Revista ARACÊ
ISSN: 2358-2472

INCODE: PROGRAMMING SUPPORT PLATFORM FOR NEURODIVERGENT MINDS

https://doi.org/10.56238/arev7n4-219

Submitted on: 03/18/2025 **Publication date:** 04/18/2025

Felipe Lopes dos Santos[1], Geciane Oliveira Vieira[2], Jovenilson Ribeiro dos Santos[3], Wilker José Caminha dos Santos[4] and Thiago Nicolau Magalhães de Souza Conte[5]

ABSTRACT

This article proposes, in a theoretical way, InCode, a platform to support programming aimed at neurodivergent people, with a special focus on individuals with Autism Spectrum Disorder (ASD). Based on a broad literature review on neurodiversity, assistive technologies, UX Design principles and gamification, the work identifies the lack of adapted tools that meet the cognitive and sensory needs of these users. InCode was designed to offer a simple, minimalist, and customizable interface, associated with a teaching methodology that integrates interactive challenges and adaptive learning – allowing evolution through pseudocode, block programming, or textual, according to the user's level. The expected results aim to validate the principles of inclusion, personalization and pedagogical adaptation and demonstrate that an adapted platform can promote improvement in the programming learning experience, contributing to the democratization of access to technological education and to the effective social inclusion of neurodivergent individuals.

Keywords: Neurodiversity. Autism Spectrum Disorder (ASD). Assistive technologies. Teaching programming. User experience (UX).

INTRODUCTION

Neurodiversity proposes a new perspective on cognitive differences, recognizing them as part of the natural variety of human neurological functioning. As Mendonça (2019)

[1]Graduating in Software Engineering. University of the State of Pará, UEPA
Email: lopesfelipe.me@gmail.com
LATTES: http://lattes.cnpq.br/6252532999914721
[2]Graduating in Software Engineering. University of the State of Pará, UEPA
Email: gecianeov@outlook.com
LATTES: https://lattes.cnpq.br/1847052913360887
[3]Graduating in Software Engineering. University of the State of Pará, UEPA
E-mail: jovenilsonr@gmail.com
LATTES: https://lattes.cnpq.br/5433025740380754
[4]Master's student in Intellectual Property and Technology Transfer for Innovation. University Federal University of the South and Southeast of Pará, UNIFESSPA
E-mail:willkercaminha@uepa.br
LATTES: http://lattes.cnpq.br/3314938287386016
[5]Dr. in Electrical Engineering. Federal University of Pará, UFPA
Email: thiagonconte@uepa.br
LATTES: http://lattes.cnpq.br/0783374325529116

Revista ARACÊ
ISSN: 2358-2472

adds, "the concept of neurodivergence refers to the diversity of human neurological functions, including conditions such as ASD, ADHD, and dyslexia, among others", showing that these differences should not be seen as defects, but as variations that demand inclusive approaches. Historically, individuals with these characteristics have been neglected and excluded from various spheres of society, due to stigmas and the difficulty of understanding how their minds work, which has prevented the development of effective strategies for the skills training of neurodivergent people and hindering the process of inclusion of this minority group.

Despite these challenges, it is essential to develop methods that take advantage of the potential of the autistic brain (MENDONÇA, 2019). Thus, with the accelerated evolution of technology and its constant presence in our daily lives, it becomes imperative that individuals with ASD are properly inserted into society, especially in technology. In this sense, AT (Assistive Technologies) play a key role in promoting accessibility, communication, and reducing barriers to teaching and learning, especially for people with ASD (RATUCHNE et al., 2024). Thus, technology, when combined with personalized teaching strategies, can and should be employed as a powerful tool for inclusion and accessibility, significantly facilitating the process of inclusion of neurodivergent people.

One of the teaching strategies that has proven effective in facilitating the understanding of concepts and promoting student engagement, especially those with ASD, is the use of gamification. This statement is in line with the research of Pereira (2022), who states that "the use of digital technologies through gamification is indicated for students with ASD, since students with this specificity have audiovisual skills.". To support the proposal of this work, the BeeCrowd platform – which uses problems and challenges as a method of teaching programming – and several literatures were analyzed, with special attention to the proposals of the Codex and CodeChef softwares, aimed at teaching adapted to neurodivergent minds. The analysis of these technologies underpinned this article, contributing to a deeper understanding of how to develop a tool that meets the needs of the public with ASD, based on principles of inclusion, accessibility and pedagogical adaptation through gamification, ensuring solutions aligned with the specificities of users.

