ST, contributes to the formation of individuals who are more aware of the impact of art on society, promoting inclusion and valuing diversity.

CLOC (Creativity, Logic, Opportunity, Growth), which trains students in web programming, opens doors to the digital future, equipping young people with essential skills for the job market. The development of programming logic exercises creativity and critical thinking are essential for problem-solving, teamwork, and effective communication. Furthermore, this ST promotes youth leadership by encouraging the search for innovative solutions and active participation in society.

PLOC, which explores the local soundscape as a possibility for cultural and economic development, connects the community to its cultural wealth through music, valuing local history and traditions. This strengthens self-esteem and a sense of belonging, fostering the development of a strong cultural identity and promoting respect for diversity and a sense of community. PLOC also boosts local economic development by valuing culture and creating opportunities for artists and entrepreneurs.

In general, these STs are change initiatives that drive human development and the construction of a more prosperous future. Through education, inclusion, and empowerment, STs weave a network of opportunities for each individual to flourish and contribute to society. In schools, STs open doors to the inclusion of students with different needs, learning styles, and sociocultural backgrounds. With the help of tools such as online learning platforms, accessibility resources, and active methodologies, STs ensure that all students have access to quality education (Lopes; Freitas; Freitas, 2017).

Materials and Methods

To achieve the proposed objective, an applied research approach was adopted, with a qualitative and exploratory-descriptive character, through an ex-post evaluation. Research using a qualitative approach facilitates the understanding and classifying of dynamic processes experienced by social groups, focusing on understanding complexity, meanings, and changes (Oliveira, 2004).

Technically, focus groups were used as a data collection procedure, allowing the researcher to identify the motivations and experiences of the participants by capturing deeper and more subjective information on the topic in question (Gomes; Barbosa, 1999). Additionally, this method allows for the exploration of nuances and details often missed in quantitative research (Conte; Habowski, 2020). To this end, 4 to 6 graduating students from each ST were selected within the research universe to form three focus groups, with each interview lasting

between 30 and 50 minutes. It should be noted that the number of participants was conditioned by the availability and number of students who had completed each ST.

The interviews were conducted in a space provided by IPTI, offering students a comfortable and familiar environment, as they were among their classmates. At the beginning of the conversation, the students were informed that they were participating in an academic study aimed at understanding their experiences within the project and how it had impacted their lives. Furthermore, it was assured that the identity of each participant would be kept confidential and that they had complete freedom to express their thoughts spontaneously and naturally. The responses were initially recorded in audio and later transcribed, preserving the original statements. For this stage, a semi-structured questionnaire containing 10 questions was used, as follows:

1. How was it to participate in the "X" program? Did the program awaken your desire to study?
2. Comparing your way of thinking today, after going through the program, with before, do you feel that your behavior has changed? And in what other ways have you changed?
3. How do you evaluate your group relationships within the program? Were there improvements?
4. Did the program change the behavior of your peers? If so, how do you assess this change?
5. Do you believe that participating in the program affected your relationship with your family? If so, how?
6. Do you think it is possible for poor people to improve their lives through Art/Science and Technology?
7. What did the "X" program mean to you? After completing the course, how do you see yourself in the future?
8. Do you see IPTI's projects as an opportunity for social and economic life changes?
9. What would you improve in the courses and at IPTI itself? What do you think about teamwork?
10. Do you see IPTI as an opportunity for other teenagers?

The questions served as a guide to stimulate dialogue, rather than forming the basis for the interview method. In many cases, during the casual conversation, students would answer the equivalent of more than one question, making it unnecessary to repeat the same question or subsequent ones that corresponded to those answers. The intention was to make the participants feel as comfortable as possible so that the questions could be answered naturally, with responses not always following a sequential order. The participants spoke spontaneously when interested.

