



Talentos+ (Mais): A networked educational management ecosystem for students with high abilities or giftedness

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ABSTRACT

This article details the development of Talentos+, a digital platform designed to address the underreporting of gifted or talented students in the Brazilian education system. The lack of official records in the country directly compromises access to resources and specialized pedagogical support, especially in the public school system. To mitigate this gap, the research proposes a technological ecosystem based on three central pillars: information management, competency mapping (via multiple intelligences), and pedagogical assessment. The operational structure integrates web systems and mobile applications, allowing for real-time data monitoring and interconnection between schools, teachers, and students. Methodologically, the platform assesses socio-productive skills through questionnaires with Likert scales, converting responses into standardized scores that offer a multidimensional view of the student's potential. The results demonstrate that the convergence between government databases and the information collected by the system optimizes the accuracy of the tracking. Supported by the theories of Gardner and Renzulli, Talentos+ transcends mere functional classification, providing individualized dashboards and pedagogical reports that underpin teaching strategies and the formulation of public policies aimed at the full development of talent.

Keywords: High Abilities; Talentos+; Technologies in Education

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1. Introduction

The Brazilian educational information system, due to the extent of underreporting regarding individuals with high abilities or giftedness, constitutes an institutional barrier to the development of educational projects aimed at serving this specific population. In the case of public schools, this underreporting directly affects municipalities, as it limits their ability to allocate more funding to elementary education. On the other hand, there is also evidence of this information gap regarding institutional, organizational, and functional repositories of data related to school management focused on education for students with high abilities or giftedness at the federal, state, and municipal levels. Queiroz (2023) corroborates this by stating that *the country lacks tools to identify and serve individuals with high abilities across different age groups and areas of knowledge*. Thus, there is a need for research focused on developing a technological platform for educational management, specifically to serve students with high abilities or giftedness.

However, it should be noted that a technological platform focused on the educational management ecosystem—specifically, a network of digital connections for highly skilled or gifted students—must be structured around three systemic pillars: a) information management; b) management of student competencies and skills in multiple intelligences; c) pedagogical assessment management, in order to promote network connections through integration and interaction among the student, the teacher, and the school. In this context, Almeida et al. (2023, p. 3176) emphasize that this triad allows the resulting information flow to constitute an institutional data repository, essential for school management and pedagogical assessment within the scope of the educational ecosystem under investigation.

However, it should be noted that the design of an information management system aimed at educating highly gifted or gifted individuals is based on the challenge of developing and expanding research scenarios within the educational ecosystem, using technological tools and drawing on concepts from artificial intelligence, machine learning, and neural networks.

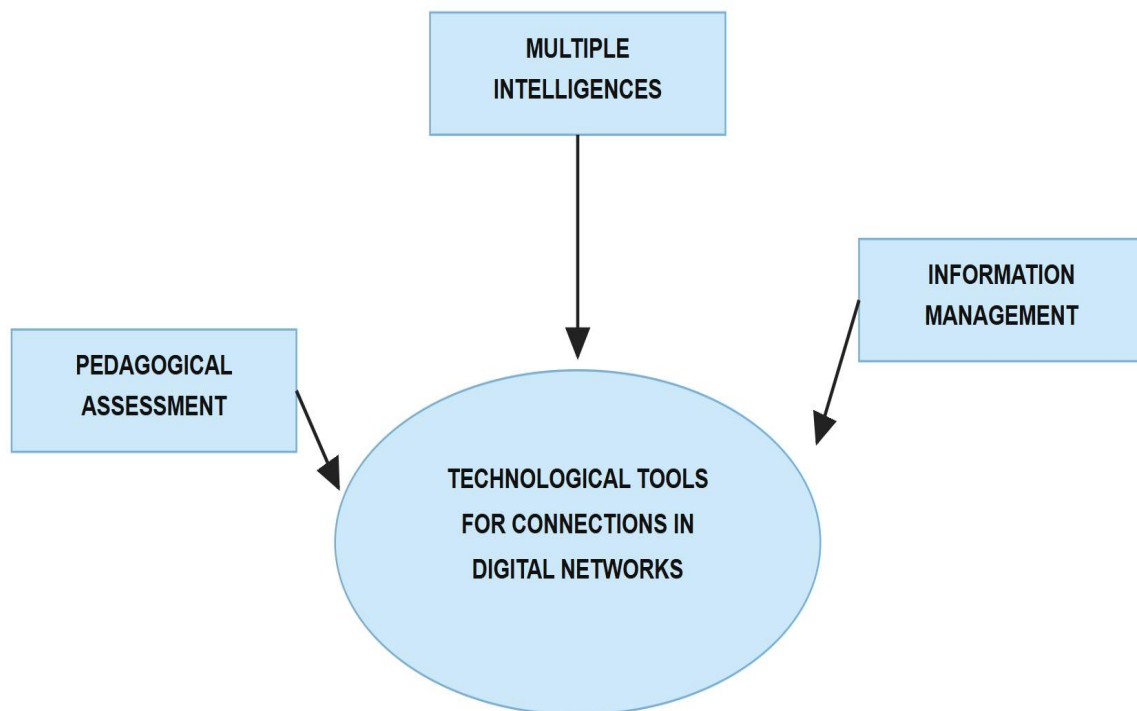
In this context, then, the question arises: How can an information management system be implemented using technologies and innovations applied to the educational ecosystem to identify students with high abilities or giftedness, through the use of interdisciplinary pedagogical assessment indicators? Thus, based on the aforementioned question, this article discusses an information management model applied to the educational ecosystem within a network of digital connections for students with high abilities or giftedness, named “*Talentos+*.” “*Talentos+*” is a technological platform within the educational management ecosystem of a network of digital connections designed for students with high abilities or giftedness.

