Identification of Gifted Students in Higher Education[1]

Identificação de Estudantes com Altas Habilidades/Superdotação no Ensino Superior

Eduarda BASSO[2]
Tatiana Izabele Javorski de Sá RIECHI[3]
Laura Ceretta MOREIRA[4]
Elizabeth Carvalho da VEIGA[5]

ABSTRACT: The National Policy on Special Education from the Perspective of Inclusive Education (*Política Nacional de Educação Especial na Perspectiva da Educação Inclusiva* – PNEEPEI) provides that gifted students receive Specialized Educational Service. However, research indicates that the number of students identified and followed in Higher Education is still far below expectations. The objective of this paper was to describe the procedures of the Global Disclosure Program of Giftedness in Universities – known, in Brazil, as PEGAHSUS, to identify university gifted students from the State of Paraná. To this end, a descriptive, retrospective study of students accessed and evaluated during the period from 2017 to 2018 by the Program was performed. The instruments used were a questionnaire for identification of intelligence expression (QIIE) and the WAIS III intelligence test. For the assessment of intelligence, 76 students participated, from which 63% had a total intelligence quotient equal to or above 130. Regarding the reliability of the screening instrument, the QIIE had a sensitivity of 64.2% in the indications to giftedness. The instrument had a positive impact on identification as it accessed several students who, in fact, had above-average intellectual potential. Finally, the importance of identifying and monitoring gifted students in the academic scope is pointed out, since it highlights data about this population and allows strategies to be developed that are consistent with the profile of the students.

KEYWORDS: Gifted students. Special Education. Identification. Intelligence.

RESUMO: A Política Nacional de Educação Especial na Perspectiva da Educação Inclusiva (PNEEPEI) prevê que estudantes com Altas Habilidades/Superdotação (AH/SD) recebam um Atendimento Educacional Especializado. Contudo, as pesquisas apontam que o número de estudantes identificados e acompanhados no Ensino Superior ainda é muito aquém do esperado. O objetivo deste trabalho foi descrever os procedimentos do Programa de Evidências Globais de Altas Habilidades/Superdotação nas Universidades (PEGAHSUS), para identificar estudantes universitários do Estado do Paraná, com indicadores de AH/SD. Para tanto, foi realizado um estudo descritivo, retrospectivo dos estudantes acessados e avaliados durante o período de 2017 a 2018 pelo Programa. Os instrumentos utilizados foram um Questionário para Identificação da Expressão da Inteligência (QIEI) e o teste de inteligência WAIS III. Para a avaliação da inteligência, participaram 76 alunos, dos quais 63% apresentaram quociente de inteligência total (QIT) igual ou acima de 130. A respeito da fidedignidade do instrumento de rastreio, o QIEI apresentou uma sensibilidade de 64,2% nas indicações para AH/SD. O instrumento apresentou um impacto positivo na identificação, na medida em que acessou diversos estudantes que, de fato, apresentaram potencial intelectual acima da média. Aponta-se, por fim, a importância de identificar e acompanhar os estudantes com AH/SD no âmbito acadêmico, visto que evidencia dados a respeito dessa população e permite que sejam desenvolvidas estratégias condizentes com o perfil dos estudantes.

PALAVRAS-CHAVE: Altas Habilidades/Superdotação. Educação Especial. Identificação. Inteligência.

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[2] Master's in Psychology, Federal University of Paraná - UFPR. Curitiba/Paraná/Brazil. E-mail: eduarda.fbasso@hotmail.com. ORCID: https://orcid.org/0000-0002-3799-9263

[3] Post-doctorate in Evolutionary and Educational Psychology. Federal University of Paraná - UFPR. Curitiba/Paraná/Brazil. E-mail: tatiriechi@hotmail.com. ORCID: https://orcid.org/0000-0001-6050-7442

[4] PhD in Education. Federal University of Paraná - UFPR. Curitiba/Paraná/Brazil. E-mail: laurac.moreira@gmail.com. ORCID: https://orcid.org/0000-0003-4569-7369

[5] PhD in Psychology. Pontifical Catholic University of Paraná – PUC/PR. Curitiba/Paraná/Brazil. E-mail: bethveiga@hotmail.com. ORCID: https://orcid.org/0000-0002-4665-147X

1 Introduction

The number of gifted people in Brazil and in the world is of great expression. However, it is understood that the projection of scientific production on giftedness in Brazil is still very small. When it comes to university students, this number is significantly lower, since giftedness in adulthood is rarely discussed in the literature. For this reason, there is an urgent need to develop works that favor the identification and monitoring of these students (Martins, Pedro, & Ogeda, 2016; Rinn & Bishop, 2015).