Results and Discussion

This section presents the main results obtained from the analysis of the focus groups of the three STs: Arte Naturalista; CLOC (Creativity, Logic, Opportunity, Growth); and PLOC. The focus groups consisted of 4 to 6 graduating students from each ST, meaning those who had completed their training. This inclusion criterion was used because they represent a group of students who experienced a longer intervention period of the IPTI's STs. However, the number of participants was limited by the availability of students that could be identified and mobilized for this research. The sessions with each group lasted between 30 and 50 minutes, and the responses were relatively short and direct.

The CLOC working group (henceforth FG CLOC) consisted of six graduating students, three of whom are part of the CITI2 company (2019), whose existence allowed the inclusion of students who are already working professionally with the skills learned in the CLOC ST. The students in this group[1] initially exhibited distrust and shyness towards the moderator, but after a brief explanation of the session's purpose, they began to feel more comfortable, ending the session in a much more relaxed state than at the beginning. The conversation proceeded with minimal disagreement, with some students participating more than others, and not all students expressed their opinions on every topic discussed.

The CLOC students reported that participating in their ST was a rewarding experience, describing it as an opportunity to learn something new with the potential to change their lives in the future, as reflected in the following statement:

AC1: "For me, it was a very good experience because I learned several things that can improve my life now [...], and now it also made me look to the future, so I now see myself doing other things I never thought I would do."

When asked, "What did the CLOC program mean to you?" the responses were clear and almost unanimous:

AC1: For me, a life change. It completely changed my life.

AC2: An opportunity to learn new things.

AC3: It meant a lot because now I can have more opportunities, and I already have knowledge of something.

AC4: An opportunity for knowledge.

AC5: It was an opportunity to learn new things and also a work opportunity.

AC6: For me, it was an opportunity, and I want to keep moving forward.

In their statements, key terms such as opportunity, new learning, life transformation, and work were emphasized. These words indicate that CLOC achieved its general purpose of promoting social change, starting with providing practical knowledge to the individuals who interacted with this technology. Regarding behavioral changes in themselves, the students reported experiencing positive changes in their own behavior and in their peers. Some exemplified these changes as an

increased desire and intention to study and a better sense of responsibility. In their own words, they said:

AC4: It changed because I didn't focus much on studying before, but after I joined this course, I focus more now.

AC3: [...] energy and desire to do things, like, I give lessons, and before I didn't have any responsibility. That's what changed.

Regarding the observed improvements in their peers' behavior and how they related in groups, they reported positive aspects such as overcoming shyness, empathy towards classmates, and a greater willingness to help others. These aspects are evident in the following statements:

AC1: It was hard for me to relate to people because I'm very shy. It got better because people were more spontaneous with me, and I talked. My communication with others improved a lot, despite being very shy.

AC4: I used to be quieter and kept to myself, but when I saw a group of people, I would go and ask if they were okay, and help them.

AC2: [...] I went through the same thing as them, my classmates helping me, and I helping them. That's how I overcame shyness.

AC5: [...] I was a teacher, and my students, some were very shy [...], and some were very restless and didn't sit still, but they improved over time.

Beyond progress in terms of confidence and communication, relationships with family members also improved. According to the students, there was initial distrust from their parents, which changed over time as more noticeable changes occurred, such as transferring classes from rural areas to the city center or when students began earning money from their work, as in the case of those involved with CITI2. It was expected that financial returns would be one of the main ways to prove and encourage parents. This perception can be confirmed in the following responses:

AC1: At first, they were kind of closed off with me because they didn't believe in the project [...]. They didn't open their minds at the beginning until I started showing them things I did, showing what the project was, you know, until they started recognizing that the project was good. That's when I joined CITI.

AC3: They started believing after we advanced because it used to be in the village, and then we moved to the city center.

AC6: When we joined CITI2, our relationship with them changed.

AC2: For me, it was the same when I joined CITI, and I started helping at home, buying things, and that's when they really started understanding.