Finally, the “*Talentos+*” Platform is built on an architecture based on subsystems for information management, student competencies and skills, and pedagogical assessment, all integrated into interconnected, interdependent, and interactive digital networks via the data repository of the digital educational ecosystem (online web-based (OWB)) and the *Talentos+* mobile app interface (location-based (LB)) in a network of functional connections linking students, teachers, and schools. The purpose of this is to produce a pedagogical record of student classification based on multiple intelligences.

2. Materials and Method

The theoretical and logical model applied to the “*Talentos+*” platform is grounded in an educational management ecosystem organized from a systems approach perspective, based on the proposal by Almeida and Silva (2026). The structure of the educational ecosystem is interactive and integrated into a network of digital connections, with the aim of shaping pedagogical assessment in terms of students’ competencies and skills, focusing on multiple intelligences through the integration of technologies and innovations applied in an interactive network for students, teachers, and educational institutions (Figure 1).

Figure 1: Information management model applied to high abilities or giftedness from a systemic perspective



Source: Almeida and Silva (2026)

In this context, it is worth highlighting the interdisciplinary approach to building a robust information base, based on the management of data from the educational ecosystem with a focus on conducting a pedagogical assessment of students in terms of multiple intelligences: linguistic, logical-mathematical, and the creative-productive intelligences (spatial, interpersonal, intrapersonal, naturalistic, bodily-kinesthetic, and musical). (Almeida; Silva, 2026).

The model of the educational management ecosystem within a network of digital connections for highly skilled or gifted students is organized into three subsystems: 1) the data repository of the digital educational ecosystem (online web-based (OWB), public and private); 2) the “*Talentos+*” mobile app interface (location-based (LB) within a network of functional connections applied to the mapping of multiple intelligences); 3) student classification into multiple intelligences through the application of statistical metrics. Finally, it should be noted that the goal of the educational management ecosystem within a network of digital connections for students with high abilities or giftedness is to issue a pedagogical assessment document on multiple intelligences.

This is an educational assessment tool for classifying students based on their strengths in various skills or areas of creative and productive giftedness (spatial, interpersonal, intrapersonal, naturalistic, bodily-kinesthetic, and musical) as well as academic abilities: linguistic skills and logical reasoning. It should be noted, however, that the purpose of the educational assessment report aims to record and provide a series of educational indicators that demonstrate the competencies, skills, and performance of students exhibiting characteristics consistent with high abilities or giftedness, contributing to their assessment and also serving as an evaluation tool for specialized educational services (AEE). The creation of effective indicators requires the identification of relevant variables and the rigorous application of statistical methodologies. In this study, this approach was adopted by selecting pertinent variables and defining metrics based on statistical foundations, ensuring theoretical validation.

The quantitative methodological approach, which is exploratory and descriptive in nature and underpins the process of classifying and mapping students with exceptional performance in Portuguese language proficiency (LP) and mathematics (MT), is structured using a model that incorporates the concept of a decision tree, based on the use of performance percentiles and proficiency levels, as it considers both the relative and absolute performance of students. In this scenario, the 95th percentile was adopted as the primary criterion for mapping students, considering that the 95th percentile highlights the top 5% of performance within a distribution, highlighting students with above-average results.

This approach is supported by Bussab and Morettin (1987), who recommend the use of percentiles to identify extreme values. In addition, proficiency levels 8 through 10 on the Basic

Education Assessment System (SAEB) scale were incorporated into the model, as they represent advanced mastery in the subjects. By integrating performance percentiles and proficiency levels, the model develops an indicator that considers both students' relative and absolute performance. The decision tree, constructed based on these criteria, features a dichotomous structure to classify students hierarchically and efficiently (Figure 2).