Similarly, both research and the identification and monitoring of this population are essential actions to guarantee the fulfillment of their rights. In Brazil, Law no. 12,796, of April 4, 2013, describes gifted students as members of Special Education, reinforcing the State's duty to guarantee Specialized Educational Service (SES) also free of charge to these students, preferably in regular public schools. **The National Education Guidelines and Framework Law** - Law no. 9,394, of December 20, 1996 – has guaranteed, since 1996, the establishment of acceleration practices for gifted students.

Although legislation guarantees gifted students the right to SES, its practice does not happen very often. According to Pérez and Freitas (2014), one of the factors for this reality would be the misunderstanding on the part of educators about the real needs and difficulties encountered by these students, as well as the prejudices and myths involved regarding giftedness. In addition to these factors, there is still a great lack of knowledge about the legislation and the conduct of educational practices for the student, which contributes to the weakening of compliance with laws and resolutions (Martins, Chacon, & Almeida, 2018; Martins, Pedro, & Ogeda, 2016; Pérez & Freitas, 2014).

Thus, the first step is the identification of this population, since a large part of them arrive at the university without presenting a diagnosis, or even without having received a qualified follow-up that meets their special educational needs. Therefore, investment in disseminating, regarding giftedness, developing strategies, qualified training of professionals, identifying and monitoring these students is essential. An understanding of the factors that involve intelligence and, therefore, an adequate diagnosis of giftedness is imperative to demystify them. Such difficulties prevent access to stimulation and development programs, in addition to negative and false positive diagnoses. Therefore, by correctly identifying the underlying elements of giftedness, it is possible to understand them as a whole and thus improve interventional actions with this population (Martins, Pedro, & Ogeda, 2016; Nakano et al., 2015).

Although many concepts are widely disseminated in the academic environment, there are still several difficulties in determining who the gifted people would be, such as: the absence of adequate assessment measures and the establishment of specific criteria or measures for assessment. In addition, the erroneous expectations created about this population also prove to be a disservice to their care. In general, giftedness can be identified in individuals who have a high potential in the intellectual, academic, leadership and psychomotricity areas, being combined or isolated, added, also, to high creativity and involvement with learning and achievement tasks of interest (National Policy on Special Education from the Perspective of Inclusive Education [*Política Nacional de Educação Especial na Perspectiva da Educação Inclusiva* - PNEEPEI], 2008).

In the identification aspect, the appointment by professors provides more comprehensive data on the behavioral context and expression of intelligence on the part of gifted students in the classroom, increasing the quality of the screening of these students. The use of an external evaluation of the individual, carried out by professors, in the process of screening potential participants for giftedness, serves as a first filter, so that those indicated by the professor are referred to a more complete evaluation, saving time and money in the giftedness identification process (Bahiense & Rossetti, 2014; Barbosa, Schelini, & Almeida, 2012; Nakano, Campos, & Santos, 2016).

Having said that, the objective of this work was to describe the protocol used to identify and evaluate students at a University of the State of Paraná, Brazil, carried out through the Global Evidence Program for Giftedness (*Programa de Evidências Globais de Altas Habilidades/Superdotação* - PEGAHSUS), which performs identification actions and monitoring of university gifted students. The PEGAHSUS Program is part of the Center for Studies and Practices in Giftedness (*Núcleo de Estudos e Práticas em Altas Habilidades/ Superdotação* - NEPAHS), which is characterized by a national reference center for the production of knowledge and performance in giftedness. The Center is located in the Service Center for People with Special Needs - Inclusion, Affirmative and Diversity Policies (*Núcleo de Atendimento à Pessoas com Necessidades Especiais - Superintendência de Inclusão, Políticas Afirmativas e Diversidade* - NAPNE-SIPAD) on the premises of the Federal University of Paraná (UFPR). It aims to promote the development of giftedness, providing opportunities for research, extension projects, training and dissemination on the topic.