Regarding future prospects, the students were open to new experiences, expressing feelings of self-esteem and perseverance concerning their professional futures. These are characteristics found in the students' statements, expressed as expectations, plans, and a desire to continue in the field of the course or pursue preexisting dreams before joining CLOC. When asked how they imagined their future after the course, responses included:

AC1: I really want to work in the field. I also want to go to college and maybe, with that, move somewhere else, discover new places.

AC2: I would like to deepen my knowledge in the course, but my real dream is to be a police officer.

AC5: I plan to stay in the field and take another course in technology and programming, and I want to study psychology at college.

AC6: I want to work in the field, and in the future, I want to go to college because I want to be a veterinarian and start my own business.

As for the work done and the importance of IPTI's STs for the city and other areas, the students viewed their experience as an opportunity to improve their lives, not just for themselves but also for young people from other places who, like them, are deprived of free access to knowledge. The following statements are evidence of this:

AC1: It generates many opportunities for young people to grow, gain knowledge, and be able to change their lives and mentality, and also create opportunities for others and for families.

AC2: It was something that came unexpectedly and was very good, and it opens up opportunities for young people.

However, when asked what could be improved in the IPTI courses, there was consensus regarding the number of classes, which, in the students' view, are too few. This observation is confirmed by the following statements:

AC2: [...] just the classes, there should be more classes. More technological, IT-focused ones.

AC3: I wanted more classes during the week because most of the time we only have two classes a week, and it could be four.

AC4: For me, there should be more classes. I joined late, and I felt there weren't enough classes.

Overall, it was possible to identify from the CLOC focus group that the experience was valuable for the development of socio-emotional competencies and empathy.

For the PLOC FG, four graduating students[2] were gathered. This number was due to the availability of students identified and may initially seem small. However, as PLOC is a relatively new ST at IPTI, this number represents nearly all the students who completed the course. In this group, the presence of socio-emotional competencies such as artistic interest, assertiveness, and self-confidence was immediately evident (IAS, 2021). The PLOC students were much more extroverted and comfortable with the moderator, displaying much less shyness and greater ease in responding to questions compared to the CLOC students. As this is an ST with a strong cultural and artistic appeal within the community, it was expected that these students would exhibit such behavior in an informal conversation.

This recognition is not only evident in this research but also in other national and international studies. According to analyses of the effects of musical learning on children and adolescents, among many other findings, "[...] some children and adolescents consider the informal use of music beneficial for coping with and managing social and emotional pressures that arise in social or family environments"

(Oliveira, 2019, p. 43). Such students "performed better in post-test results that evaluated parameters related to executive functions (inhibition, planning, and verbal intelligence) compared to other groups" (Oliveira, 2019, p. 44).

More generally, when asked how they evaluated their participation in PLOC, the most common response was that the PLOC ST came to them as an opportunity to learn something innovative, completely different from anything they had done before or even imagined doing in the future. This conclusion is evident in the following statements:

AP2: It was a good experience. At first, I joined just out of curiosity, but as we started taking the classes, workshops, and everything else, my mindset started changing: wait a minute, I'm not here for nothing. I'm here for a reason, which is to change my life.

AP3: Acquiring new knowledge, applying something completely different from what we thought, where we thought it wouldn't amount to anything, but it did.

AP4: For me, it was something quite innovative that changed our perspective on the world [...]. How could we imagine having imported equipment and learning how to make music, sound recording?

They described characteristics such as curiosity, flexibility of thought, clear goals, the pursuit of personal transformation, a desire to acquire new knowledge, and a change in perspective on the world, which indicates a disposition for new and stimulating experiences, such as curiosity and the joy of learning, as well as extroverted traits such as sociability and enthusiasm, among other skills (IAS, 2021; Abed, 2014). Regarding their relationships with their families before and after the courses, there was a consensus among the students, who stated that there was initial distrust from family members regarding IPTI and the nature of the courses. This was often due to the fact that families did not understand how the course would benefit the students' futures. However, as more perceptible results appeared, their parents' attitudes began to change. These results include presentations, trips, work for major companies, and more, as evidenced by the following statement:

AP1: [...] we try to explain something a million times, but they only understand what they want to understand, and there's no point in arguing. So, at first, they thought we were wasting time, but as we started showing our work, they realized they were wrong.