Russell and Norvig (2021) highlight the importance of transforming variables into dichotomous ones to simplify models and improve algorithm performance. The use of a decision tree stands out as an efficient tool, as it allows for the classification of students based on objective criteria, such as performance percentiles and proficiency levels, facilitating well-founded and assertive pedagogical decisions (Figure 2).

With regard to high socio-productive skills, the decision tree model is also used as a tool for classifying students. However, the metrics used are based on the parameters of a 5(five)-point Likert scale, whose results and evidence are expressed through the administration of a multiple intelligences questionnaire (spatial, interpersonal, intrapersonal, naturalistic, bodily-kinesthetic, and musical), consisting of a set of questions organized into specific dimensions. The student's score in each dimension is obtained by averaging the standardized scores of the questions that make up that dimension. Therefore, for each student and for each question, the original response on the Likert scale (1 to 5) is converted into a standardized score ranging from 0 to 100, calculated exclusively at the individual level—without using group averages—using the following formula:

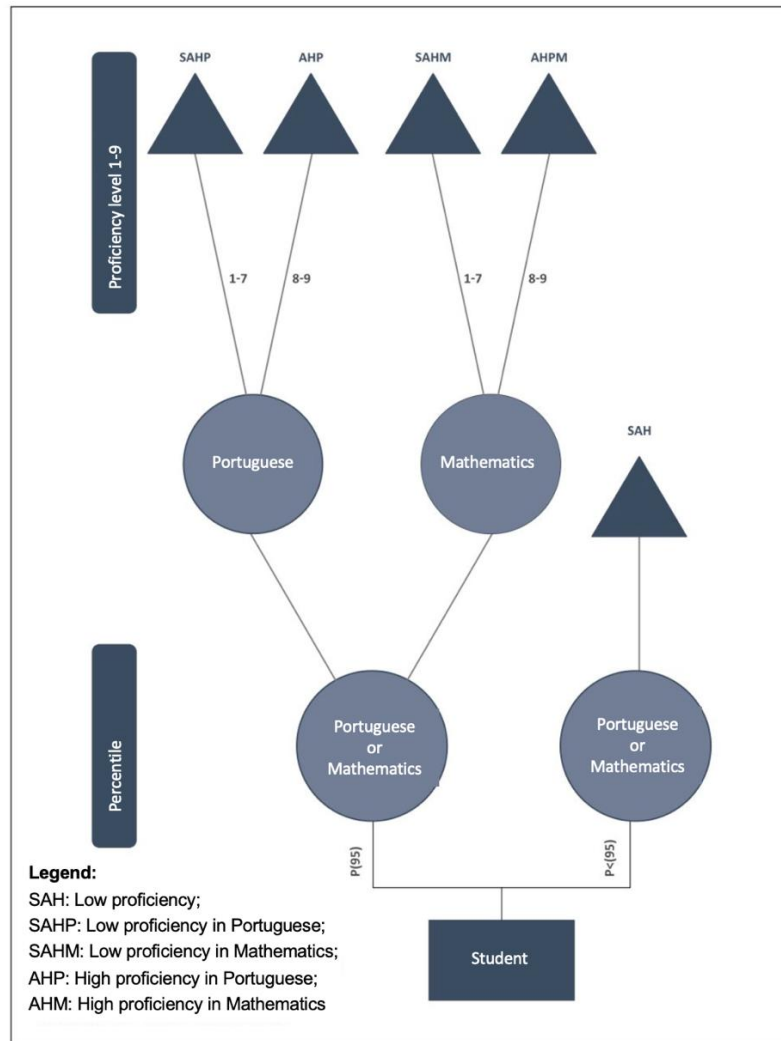
$$S_{ij} = \frac{X_{ij}-1}{5-1} \times 100$$

Where:

S_{ij} = student i 's standardized score on item j ;

X_{ij} = the score assigned by student i to question j ;

A student is classified as having “High Skills” when the score obtained in a given dimension meets the following criterion: $S_{id} \geq 90$. In these dimensions, a decision tree is used as a tool for categorizing students.