In view of the studies carried out, the objective of this article is to propose, in a theoretical way, InCode – a platform designed especially for people with ASD. This tool was designed to meet the needs of neurodivergent individuals, offering a simple, minimalist and intuitive interface, combined with a teaching methodology based on gamification and

Revista ARACÊ
ISSN: 2358-2472

adaptive learning, which allows the user to evolve progressively, either through pseudocode with Portugol, block programming or textual programming for more advanced levels. The development of the InCode proposal is based on a broad review of literature that addresses the best teaching practices for neurodivergent minds and on the practical experience of one of the study's collaborators, a person with ASD, which enriches the perspective of the design and usability of the interface. Thus, this article presents an innovative approach that aims to improve the experience of teaching programming to neurodivergent people, contributing to the construction of more inclusive and effective educational environments.

PROBLEM

Digital technology is no longer just a tool and has started to profoundly structure social life, becoming essential in relationships, access to information and citizen participation (KOHN, 2007). In line with this vision, areas such as communication, education, health and, especially, the development of systems have proven to be fundamental for the advancement of society, among these competencies, programming stands out as an essential skill. According to research carried out by Jurask (2019), mastery of programming is one of the most requested skills by companies, reinforcing the importance of investing in teaching methods and platforms that keep up with this demand.

Despite the accelerated growth of technology, especially in the field of programming, there are still significant gaps in the inclusion of neurodivergent people. During the research carried out for the construction of this article, no platforms, software or tools were identified specifically aimed at meeting the needs and particularities of the public with Autism Spectrum Disorder (ASD). This absence of adapted assistive technologies leads not only to the exclusion of these individuals in the area of programming, but also limits their full participation in an increasingly digital society (KOHN, 2007), a fact that reinforces the importance of initiatives aimed at inclusion.

In addition to the fact that there are no exclusive solutions for teaching programming to individuals with ASD, the platforms currently available have several obstacles that hinder their learning processes. Among the main problems identified are: sensory overload caused by confusing visual interfaces or intense stimuli; the use of an excessively complex technical language and the little flexibility in the way of learning and interacting with the proposed challenges. Thus, it becomes challenging for technology students to learn programming concepts, since many find it difficult to understand the problem and turn it into

Revista ARACÊ
ISSN: 2358-2472

a program (ARAUJO, 2024). These factors not only compromise learning, but also directly affect students' engagement, self-confidence, and permanence in technology courses. This statement is evidenced according to the studies presented by Pires (2025), in which they indicate that computing courses face, worldwide, high retention and dropout rates, and among the possible reasons are the need for abstraction and the complexity of the contents – difficulties that are aggravated when it comes to autistic people.

In addition to the problems related to the lack of existing tools, traditional programming teaching methodologies do not meet the specificities of neurodivergent minds, whose mode of processing and learning differs significantly from the usual pedagogical approach. A student has special educational needs when he or she demonstrates significantly greater difficulties, making the learning process more complex for this person, thus requiring differentiated pedagogical approaches to achieve the expected learning. (OLIVEIRA, 2020, apud BORGES, 2015). Thus, it is essential to adopt personalized approaches that allow adjusting the pace, difficulty, and style of problem solving, promoting an educational environment that recognizes and values individual differences.

In summary, the problem presented shows that there are no tools developed specifically for the neurodivergent public, and the existing solutions have limitations that compromise the learning process and, consequently, the inclusion of these individuals in the area of technology. On the other hand, by allowing adjustments in the interface, difficulty, and style of solving challenges, an adapted platform – such as the one proposed by InCode – can promote inclusion, autonomy, and motivation in the learning process. Such practices not only benefit people with ASD, but also contribute to more accessible and effective education for other neurodivergent profiles, thus driving broader and more equitable participation in the digital society.

ADAPTIVE TOOLS IN TEACHING PROGRAMMING

Adaptive tools, also known as assistive technologies, are features designed to extend or improve the functional capabilities of people with disabilities, allowing for more effective interaction with digital environments. The use of these technologies can significantly improve the quality of life of people with ASD when associated with specific educational methods (PROENÇA, 2019). In this context, teaching methods adapted for people with ASD in learning programming include clean and minimalist interfaces that

Revista ARACÊ
ISSN: 2358-2472

minimize stimuli, neutral and accessible language to facilitate understanding, gamification elements that promote engagement, and a personalized learning system that adjusts to the pace of each student. This combination creates an inclusive environment that is able to meet the sensory and cognitive needs of students.

During the literature review, it was found that there were no tools or software developed exclusively for teaching programming to autistic people, with only theoretical proposals and some articles on the subject. Among these proposals, CodeChef stands out, described by Viana (2024) as: "A tool that enables the practice of introductory programming concepts and algorithms through playful challenges with pseudocode". CodeChef incorporates adaptations such as the use of a less intense color palette, intuitive interfaces, and guidelines that facilitate interaction. However, it is worth noting that CodeChef is still in the development phase, evidencing the limited availability of similar solutions in the market and reflecting the relative scarcity of research in assistive technology in Brazil (GALVÃO, 2013).