Some key perceptions of the students are persistence, self-control in the face of family denial, and tolerance and understanding that arguing would not resolve the impasse of being recognized for what they were trying to achieve. Thus, it was only through perseverance, self-control, and self-regulation (IAS, 2021; Abed, 2014), through their own practices, that the students realized they could change others' perceptions of them. This becomes even clearer in the students' own words:

AP2: And we didn't even need to talk about it because they could see for themselves: filming with a band, a trip to Aracaju for a presentation, and after several positive outcomes from the project, they began to see that the project was worth it and that we were doing something good.

AP3: They look at us and our friends and see that we have much more to offer and show the world than they do because the PLOC project revolutionized our lives.

Regarding their future perspectives, that is, how they see themselves going forward, it was noted that, although they enjoyed the field, the students are not limited to it and aspire to new positions and careers. However, they attribute the awakening of these interests to the PLOC project.

AP1: I don't see myself working professionally in this area, [...] what interested me the most was the opportunity to pass on everything we learned to other children. But PLOC opened my mind, and I realized I could do anything else.

AP2: So I want to continue with the project, I want to make my music, and also learn new things, different from this.

AP3: Keep teaching and learning new things, outside the music world as well.

The openness to new experiences, increased curiosity, and desire to study and deepen the techniques learned during the course are other characteristics present in the students' statements. For some of them, ST is a path to various possibilities, as demonstrated by this statement:

AP1: [...] we already think about working with this, teaching others through teaching groups, and today we can work in a studio for a company. There are several possibilities we can pursue through this project.

Here we can observe competencies such as determination: "[...] the ability to set goals, have ambition, and motivation to work hard and dedicate oneself fully to achieving them beyond what is expected" (IAS, 2021, p. 20). Another noteworthy competency is persistence: "[...] the ability to maintain the continuity and consistency of efforts over time to overcome obstacles and complete tasks we take on/started, instead of procrastinating or giving up" (IAS, 2021, p. 20). Furthermore, it is important to mention organization, focus, empathy, responsibility, social initiative, curiosity to learn, and creative imagination (IAS, 2021) as other competencies. This perception is once again evident when we examine the following statements:

AP4: [...] before, I didn't like people much (laughs), didn't mix with others or talk, but then we learned that it's really necessary because you can't do anything alone, everything is done together.

AP3: Today, people look at me and say, "Wow, she's a teacher. She learned how to do this and that," and I had to change my attitude to show respect. That's when we see how much we mature.

This is the realization of the real development and/or enhancement of socio-emotional competencies. Understanding the need for socialized interaction for collective construction involves accepting others in their various ways: through engagement with others, kindness, and resilience (IAS, 2021). Recognizing one's own evolution with maturity represents self-management (IAS, 2021), as well as responsibility, which "[...] is the ability to manage ourselves in order to accomplish our tasks, fulfill commitments, and keep promises we've made, even when it is difficult or inconvenient for us" (IAS, 2021, p. 20). Responsibility is a competency present in both AP4 and AP3.

Other examined aspects are teamwork, the perception of peer behavioral evolution, and the recognition that people in similar circumstances can have a better quality of life through their inclusion in science, art, and technology projects. According to the PLOC students, they are living examples of this possibility of transformation.

Regarding IPTI and what could be improved in its activities, the students pointed to the need for closer ties between the institute and the community to promote its projects and results, in order to dispel the mistaken perception of what it does. The PLOC students conveyed this understanding in the following statements:

AP1: [...] presenting it in a more dynamic and simpler way, so that newcomers don't go through what we did, where our parents didn't understand, and all that. [...] parents don't get it, and they need another language that is more understandable for them.