In view of this, the description of the screening, evaluation and intervention procedures was carried out in the period from 2017 to 2018. The study aims, therefore, to contribute to a deeper understanding and inclusion actions regarding giftedness, in the adult population, especially with university students.

2 Method

A descriptive, retrospective study of students accessed and evaluated during the period from 2017 to 2018, carried out by the Global Evidence Program for giftedness, was carried out. Initially, for the survey of indicators of giftedness, contact was made with the coordinators of the courses of the Universities to present the Project, analyze the Academic Performance Index of the first two periods of the course and scheduling of the application of the self and hetero assessment questionnaire in the classroom.

The first step consisted of applying the Questionnaire for Identifying the Expression of Intelligence (QIIE), which is carried out in the classroom. This questionnaire evaluates indicators of giftedness in a weighted classification from 0 to 30 through 25 items that cross information from self-assessment and hetero-assessment. The self-assessment consists of 24 questions with a single answer (yes or no) on the expressive and socio-adaptive channels of intelligence. Hetero-assessment is calculated by the number of student nominations as one of the five students that stand out the most, multiplied by 100, divided by the total of questionnaires answered in the discipline. To check the internal consistency of a measurement instrument, Cronbach's Alpha Coefficient is used. This coefficient ranges from 0 to 1. The

closer to 1, the greater the consistency of the test. Values above 0.7 are considered satisfactory (Streiner, 2003).

The psychological assessment, the second stage, was carried out after the signing of the Free and Informed Consent Term (ICF), in which the participant, or those responsible, were informed about the research carried out by the Program. Only after their consent, these data were used statistically for research purposes. In order to participate in the evaluation, the student was contacted through the QIIE indications or by spontaneous demand, when the student contacted the Center and was referred to be accompanied by the Program. Cognitive functions were assessed using tests, inventories and scales, some standardized, others in the standardization phase, with quantitative and qualitative analysis, presented below.

- Wechsler Adult Intelligence Scale - WAIS III: Evaluates the intellectual capacity of adults aged 16 to 89 years old. It is an essential test for psychological and neuropsychological assessments, being particularly indicated for the assessment of adolescents (aged over 16 years old) and adults, in the clinical, educational and research contexts (Wechsler, 2004). Research shows strong reliability of the Instrument for the assessment of gifted people (Macedo, Mota, & Mettrau, 2017).
- Rey Complex Figure: Evaluates perception and visual memory. It verifies how the subject perceives the perceptual data that is presented to him/her and what has been preserved by memory. The subject transcribes it to a sheet, at first, with the visualization of the figure. In the sequence, there is the same transcript, but without the visualization of the figure (Strauss, Shermand, & Spreen 2006).
- Five-digit test - FDT: Evaluates the processing speed, executive functions and attentional functioning, through reading and counting numbers (Sedó, de Paula, & Malloy-Diniz, 2015).
- Depression Inventory - BDI and Anxiety Inventory - BAI: These inventories, each, contain 21 groups of statements that measure the intensity of depression. The examinee responds according to a scale of 0 to 3 in the BDI and 0 to 4 points in the BAI, which ranges from "Absolutely not" to "Severely". Although the standards have been developed for use with psychiatric patients, they are used in non-psychiatric subjects, within the age group of 17 to 80 years old (Beck, Steer, & Brown, 2012).
- Inventory of Social Skills - IHS-Del-Prette: Allows to characterize social performance in different situations (work, school, family and daily life). The subject responds to 38 items, each describing a social situation and reaction, on a Likert-type scale from 0 (never or rarely) to 5 (always or almost always). The standards were developed for the Brazilian social context within the age group between 18 and 25 years old and complete High School level (Del Prette & Del Prette, 2009).
- Modular Cognitive Inventory for Youth and Adults (MCIYA): Evaluates the modular cognitive profile, identifying Sternberg's Triarchic theory within Gardner's multiple intelligences. This questionnaire consists of 368 single-answer questions (yes or no), subdivided into 46 questions according to Sternberg's Triarchic theory: 19 on practical profile; 15 on analytical profile; 12 on creative profile; multiplied in a matrix by 8

intelligent systems, according to Gardner's theory of multiple intelligences: linguistic, logical-mathematical, spatial, bodily-kinesthetic, musical, naturalistic, intrapersonal and interpersonal (Veiga & Garcia, 2006).