Assistive technologies offer significant benefits for people with ASD, especially in the area of technology, where little software serves this audience. They promote greater autonomy, cognitive and social development, in addition to helping to overcome sensory barriers, providing access to content that was previously inaccessible (RIBEIRO, 2023). Thus, the proposal of this article is to develop, in a theoretical way, a platform to support programming that combines a clean and minimalist interface, neutral and accessible language, personalization, interactive and adaptive challenges, a personalized learning system and gamification elements. This tool aims to create an innovative and inclusive educational environment, contributing to the formation of technological skills in students with ASD.

THE INFLUENCE OF CUSTOM USER INTERFACES

From the beginning of the project's conception, one of the great challenges identified was to develop a tool that was truly accessible to the public with ASD, considering that the autism spectrum covers a wide variety of profiles and needs. This diversity makes it difficult to standardize a single interface that serves everyone, because, according to Serati (2022, apud NIMH, 2022), ASD affects each individual's ability to interact, communicate, learn, and behave differently. Thus, it was concluded that, in order to create an appropriate tool for this

Revista ARACÊ
ISSN: 2358-2472

audience, the customization of the interface must be one of the central pillars of the project, allowing each user to adjust elements according to their preferences and needs.

To support the definition of the characteristics that a programming teaching tool aimed at people with ASD should present, several literatures were analyzed. In particular, the "GAIA - A Guide to Recommendations on Inclusive Digital Design for People with Autism" stands out, which synthesizes recommendations for the development of accessible websites and web applications, especially for children with ASD, emphasizing the use of adaptive interfaces on multiple devices (PICHILIANI, 2020). This literature showed that, due to the wide variety of preferences among individuals with ASD, customization becomes essential, since it is hardly possible to identify a single pattern. In addition, the possibility of customization allows users to configure the environment according to their preferences and needs, creating ideal conditions for greater concentration and better assimilation of content.

Returning to the points addressed, the evidence extracted from the literature demonstrates that the interface of the proposed platform should prioritize accessibility for the public with ASD, based on the principles of User Experience (UX). The creation of products for people with ASD requires in-depth study, patience, and dedication, and the application of UX principles allows the development of safer and more reliable solutions, even in the face of the challenges imposed by the atypical characteristics of this audience (FRANÇA, 2022). Thus, the project is based on the idea that a customizable interface, which allows adjustments in visual and functional aspects, will promote a more appropriate teaching environment, providing users with greater autonomy and a better learning experience.

LEARNING MODELS BASED ON NEURODIVERSITY

As Mantoan (2011) points out, the concept of neurodiversity is a natural expression of variations in human capacities, and should not be interpreted as a disability. On the other hand, the society, since its formation, has been organized to serve mainly people without any type of disability, whether physical or neurological. Consequently, the needs of individuals with different forms of cognitive functioning have often been neglected. In this way, this understanding reinforces the urgency of developing pedagogical models that adapt to the particularities of students with Autism Spectrum Disorder (ASD).

When investigating the current scenario of programming support software, it was found that there are no specific solutions for people with ASD, with references found

Revista ARACÊ
ISSN: 2358-2472

restricted only to the academic literature; In addition, popular and widely used software was not developed with the particularities of this audience in mind. For this reason, the purpose of this article is to present an alternative that considers the variations in the capabilities of the neurodivergent brain, facilitating the process of learning programming for this group.

The use of adapted digital platforms allows the adjustment of content to the pace and individual needs of students, which, in turn, enhances engagement and motivation for more meaningful learning (DOS REIS, 2024). Thus, the initiative is based on the implementation of specific strategies, such as personalizing the pace of teaching, the use of interactive challenges and visual methods that help in understanding, ensuring that the tool adapts to the requirements and particularities of students with ASD.

In summary, learning models based on neurodiversity propose considerable benefits, such as increased engagement, promotion of autonomy, improved understanding of content, and adaptation to the individual needs of students. These advantages can be leveraged in a programming teaching tool that incorporates a clean and minimalist interface, neutral and accessible language, personalization elements, adaptive and interactive challenges, personalized learning system, motivating feedback, and gamification with rewards. Such measures create an environment that values the potential of the autistic brain and stimulates its development, which reinforces the need for strategies aimed at making better use of these capabilities in the school environment and in the labor market (MENDONÇA, 2019).

METHODOLOGICAL PROCEDURE

This research adopts a theoretical approach, based on a broad bibliographic review and critical analysis of the available studies. Given the relevance of the topic, this review is essential to identify the fundamental theoretical principles and best practices related to teaching programming to people with ASD. As Botelho (2011) points out, the literature review is the first fundamental step in the construction of scientific knowledge, allowing the emergence of new theories and the identification of gaps. Thus, the literature review becomes the most appropriate method to theoretically support this proposal. The selection of sources had as its main criterion the direct relationship to the theme, covering studies on inclusion, accessibility, teaching methodologies, gamification and adaptive interfaces, ensuring coherence between the theoretical basis and the objectives of the work.