AP2: I think the projects and their results should be more easily communicated so that everyone can understand and those who aren't involved can participate.

AP3: The way the courses are presented needs to change.

It is clear that, "in addition to influencing the development of students' socio-emotional skills, the school [IPTI, for example] can become a privileged place for the socio-emotional development of [...] students' families" (Abed, 2014, p. 15). The benefits could be intensified even more, as studies have shown that developing support projects for students' parents reduces rates of crime, violence, teenage pregnancy, underemployment, and more (Abed, 2014). Regarding this, the PLOC participants shared their perceptions:

AP2: They [parents] look at us and our friends and see that we have much more to offer and show the world than they do because the PLOC project revolutionized our lives. It opened new doors and showed us what we're capable of. And we're professionals because of it.

This means that, despite living within the same social reality, PLOC students have the opportunity, through new practices, to acquire new knowledge and skills, and above all, to change their trajectory—which, in many cases, would have been predetermined due to the challenges and deficiencies of their social environment. The following testimony supports this: AP2: [...] it's that idea of thought leads to feeling, and that generates actions. So, in everything we learned, it changed our feelings, and automatically our behavior changed without us even realizing it.

The relevance of the PLOC ST is once again evident in the words of AP2: "I would summarize [the PLOC ST] as innovation, a dream, self-esteem, everything". Self-esteem is explained by the students finally recognizing that they also have the ability to develop as individuals. It implies self-confidence, self-control, and physical and psychological well-being.In this case, the sense that they developed emotional control. There is also a strong desire, seen in all participants of the second group, to pass on what they learned at IPTI to other young people in their community and beyond.

To conclude the focus group analysis of IPTI's STs, we also worked with participants from the Arte Naturalista ST. The objective, as previously mentioned, was to understand the development of socio-emotional competencies in the students of the respective groups covered in this study. The Arte Naturalista FG consisted of only four students. We expected more students[3], as this is a social ST that is more mature compared to the others, but this research was subject to a significant lack of pre-existing data, and the subsequent data collection was greatly impacted by the pandemic period.

As this ST involves art, in this case botanical art it was expected that the students would exhibit less inhibition. However, this was not observed. On the contrary, the students' inhibition and discomfort were evident when facing the moderator, who often had to rephrase the questions with examples and encourage participation. During the conversation, it was clear that one specific, more experienced student dominated the discussion. This may have inhibited the other students from speaking up, resulting in conformity and agreement with the dominant student's statements. This is evident in the following excerpts:

AAN1: For me, it was a bit challenging because nobody came with a vision—we are people from different villages [...], and not just for me but for the community of Santa Luzia, seeing art as an escape or an opportunity is almost nonexistent. [...] I started the course, and I got interested in it because it got me out of Taboa. Until then, I was someone who never left the village, and when I started the course, I began going to Crasto. [...] I thought it was cool, and that was a reason to take the course.

AAN2: I improved my techniques more, it motivated me, and it's going well.

AAN3: [...] I used to draw for myself, then when this IPTI project came along, I got even more interested, and I'm still here today.

AAN4: It was good, it was motivating, something that kept involving me more and more**.**

This raises another motivational aspect that may better represent the characterization of this third focus group in the early stages. According to the model that addresses learning in a university context, practice (action) and emotion are central, and even though learning is planned, it always yields unexpected results, such as changes in self-perception, self-efficacy, and self-esteem. These are fundamental characteristics in the process of continuous learning and acquiring new professional experiences.

The analysis of the Arte Naturalista focus group, in the initial phase of the dialogue, is that the enjoyable experience of simply leaving their village or improving the techniques they already knew contributed to self-motivation to keep learning. When asked how the course changed their behavior and whether they saw these changes in their peers, the interviewed students mentioned improvements such as greater interest in studies, increased responsibility, better group rela-

tionships, improved self-confidence and self-esteem, and better communication (reduced shyness). This is expressed in the following statements:

AAN1: [...] I was a teenager who went to school just to mess around, not caring about studying. After I realized and grew within the project, I needed to have good behavior, have a stance, really integrate into society.