- Focused attention test - TEACO-FF: Evaluates a person's ability to select only one source of information in the face of various stimuli (Rueda & Sisto 2009).
- Divided attention test - TEADI: Evaluates the individual's ability to seek two or more stimuli simultaneously in the presence of different distractors in a given period of time (Rueda, 2010).
- Alternate attention test - TEALT: Evaluates the alternation of attention, indicating whether the subject is able to focus his/her attention on one stimulus and then on another, over a period of time (Rueda, 2010).

At the end of the evaluation, feedback was given to the participant, and to the person responsible in the case of participants under 18 years of age, with the delivery of the Evaluation Report according to their results. It is noteworthy that, at any stage of the evaluation, when there was a need for monitoring related to emotional or cognitive demand, referral was made to a specialized professional. In the third stage, the students who participated in the assessment were invited to remain under monitoring by the multidisciplinary team, which developed activities aimed at strategies for inclusion and curriculum enrichment.

Figure 1 shows the flow of the stages performed by the Program, in which the student is initially contacted with the application of the QIIE. If he/she reaches the score, he/she is invited for psychological assessment and, finally, receives feedback and monitoring by the multidisciplinary team.

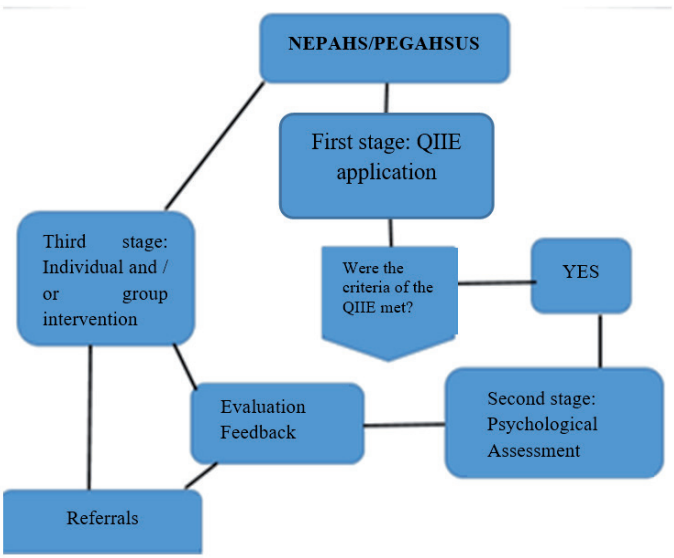

Figure 1. Flowchart of the screening and evaluation steps.
Source: Elaborated by the authors.

Due to the fact that the QIIE is still in the validation phase, the evaluation participants were not only contacted by the instrument. Therefore, at this stage, even if the student did not reach the score, he/she could participate in the assessment, in order to guarantee the inclusion of students who could present potential above average, even without reaching the score or even not having answered the questionnaire.

3 Results

The results show the characterization of the sample of students (Table 1) who underwent psychological assessment and the performance of students in the assessment of intelligence, during the period from 2017 to 2018.

	Mean	SD	Minimum	Maximum
Age (years old)	20	3,75	17	34
	N	%		
Male	58	76		
Female	18	23		
Courses				
Biological Sciences	16	21		
Exact Sciences	49	64		
Human Sciences	11	14		

Table 1. Characterization of students with completed evaluation (n = 76).
Source: Elaborated by the authors. Research data. Legend: SD: Standard deviation.

In the psychological assessment stage, the sample consisted of 76 students, who were invited, following the QIIE scoring criteria, indication of peers and professors or when they contacted the NEPAHS/PEGAHSUS team, showing interest in participating in the study evaluation.

The predominance was of students in the Exact Sciences area (64%), with the majority of the population being male students (76%). The average age of the participants was 20 years old (minimum age was 17 and the maximum was 34 years). The performance results in the intelligence assessment (WAIS III) are described in Table 2.