Figure 2: Decision tree matrix for high academic achievement

Source: The authors

3. Results and Discussion

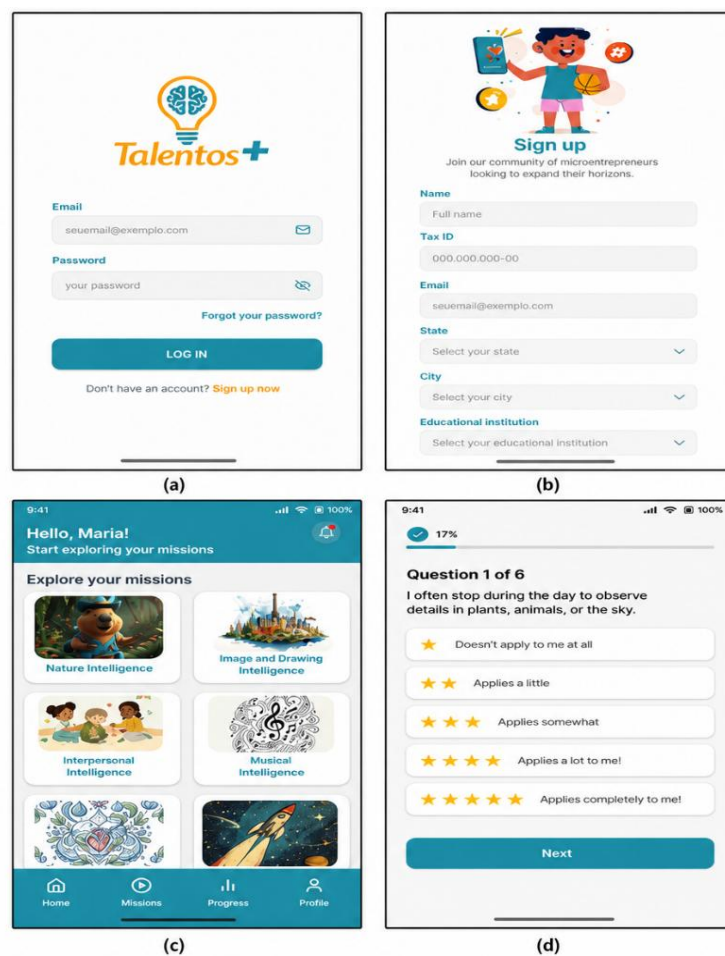
The institutional data repository for the educational ecosystem draws on the information systems of government repositories maintained by federal, state, and municipal education agencies. In particular, the SAEB—Basic Education Assessment System, conducted by the Anísio Teixeira National Institute for Educational Studies and Research – INEP, which provides a historical series of data on Brazilian basic education in Portuguese language, mathematics, as well as in the areas of natural and human sciences, by geographic region, state, administrative jurisdiction (federal, state, municipal, or private), location (urban or rural), and area (capital or interior).

On the other hand, the aim is to expand the information database by applying technological tools to the student segment of the school population under study in order to map

multiple intelligences (spatial, interpersonal, intrapersonal, naturalistic, bodily-kinesthetic, and musical). In this educational management ecosystem, the use of technological and audiovisual applications via the *Talentos+* mobile app (location-based (LB)) is encouraged as an auxiliary tool for the production and collection of informational data on students with high abilities or giftedness (Figure 3). Figure 3(a) shows the login screen, where the user enters a previously registered email address and password. This registration can be completed on the registration screen (Figure 3(b)), where the following information must be entered: name, *CPF* (an Individual Taxpayer Identification Number but from Brazil) email, state, city, educational institution, and password. After logging in, the home screen loads, displaying the tracks (missions), Figure 3(c). The tracks contain the questionnaires themselves, Figure 3(d).

In this context, the goal is to foster an environment of educational services via a digital platform, promoting interactive digital connections within a strategic cooperation network, using the data repository of the digital educational ecosystem (online web-based (OWB)) and the *Talentos+* mobile app interface (location-based (LB)) within a network of functional connections linking students, teachers, and schools.