AAN4: [...] I used to be the quietest, kept to myself. Then I noticed that when two people were talking about something, someone would always come to me, asking my opinion on that. Noticing this, I started saying something, I got involved.

The sense of responsibility to achieve a goal is first seen developing here. In the following statement, the previously mentioned information is reflected:

AAN1: [...] (So-and-so), before the project, was downcast, couldn't express himself, and felt diminished daily because he lived here [Taboa village]. He thought anyone living in a big city was smarter than him. I had a kind of monster, something like that. But within the project, I realized that wasn't the case, and that I had potential, just like anyone from anywhere else, and I could express myself on equal terms and reapply the methodology in the classroom to bring about change.

These are very particular feelings, but not uncommon, especially given the current socioeconomic structure, where cultural, regional, or ethnic differences grant some people a sense of meritocracy while others feel embarrassed. In reality, however, the opportunity to develop more advanced skills is not equally available to everyone, which can cause feelings of inadequacy in those who don't have the opportunities compared to those who do.

According to the students, relationships with their parents also improved, as did their parents' views of IPTI. However, this change only took place once there were financial returns, i.e., when these students started earning money through art, a result of the lessons learned in Arte Naturalista.

AAN1: [...] I come from a family where my father is strict, homophobic, and not just for my father, but for the men in the family, studying drawing was seen as something for gays. [...] they said the project wouldn't succeed, that it wouldn't lead anywhere because drawing was for women and gays. [...] it was for rich people from big cities, and it would never take off in the countryside [...], I even gave up on the project a few times to go to the mangroves with my father. And my relationship with my father, my uncle, or close relatives only improved after I started bringing money home, so the project gave me a better financial situation than going to the mangroves.

The desire to continue what they learned in the project, combined with a certainty that other dreams are possible thanks to Arte Naturalista or even outside of it, is a sentiment expressed in the students' words:

AAN1: "I intend to take advantage of the change it brought, to turn this key, sign up, and maybe even pass a public service exam."

AAN2: "To become a recognized artist everywhere."

AAN4: "I intend to continue in this area, seeking knowledge to improve more every day."

IPTI's actions are seen by the students as a tool offering opportunities with the power to bring about behavioral, professional, and social changes, as reported in the following statement:

AAN1: [...] a tool to generate life opportunities because it works on many fronts, from an English class, which is extremely essential, to giving us tools to grow. And that's very important. I think if IPTI wasn't here in Santa Luzia, we would remain a town with the narrowest mindset possible.

Regarding IPTI's role in transforming these young people and developing socio-emotional competencies, the students believe the institute fulfills its role well. The sharing of knowledge among everyone involved in this relationship — IPTI, teachers, and students — is, therefore, a decisive aspect of Arte Naturalista. The project thus proves capable of:

> Promoting the development of various subjective aspects inherent to interaction situations. Cultivating an atmosphere of respect and mutual help; emphasizing the importance of learning to deal with emotions (our own and others'), expressing ourselves clearly, balancing personal and group goals, resolving conflicts, etc. (Abed, 2014, p. 20).

As for aspects of behavioral regulation and control, we can define them as follows: they are possibilities to "help the student regulate their own actions, adapting them to the demands of the situation; [and to] promote reflective thinking" (Abed, 2014, p. 19). In this sense, there is no doubt about IPTI and its teachers successfully fulfilling such competencies, as recognized by the students themselves. Moreover, regarding IPTI:

AAN4 emphasizes: "It was something very good, and what I learned at IPTI is that what matters is not just our growth. What matters is that everyone around us also grows. So, just as it was a good opportunity for us, it can also be an opportunity for others."