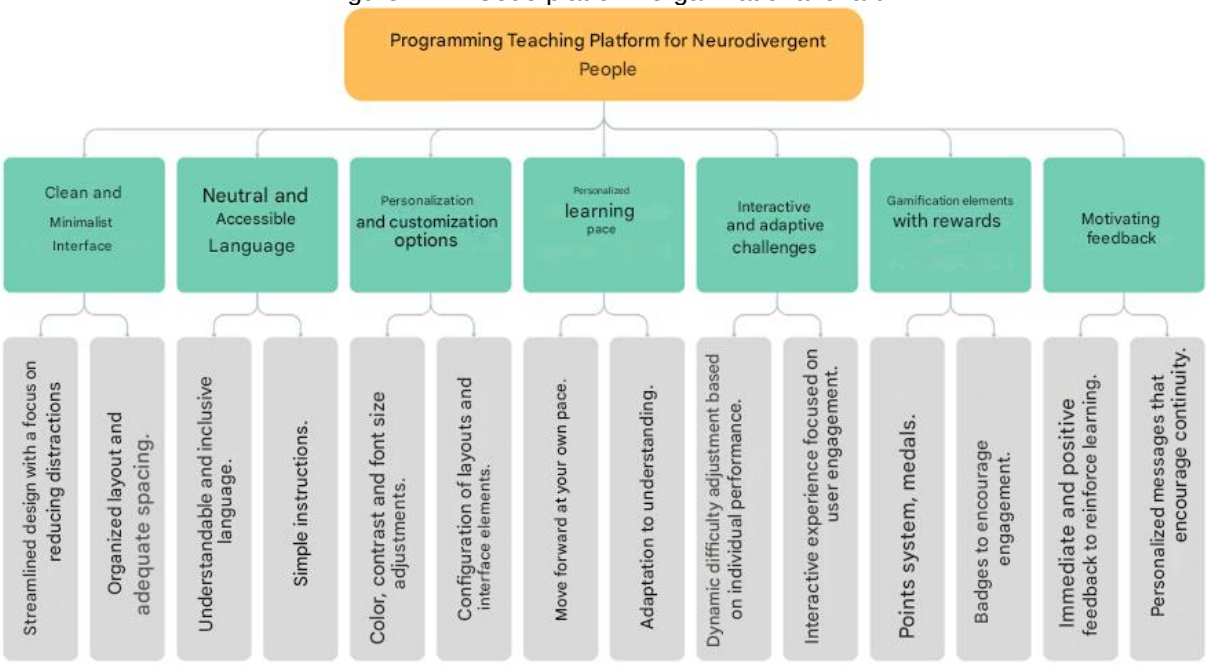
Revista ARACÊ
ISSN: 2358-2472

Fundamental keywords were defined for the literature search, including "Neurodiversity", "Assistive Technology", "Gamification", "Programming Teaching" and "User Experience (UX)", each associated with the term "Autism Spectrum Disorder", and the search was conducted predominantly on Google Scholar. To ensure the adequacy of the articles to the proposed theme, a methodology inspired by the procedures described by Botelho (2011) was adopted: initially, titles, abstracts and keywords were analyzed; and only when this information did not ensure relevance, was the material read in full. This strategy allowed us to select works that directly addressed ASD, prioritizing recent publications (2015-2025) and resorting to older sources only when necessary. In this way, the selection of sources is aligned with the objectives of the work, ensuring that the theoretical foundation addresses aspects of inclusion, accessibility, teaching methodologies, gamification and adaptive interfaces.

After selection, all studies were read and critically analyzed with the aim of extracting the key elements and identifying gaps in the literature. Canuto (2020) suggests that the various methods of literature review are crucial to identify both advances and deficiencies in scientific production. In this survey, it was observed that there are no specific proposals for teaching programming aimed at people with ASD, and most publications are restricted to theoretical analyses and discussions on the application of assistive technologies in educational contexts. The extracted data were systematized, enabling the construction of a theoretical framework that will serve as a basis for the platform's proposal. Thus, the analysis allowed us to identify which tools the currently available software offers to the public with ASD and, equally, which aspects have not yet been developed. This finding highlights the opportunity for improvement and, consequently, the differential that the proposal of this article will seek to offer.

Revista ARACÊ
ISSN: 2358-2472

Figure 1 – InCode platform organizational chart



Source: Authors (2025)

With the data and analyses obtained during the literature review, it was possible to integrate the information to formulate the theoretical model of the programming support platform. The resulting framework includes relevant components as evidenced in figure 1.

The proposal presented in this article aims to offer a platform that integrates all these functionalities in a cohesive way, overcoming the limitations of existing models, which address such aspects in a fragmented way. Although CodeChef represents one of the most complete initiatives found in the literature, its proposal does not include in-depth customization, a fundamental element to adapt the learning experience to the varied preferences of students with ASD. Thus, the results of the review show that an adaptive approach can significantly improve the teaching of programming to neurodivergent people, by identifying their strengths and areas that need improvement. This critical analysis confirms that this method is essential to develop solutions that really advance the area (ALVES, 1992).