Figure 3: Screenshots of the *Talentos+* Prototype

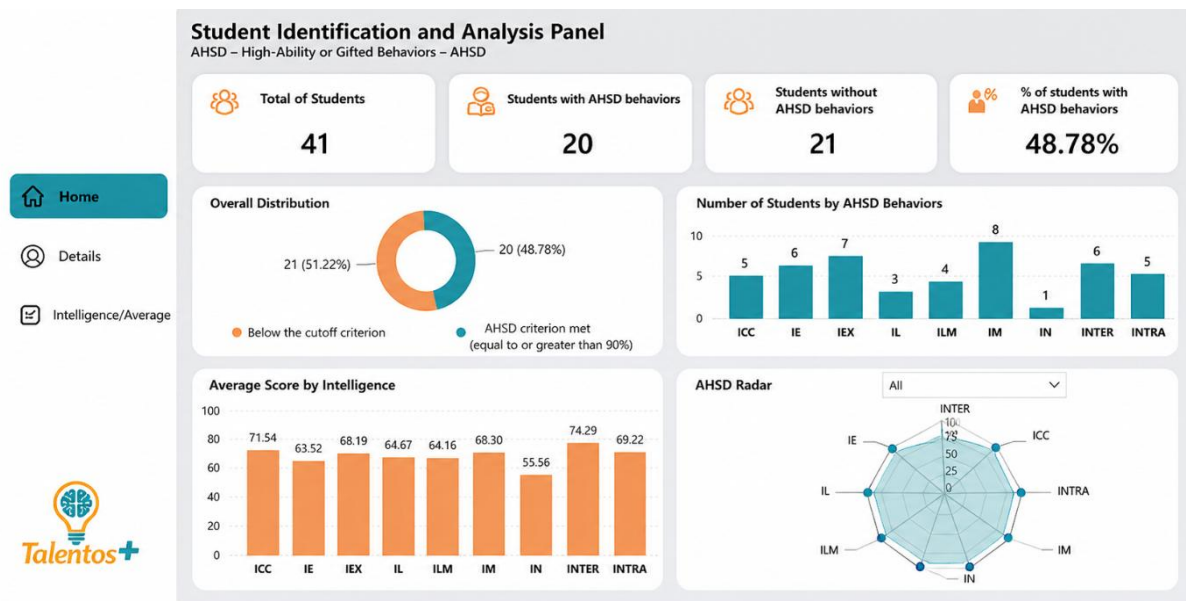


Source: The authors

The process of organizing and analyzing the database is carried out using a quantitative methodology based on statistical tools for compliance and educational assessment within a modular and scalable architecture, which allows students to be classified into different performance categories, identifying those with the greatest academic and creative potential.

However, it is worth highlighting the use of digital educational tools—specifically, the online web-based (OWB) platform and the *Talentos+* mobile app (location-based (LB))—as instruments for collecting data and information to model pedagogical assessment regarding the high-level social and productive skills of the school system under study. In this context, considering the foundations of the educational ecosystem’s repositories (external and internal), it becomes feasible—through the processing of information and data mining from the respective repositories—to produce a pedagogical report, individualized by student, that assesses the set of high-level skills or giftedness.

Figure 4: Student identification and analysis dashboard.



Source: The authors

The systematization of data, processed via Power BI, goes beyond the simple cataloging of interests, as this tool allows for the identification of indicators of AHSD behavior across multiple dimensions. Therefore, the information generated by Power BI underpins the pedagogical assessment document by recording evidence of behaviors, skills, and performance with characteristics consistent with high abilities or giftedness: intellectual, academic, creative, artistic, psychomotor, and leadership. It is imperative to emphasize that this interdisciplinary approach does not end with the systematization of information regarding high abilities or

giftedness, but fulfills the social function of demystifying the phenomenon of high abilities or giftedness in everyday school life.

4. Final Remarks

In the context of basic education in Brazil, there is a major challenge to be overcome: the identification and support of students with high abilities or giftedness (AHSD). Regardless of the advances in legislation and the normative guidelines contained in Decree No. 7,611/2011 and Opinion CNE/CP No. 51/2023, there is a disconnect within the school system between the application of the law and pedagogical practices in schools. Therefore, the mapping and pedagogical assessment of students with high abilities or giftedness (AHSD) is a relevant tool for reporting and verifying evidence of student behavior, abilities, and performance resulting from pedagogical research.

The *Talentos+(mais)* platform: an educational management ecosystem based on a network of digital connections for highly skilled or gifted students is a technological tool grounded in Renzulli's Triadic Model of Enrichment (2005) and Howard Gardner's Theory of Multiple Intelligences (1999), with the aim of producing a pedagogical profile classifying students according to multiple intelligences. The scope of the pedagogical profile is structured around a set of pedagogical assessment indicators focused on the performance of complex activities and meaningful learning, as well as performance in social interaction contexts. It is also worth noting that the pedagogical profile, in addition to scientifically mapping students with characteristics consistent with high abilities or giftedness, provides the school ecosystem with elements to establish policies and guidelines aimed at implementing programs and projects centered on the teaching and learning process of students identified as having high abilities or giftedness.

Finally, the *Talentos+(mais)* platform: an educational management ecosystem based on a network of digital connections for highly skilled or gifted students. Within the context of the school management ecosystem's digital connections and through a quantitative methodology, it maps and identifies students with academic (linguistic and logical reasoning) and creative-productive potential (spatial, interpersonal, intrapersonal, naturalistic, bodily-kinesthetic, and musical), through the application of statistical tools for compliance and pedagogical assessment, classifying students into different performance categories.

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