Here, the dissemination of knowledge developed within the institutional space to the entire community becomes evident. This dissemination occurs due to the desire for growth to extend to those around these participants; there is also the desire for the opportunity to exist for others in the area. All of this symbolizes the presence of socio-emotional competencies of extroversion and agreeableness/cooperativeness (Abed, 2014). When asked what needs to be improved, not only in Arte Naturalista but in IPTI as a whole, one of the participants pointed out:

AAN1: There needs to be more dialogue with the community, you know! IPTI offers a lot, and it's embraced by those involved, but it needs to be closer to the community, giving transparency in some areas, which is essential. The institute and the community need to be partners because there's still a gap, a disconnect.

A second valuable observation from this research was that there is still a deficiency at IPTI in addressing students' emotional issues more comprehensively, as these often go unnoticed, according to the Arte Naturalista participants. In one testimony:

AAN1: [...] IPTI gives us tools, we grow, or we improve in terms of behavior, intellectual capacity, finances, or anything along those lines, but sometimes there's no support, for example: a friend of mine is depressed, and because the institute doesn't know how to handle that situation, they chose to distance her. [...] come on! We're working with young people and adolescents. Today's generation is a depressive, anxious generation, and a methodology from five or six years ago won't make a difference.

This suggests that there may be an institutional deficiency that renders its communication with the community and its ST application model ineffective.

While this group of participants, like the other focus group members, had personal reasons motivating them to take and stay in the courses, it was observed that the first two groups (CLOC and PLOC) had a certain equity among their members regarding their reasons for participation. The possibility of learning new things or the opportunity to change their lives provided them with determination and focus to continue working with these STs. In the case of Arte Naturalista, the participants' motivation, at first, was not entirely related to the understanding of motivation in terms of its connection to socio-emotional competencies like determination, persistence, enthusiasm, and curiosity to learn (IAS, 2021).

Based on the perceptions reported through the focus groups, it can be concluded that the participants themselves became more empathetic, determined, focused, organized, responsible, more eager to study, and more open to new learning experiences. Only in terms of communication did some participants, more than others, exhibit certain shyness, even at the end of the course, which hindered the development of assertiveness. For this reason, the dialogue with the moderator yielded responses that were less precise than could have been achieved with a more conclusive analysis.

In summary, the main points of analysis can be outlined as follows: (1) the recognition of positive behavioral change; (2) the recognition that students can achieve present and future goals because they are as capable as anyone else, even when embedded in more difficult realities; (3) the recognition that, just like them, other members of their community and other communities should also receive the same opportunities so that they too can develop; and (4) the recognition that, through the promotion of new knowledge opportunities in the fields of art, science, and technology, social inclusion and improved quality of life can be achieved. Reflecting on the STs mentioned in this research, it is possible to even:

> [...] recognize social diversity and include the singularity present in each individual of the community in the discussion of society, building full citizenship through democratic processes. These are virtues that culminate in an effective social transformation, encouraging direct participation of the population and, as a result, including popular knowledge and access to scientific knowledge, supported by social justice values (Dias, 2017, p. 74).

It is worth noting that "[...] each social technology has its specific purposes, that is, each one is created with specific objectives that are not necessarily aligned with the common goals of all of them" (Araújo; Cândido, 2017, electronic document). In its broad definition and purpose, it can be stated that the general foundation of STs is social transformation through the development of tacit knowledge in individuals.

Final Considerations

This work aimed to examine the contribution of Social Technologies (STs) to the behavior of students at a municipal institution located in the interior of the state of Sergipe. To this end, students who interacted with them from the beginning to the end of the project participated in focus groups (FG), which provided evidence for this analysis. From the perspective of developing socio-emotional competencies, it was observed that the CLOC program succeeded in developing and/or enhancing concentration/focus in its participants. On the other hand, according to the perception of the PLOC focus group, it was found that participants in this second program were more assertive and tolerant of frustrations. Regarding Arte Naturalista, students evaluated their experience in this ST as challenging, good, and innovative, as it allowed them to engage in an activity unlike anything they were used to, such as having access to new places, experiences, and people.