	TIQ	VIQ	EIQ	VCI	POI	WMI	PSI
Mean	132	131,7	130,8	132	129,97	127	126
Standard deviation	7	8,58	6,59	8,7	6,478	5,89	5,42
≥130	48	45	41	41	37	35	23
% ≥130	63	59	54	54	48	46	30

Table 2. Results for the WAIS III Instrument.
Source: Elaborated by the authors. Research data.
Legend: TIQ (Total IQ), VIQ (Verbal IQ), EIQ (Execution IQ), VCI (Verbal Comprehension Index), POI (Perceptual Organization Index), WMI (Working Memory Index), PSI (Processing Speed Index).

Based on Table 2, it was identified that the students had an average Total IQ (TIQ) of 132 and a standard deviation of 7, whose classification is *much higher*. Only the Processing Speed Index (PSI) had an average of less than 130, with a *higher* classification. It was found that most of the evaluated sample (63%) had a Total IQ index equal to or above 130 (48 participants). The lowest percentile identified was in the areas of Operational Memory (46%) and Processing Speed (30%). The sample showed higher results in the Verbal Comprehension Index (VCI). The data presented describe that the sample presents a performance above the average, with a significant number of students with characteristics of academic giftedness being identified.

3.1 Result of the relationship between WAIS III and QIIE

The relationship between the results of WAIS III and the responses in the QIIE was analyzed, considering the questionnaire score, academic performance and the indication of the professor. In all, 48 subjects were accessed by QIIE and assessed by WAIS III. Of the total sample (76), the number of students who answered the QIIE was 48. Of these, three subjects were not indicated by the QIIE and, in fact, did not present characteristics of giftedness. Fifteen subjects were not indicated by the QIIE, but had characteristics of giftedness; three subjects were indicated by the QIIE, but did not show above-average intellectual potential in WAIS III; and 27 subjects were indicated by the QIIE and had characteristics of giftedness. Thus, the questionnaire showed 62% accuracy for the sample evaluated (Figure 2).

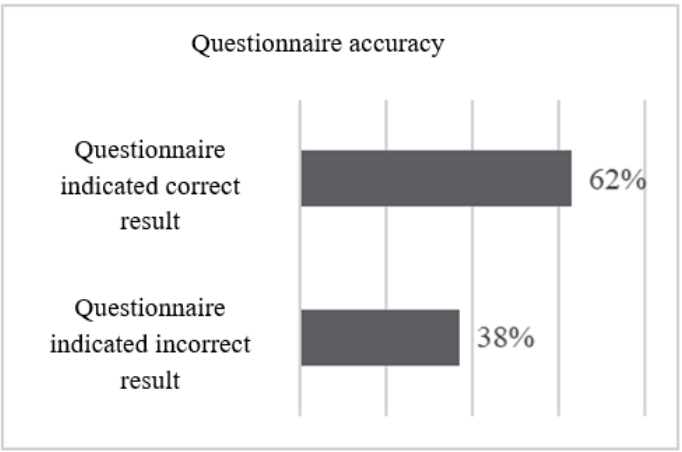

Figure 2. Accuracy of the questionnaire (QIIE), based on the evaluations of 48 subjects, indicating 62% accuracy.
Source: Elaborated by the authors. Research data.

From the data of the participants evaluated by the QIIE, it is possible to verify the measure of diagnostic performance of the referred instrument. In the literature, to check whether the test is useful for diagnosing an event, two measures are used: sensitivity and specificity (Gomes, 2005). Sensitivity is the probability that the test will capture truly positive

individuals - who were referred by the QIIE for evaluation and actually had above-average intellectual potential, identified by WAIS III. Specificity is the probability of detecting the true negatives - those that the QIIE did not indicate for evaluation and really in WAIS III did not show much superior performance.

Table 3 presents the values referring to the sample of the 48 participants who answered the QIIE and WAIS III.

Diagnostic performance measurement
a- true positive = 27
b- false positive = 3
c- false negative = 15
d- true negative = 3
Sensitivity: a/(a+c)= 27/27+15 = 64,2%
Specificity: d/(b+d) = 3/6 = 50%

Table 3. IQI sensitivity and specificity.
Source: Elaborated by the authors. Research data.