INTERFACE PROPOSAL

The interfaces presented in this chapter were developed by one of the authors, a person with Autism Spectrum Disorder, based not only on the extensive analysis of the literature, but also on his personal experience as a user. This contribution represents a significant advance to the article, highlighting the relevance of incorporating practical

Revista ARACÊ
ISSN: 2358-2472

perspectives in the construction of inclusive solutions. The prototype of the interfaces was developed based on design principles aimed at people with autism, as presented in the book "GAIA" by Pichiliani (2020), which emphasizes aspects such as visual and textual vocabulary, customization, engagement, redundant representations, easy recognition, and predictability.

This approach offers several advantages, including the possibility of creating more empathetic, effective, and truly user-centered solutions. The direct involvement of an autistic person in the development of interfaces contributes to a deeper understanding of the needs, preferences, and challenges faced by this audience, going beyond the external and technical gaze. In addition, valuing neurodivergent thinking in this context represents an important step towards real inclusion. People with different ways of perceiving and interacting with the world bring unique perspectives that can significantly enrich design, innovation, and accessibility processes. In the specific case of Autism Spectrum Disorder, characteristics such as attention to detail, logical thinking, preference for predictable structures, and sensitivity to stimuli are elements that, when recognized and respected, can be transformed into fundamental qualities for the improvement of more inclusive technologies.

Figure 2 presents the interface proposal for the InCode login screen. This screen is designed to be simple and intuitive, avoiding visual clutter and featuring a brief text that introduces the platform with simple, neutral language. A palette with soft colors was used in order to attenuate the sensory impacts that vibrant tones could cause to the audience with ASD. In addition, the interface allows customization already on the login screen, with the option available in the upper right corner, where the user can adjust the color palette according to their preference.

Revista ARACÊ
ISSN: 2358-2472

Figure 2 - InCode login screen interface

Source: Authors (2025)

Figure 3 illustrates the proposed InCode customization screen. In this interface, the design principles presented in GAIA were applied, such as visual and textual vocabulary and redundant representations, ensuring that the platform's functionalities are displayed both through text and images (PICHILIANI, 2020). The interface maintains the clean and minimalist pattern, similar to that of the login screen, and features pre-configured themes with color palettes based on studies on best practices for the neurodivergent audience. In addition, the user has the functionality to import new themes, allowing them to customize their own interface.

Figure 3 - InCode Customization Screen Interface (Blue Tones)

Source: Authors (2025)

Revista ARACÊ
ISSN: 2358-2472

Figure 4 represents the same customization screen shown in Figure 3, but with a change in the color palette. Unlike the light blue theme used in Figure 3, in this interface the user sees a palette with shades of light green, demonstrating the tool's customization capacity.

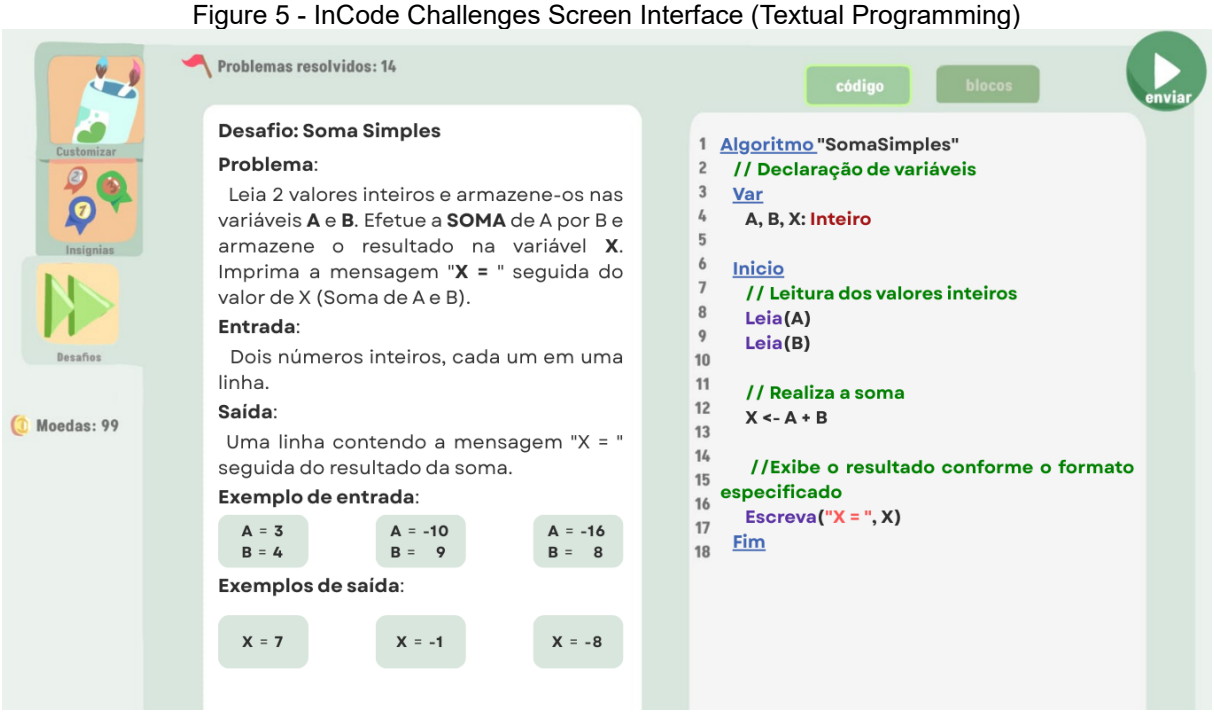
Figure 5 presents the proposed interface of the InCode challenges screen, where the user can learn the programming logic through interactive challenges. On this screen, the challenge is described in simple, neutral language, presenting examples of the testable input types and their expected outcomes. In the upper right corner, the "code" option indicates that the user must answer the challenge using textual programming – as exemplified with Portugol – and, at the end, send their answer through the button available in this same area.