In the CLOC group, students expressed a positive change in their lives, viewing participation in the program as an opportunity for learning and professional growth. They highlighted improvements in social and behavioral skills, such as communication, responsibility, and empathy, as well as improved family relationships and promising future prospects. In the PLOC group, students showed great motivation and enthusiasm for the program, seeing it as an opportunity for innovative and transformative learning. They also highlighted improvements in socio-emotional skills, such as determination, persistence, and self-confidence, along with an openness to new experiences and a desire to share their learning with others. In the Arte Naturalista group, students reported changes in their self-image and self-esteem, as well as improvements in artistic and social skills. They also noted a change in their families' perception of the program, especially after they began generating income from the skills they learned.

In all groups, students recognized the value of IPTI's programs in their lives, but they also pointed out areas for improvement, such as the need for more classes and better promotion of IPTI's projects to the community. There is a perception that IPTI could improve its approach to students' emotional issues, in particular addressing problems such as depression and anxiety, highlighting a gap in the Institute's ability to handle these situations effectively. A recurring issue raised by students was IPTI's difficulty in building stronger connections with the community. The existence of distrust and misunderstanding, often attributed to a lack of understanding about IPTI's actions, requires attention, as it directly affects the number of students participating in the

projects. Based on the statements from all the focus groups, it was found that while IPTI successfully develops socio-emotional competencies in young people, it has not, on the other hand, established effective communication with the social environment in which it operates. The difficulty IPTI has in creating a compatible language with the community was a recurring theme in the students' comments.

In light of the above, the evidence gathered here reiterates and reinforces the relevance of Social Technologies and the studied institution as drivers of emotional skill development. IPTI's recent efforts through the application of STs have shown positive results in the lives of young people and their communities, as they develop not only skills that benefit them individually but also characteristics that contribute to society and their surroundings. Despite this, the need for improvement in project execution is recognized, particularly with regard to fostering closer ties between IPTI and the community in order to reduce any lingering distrust in the institution's locality.

It is worth noting that this work did not focus on identifying IPTI's difficulties, as doing so would require a statistical survey and the application of a more specific interview method, which is suggested for future research. For this analysis, it is understood that the objective was achieved. Additionally, the examination is considered satisfactory, as it was possible to conduct a minimal but meaningful diagnosis. Finally, this work has opened the door for future studies on: the relationship between STs and the development of socio-emotional competencies; the impact of these competencies on the lives of those who interact with STs; and, more specifically, the reasons why IPTI may be deficient in dealing with social inclusion.

It is necessary to mention that, given the specific objectives of each ST, in order to accurately assess their final effects, the analysis process would require a comparative examination using additional data — in this case, data about the key characteristics of the individuals being observed, particularly in terms of competencies and empathy. A more productive evaluation would include an ex-ante assessment before the project's implementation and an ex-post evaluation after its conclusion. This way the selected group could be followed throughout its developmental process and compared in terms of their current and previous characteristics before joining IPTI's projects, as was the case in this study. This would make the research more conclusive regarding IPTI's ST objectives and results; however, this was not our objective here.

The instruments used reveal that socio-emotional competencies are not limited to those addressed in this research. However, from these competencies, it was possible to highlight their relationship with empathy, learning, well-being, continued education, employability, and other relevant aspects in the school context. The results obtained are also significant, as they indicate that the Social Technologies studied can be developed through group, community, and institutional experiences in spaces dedicated to knowledge generation.

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Notes

[1] The participants here are identified as students from CLOC by the acronym AC followed by a number that identifies their speech (AC1, AC2, AC3,..., ACn).

[2] The participants here are identified as students from CLOC by the acronym AC followed by a number that identifies their speech (AC1, AC2, AC3,..., ACn).

[3] The participants here are identified as students of Arte Naturalista, by the acronym AAN followed by a number that identifies their speech (AAN1, AAN2, AAN3,... AANn).

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