For the sample evaluated, it was found that the sensitivity (probability of the test being positive in the presence of the event) of the screening instrument was 64.2%, indicating that the sensitivity of the instrument was modest. Regarding the specificity (probability of the test being negative in the absence of the event) of the screening instrument was 50%, indicating that the specificity was relatively low.

3.2 Intervention

The intervention program with students took place through individualized assistance in order to help in the planning of their academic activities and as a group. Group activities began in the second half of 2018, with monthly meetings lasting 2 hours each. The purpose of the interventional activities was to favor the integration of students, to offer a welcoming space, to contribute to actions of inclusion and curriculum enrichment.

4 Discussion

The results show the importance of identifying and monitoring students in the academic field. There is a visible lack of research with an emphasis on gifted students in Higher Education in Brazil (Lima, 2011). In addition, the students evaluated with characteristics of giftedness had not previously received specialized monitoring, demonstrating the importance of initial identification, since the recognition of the potential is extremely relevant for students to leave invisibility. Within the scope of the research, the program performs the identification and monitoring of gifted individuals so that they can understand about their behaviors, developing strategies that address their educational needs (Lima, 2011; Pedro, Ogeda, Moraes, & Chacon, 2016).

On the one hand, regarding the male gender being more prevalent, research shows a greater number of male students, one of the possible hypotheses for this phenomenon being a view historically permeated by prejudices, mainly related to the education of women (Gontijo, 2007; Lang, Matta , Parolin, Morrone, & Pezzuti, 2017; Tentes & Fleith, 2014). On the other hand, Pedro et al. (2016) state that, for social reasons, the experience of giftedness in women is given differently, since cultural values regarding intelligence need to be considered and questioned. This result is also important to be considered, since it evidences data about this population and allows strategies to be developed that take into account issues of this nature within Higher Education, both in the identification and in the intervention.

Regarding the screening instrument, the QIIE, 63% of students with above-average intellectual potential were identified. Although this instrument is still subject to assessments of reliability and validity, it had a positive impact, as it accessed several students who were, in fact, diagnosed as gifted. The results indicated, through the Diagnostic Performance Measure, that the questionnaire had a sensitivity of 64.2%, an important result, since there are few instruments for the identification of giftedness. It should be noted that the lack of screening scales and specific tests aimed at this population makes the identification process difficult (Zaia, Nakano, & Peixoto, 2018).

The results presented offer a possibility to identify and monitor these students. Regarding the intervention stage, the proposals brought are in agreement with authors in the area, who agree with the need for practices that aim to develop curricular enrichment, which can occur in different ways, also providing student development programs, individually or in a group (Lima, 2011; Matos & Maciel, 2016; Pérez & Freitas, 2014; Simonetti, Almeida, & Guenther, 2010).

5 Conclusion

The evaluation process presented in this paper is characterized by identifying and monitoring students, being fundamental to the inclusion process, since the students evaluated by the program had no report or intervention in their life history. The PEGAHSUS protocol contributed to access, identify and intervene, with the inclusion and guarantee of these students' rights. Likewise, it favored the formation of strategies to monitor their abilities, strengthening the links between the students' cognitive and social reality. In addition, the QIIE may contribute to the identification of gifted people within the Universities. Through the results, it was identified that the QIIE should be subjected to other analyzes in order to certify its validity and improve the accuracy of the instrument. It is noteworthy that one of the limitations of the identification process used by the Program is the fact that it is specifically aimed at the academic area, being inadequate to identify giftedness in other areas, such as artistic, psychomotor, leadership, creative.

The results found are indicative of the importance of studies in the area of giftedness, mainly focused on scientific production. The work proves to be of great impact not only because of the scarcity of studies in the area, but also because it contributes to ensuring that the rights of this population are fulfilled, as the research provided important data regarding identification and social and academic monitoring of university gifted students. In addition,

linking the knowledge of Psychology with Special Education is essential for scientific advances and for greater visibility on the subject of giftedness.

The studies of the Program will continue and new research in the area will be disseminated, with a greater number of participants, in order to contribute to the improvement of identification and monitoring strategies of university gifted students.

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