Figure 4 - InCode Customization Screen Interface (Green Tones)

Source: Authors (2025)

Revista ARACÊ
ISSN: 2358-2472

Figure 5 - InCode Challenges Screen Interface (Textual Programming)

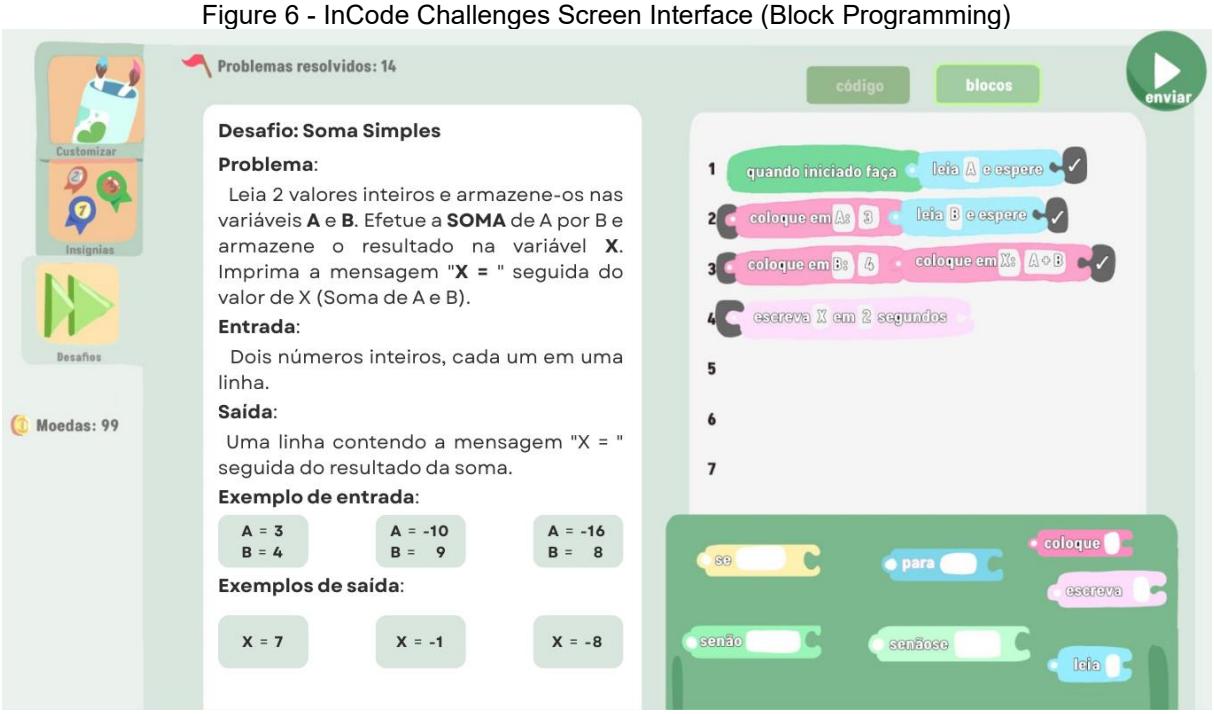


Source: Authors (2025)

Figure 6 displays the same interface as the challenge screen, but with the "tile" functionality selected, instead of "code". In this mode, if the user has doubts or difficulties with the textual programming logic, he can use block programming to solve the challenge. The programming blocks are available at the bottom of the screen, allowing the user to build their solution in a visual and interactive way. Thus, Figures 5 and 6 highlight the principles of interactive challenges and a personalized learning system, central elements in the InCode proposal.

Revista ARACÊ
ISSN: 2358-2472

Figure 6 - InCode Challenges Screen Interface (Block Programming)



Source: Authors (2025)

Therefore, valuing neurodivergent thinking not only expands the creative and functional potential of the solutions developed, but also promotes social justice, recognizing these people as protagonists and not just as recipients of adaptations. It is a movement towards a truly collaborative and representative construction in the field of assistive technology and inclusive design.

EXPECTED RESULTS

The expected results, even in a theoretical way, aim to validate the principles of inclusion, personalization and pedagogical adaptation that underlie the InCode proposal. The integration of assistive technologies and gamification can serve as a reference for future adaptations of software and programming platforms. By demonstrating the benefits of InCode, the article contributes to the discussion on the democratization of access to technological education, suggesting guidelines for the development of new tools aimed at the public with ASD. In addition, the proposal not only improves existing software, but also stimulates future research and innovative initiatives that value the potential of neurodivergent individuals.

Although the present work is of a theoretical nature, the InCode proposal foresees results that reflect the benefits of the platform for the inclusion and learning of programming

Revista ARACÊ
ISSN: 2358-2472

by people with ASD, especially with regard to the improvement of the user experience and the effectiveness of learning processes:

USER EXPERIENCE (UX)

- **Interface**: With the implementation of UX Design principles – such as maintaining a clean interface, the possibility of customization, and the predictability of elements – users are expected to enjoy a fluid and intuitive experience. The option to change the color palette and other visual components will contribute to the reduction of sensory impact, providing a comfortable environment for people with ASD.
- **Accessibility**: The principles of accessibility, when applied to the interface, ensure easy recognition of functions, promoting intuitive navigation that encourages both exploration and autonomy in the use of the platform. Elements such as clear icons, suitable contrasts, and a consistent layout are incorporated to minimize cognitive and sensory overload, making it easier for users with specific needs to interact.

LEARNING PROCESS

- **Engagement and Motivation**: The integration of gamification elements, such as scoring, badges, and interactive challenges, aims to increase users' interest and motivation by making it easier for them to understand programming concepts. Users will be congratulated for getting the challenges right and, in case of error, they will receive guidance to identify and correct their mistakes, promoting constructive and positive learning.
- **Personalization of learning**: The platform presents challenges in different ways – both in textual programming and by blocks – which allows it to meet different levels of knowledge and promote a gradual and adaptive evolution of teaching. The customization of the pace and study environment allows each user to progress according to their needs, reinforced by tools for setting personal goals and adjustments in the learning flow, providing a truly personalized educational experience.

In summary, the expected results include the improvement in the user experience through adaptive and personalized interfaces, the increase in engagement and effectiveness in teaching programming, and the theoretical contribution to the creation of

Revista ARACÊ
ISSN: 2358-2472

inclusive educational environments. These theoretical results pave the way for future empirical validations, which may confirm the proposed benefits, encouraging the practical implementation of InCode and other assistive technologies in the educational area.

FINAL CONSIDERATIONS

This article aimed to present, in a theoretical way, the proposal of the InCode platform, developed to promote the inclusion of people with Autism Spectrum Disorder (ASD) in the teaching and learning of programming. Based on a broad literature review, it was found that there are few digital tools available that are specific and adapted to the needs of the neurodivergent public, especially in the field of technological education.

The InCode proposal is based on principles of accessibility and personalization, adopting a clean and minimalist interface, neutral and accessible language, integrating elements of gamification and pedagogical adaptation. These characteristics aim to provide a more meaningful and motivating learning journey, meeting the sensory and cognitive needs of users with ASD. The collaboration of one of the authors, diagnosed with ASD, was fundamental for the development of the platform's interface, ensuring that the project reflects the real needs of the target audience.

Finally, it is concluded that the implementation of assistive technologies aimed at teaching programming represents an effective strategy to expand access to knowledge and foster the professional development of neurodivergent individuals. The InCode platform emerges as an innovative solution, with the potential to contribute significantly to the construction of more inclusive, efficient, and welcoming educational environments. It is hoped that this theoretical study will inspire new research and practices in the field of technology aimed at the inclusion of people with ASD, promoting the recognition of their abilities and the strengthening of diversity in the educational and professional environment.

Revista ARACÊ
ISSN: 2358-2472

REFERENCES

1. Alves, A. J. (1992). A revisão da bibliografia em teses e dissertações: Meus tipos inesquecíveis. Cadernos de Pesquisa, (81), 53–60.

2. Araújo, E. C. J., Silva, M. R., Costa, L. H., & Carvalho, R. B. (2024). Uma abordagem para criação de instrumentos pedagógicos no contexto do ensino de programação para pessoas neurodivergentes [Unpublished manuscript].

3. Botelho, L. L. R., Cunha, C. C. A., & Macedo, M. (2011). O método da revisão integrativa nos estudos organizacionais. Gestão e Sociedade, 5(11), 121–136. https://doi.org/10.21171/ges.v5i11.1220

4. Canuto, L. T., & de Oliveira, A. A. S. (2020). Métodos de revisão bibliográfica nos estudos científicos. Psicologia em Revista, 26(1), 83–102. https://doi.org/10.5752/P.1678-9523.2020v26n1p83-102

5. dos Reis, N. S., Silva, M. R., Costa, L. H., & Carvalho, R. B. (2024). Neurodiversidade na escola: Quebrando barreiras e construindo uma educação inclusiva para todos. ARACÊ, 6(4), 16062–16075.

6. França, M. E., Gambogi, A. S. A., & Gibertoni, D. (2022). Interfaces com acessibilidade para pessoas com Transtorno do Espectro Autista (TEA): Uma análise das diretrizes. Revista Interface Tecnológica, 19(2), 223–234. https://doi.org/10.31510/infa.v19i2.1415

7. Galvão Filho, T. (2013). Tecnologia assistiva e educação. In Educação inclusiva, tecnologia e tecnologia assistiva (pp. 13–36). Criação.

8. Jurask, G., Silva, M. R., Costa, L. H., & Carvalho, R. B. (2019). Um estudo sobre o uso de linguagens de programação e softwares utilizados na indústria de Joinville e região e sua relação com o perfil do egresso do Bacharelado em Ciência e Tecnologia da UFSC campus Joinville [Unpublished manuscript].

9. Kohn, K., & Moraes, C. H. (2007). O impacto das novas tecnologias na sociedade: Conceitos e características da Sociedade da Informação e da Sociedade Digital. In XXX Congresso Brasileiro de Ciências da Comunicação (pp. 1–13). Intercom.

10. Mantoan, M. T. E. (2015). Inclusão escolar: O que é? Por quê? Como fazer? Summus Editorial.

11. Mendonça, S. (2019). Neurodivergentes: Autismo na contemporaneidade. Manduruvá Edição Especiais.

12. Oliveira, F. L. (2020). Autismo e inclusão escolar: Os desafios da inclusão do aluno autista. Revista Educação Pública, 20(34). https://educacaopublica.cecierj.edu.br/artigos/20/34/joseph-autismo-e-inclusao-escolar-os-desafios-da-inclusao-do-aluno-autista

Revista ARACÊ
ISSN: 2358-2472

13. Pereira, L. M., & Barwaldt, R. (2022). Gamificação como estratégia pedagógica para potencializar habilidades matemáticas para estudantes com Autismo: Uma revisão sistemática da literatura. Revista Novas Tecnologias na Educação, 20(1), 81–90. https://doi.org/10.22456/1679-1916.124567

14. Pichiliani, T. C. P. B. (2020). Gaia: Um guia de recomendações sobre design digital inclusivo para pessoas com autismo. Editora Appris.

15. Pires, F., Goes, L., & Pessoa, M. (2025). Desenvolvimento de habilidades e competências em computação de um estudante com TEA: Lições aprendidas. In Simpósio Brasileiro de Educação em Computação (EDUCOMP) (pp. 423–434). SBC.

16. Proença, M. F. R., Silva, M. R., Costa, L. H., & Carvalho, R. B. (2019). A tecnologia assistiva aplicada aos casos de Transtorno do Espectro do Autismo (TEA). Revista Eletrônica Acervo Saúde, (31), e541. https://doi.org/10.25248/reas.e541.2019

17. Ratuchne, P. A. O., Silva, M. R., Costa, L. H., & Carvalho, R. B. (2024). Estudo de revisão sobre a Tecnologia Assistiva no ensino de crianças com Transtorno do Espectro Autista (TEA). Ensino & Pesquisa, 22(1), 116–130. https://doi.org/10.18227/1678-8346ensino.v22i1.7886

18. Ribeiro, E. T., Silva, M. R., Costa, L. H., & Carvalho, R. B. (2023). O uso das tecnologias assistivas como uma ferramenta inclusiva na educação especial. Revista Ibero-Americana de Humanidades, Ciências e Educação, 9(8), 431–442.

19. Serati, A. G. C., & Gibertoni, D. (2022). A experiência do usuário no contexto de desenvolvimento de um aplicativo para crianças com Transtorno do Espectro Autista. Revista Interface Tecnológica, 19(2), 330–341. https://doi.org/10.31510/infa.v19i2.1450

20. Viana, T., Silva, M. R., Costa, L. H., & Carvalho, R. B. (2024). CodeChef: Um ambiente gamificado para auxiliar estudantes com TEA na aprendizagem de Programação e Algoritmos. In Simpósio Brasileiro de Educação em Computação (EDUCOMP) (pp. 13–14). SBC.