

Issues of Attending High Skills/Giftedness Students: discussion of an important topic

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Abstract - Students with high skills/giftedness (HSG) are part of the target public of Special and Inclusive Education. Laws, resolutions and decrees in Brazil rule the specialized educational service in its educational system, as well as the academic formation of its teachers and professors. In this article we explored Brazil's current situation involving educational attending of this specific public to highlight common issues for developing countries. By this approach we identified some issues that include: a) the absence of early identification of HSG, which lately is a huge challenge in the Brazilian school context; b) Full and proper characterization of HSG to allow an individualized offer of education as well as their fully development, and c) the poor academic formation of the educational staff. In this context, courses about HSG to be offered to middle and high school teachers are important to improve the work level of these professionals. In addition, partnerships among schools and university and/or enterprises should be explored as they can bring new opportunities for HSG, helping on avoiding the waste of talent, boredom and school failure/dropout.

Keywords: High skills, Giftedness, Identification, Inclusion, Teacher Training.

I. INTRODUCTION

The twenty first century is characterized by different challenges in several aspects (WILSON et al., 2005, VÖRÖSMARTY et al., 2010, GOSTIN, 2014). Problems involving different areas, complexity and degrees are waiting for the future generations, requesting sustainable, intelligent and affordable solutions (NATURE PUBLISHING GROUP, 2012). On that perspective, the whole society should participate in constructing these creative solutions including the people with high skills/ giftedness (HSG) (LUBART et al., 2003, LUBART and GEORGSDDOTTIR, 2004; BESANÇON, 2013; PLAUT, 2014, DELOU et al., 2014).

From the perspective of inclusive education, teachers and professors training is essential to offer the best education for all students. It is necessary that they stimulate learning skills and interests of this public by using different strategies (KANTROWITZ, 2014). According to the literature, this profile is a paradigm shift for most of these educational professionals, as it demands time and search for training (NELSON, 2010, DELOU et al., 2014). On that matter, the need of a well trained professional and different didactical approaches is very important to HSG because they demand more attention and knowledge than the other students (DELOU

et al., 2014).

HSGs need specialized educational services to allow their skills and potential development to continually stand out. In Brazil, several aspects of the needs of these students seem to be ignored and not well attended (ALENCAR, 1996 and 2007; ARAÚJO, 2007, DELOU et al., 2014). Therefore, in this work we analyzed and identified important issues regarding teaching HSGs in Brazil through the current educational system and laws perspective. This case-study approach will highlight issues that are important probably not only for Brazil but also for other countries, including those in development.

II. METHODS

In this article, we analyzed documents regarding Brazilian laws, resolutions and decrees available on Minister of Education webpage besides other references regarding the HSGs in the literature in the last 10 years. We looked for the inclusion perspective regarding HSG in the Brazilian educational system to identify the issues involving teaching this public.

III. RESULTS AND DISCUSSION

CHALLENGES IN THE IDENTIFICATION OF GIFTED STUDENTS

According to the Brazilian official documents, the characteristics of students with high skills / giftedness (HSG) are clear and they should be attended on their educational demands. These students present (...) *easy learning, which leads them to quickly master the concepts, procedures and attitudes... having conditions of deepen and enrich these contents. (They) should receive additional challenges in common class, in resource rooms, or in other spaces defined by the educational system, including (the possibility of) completing in a smaller time their series or educational level (BRAZIL, 2001).*

Despite of that, giftedness is still seen as a rare phenomenon in Brazil (DELOU et al, 2012). Amazement and curiosity about a gifted child or teenager is still a common behavior observed among teachers and professors. In addition, there are many misconceptions in the Brazilian society, which lead to ignorance and prejudice that interfere and undermine HSG education (ALENCAR, 2007).

In agreeing to that, most of the training courses targeting teachers update do not address or even mention HSG. In addition, the few courses that mention them do it in a brief, simpler or mistaken way. As a result, there are teachers in Brazil that work with HSG without recognizing them and are surprised when they are identified as such. This points an important issue and challenge - the early identification of HSGs - to be urgently overcome to guarantee their proper education (DELOU et al., 2012 and 2014).

One of the obstacles for the early identification in Brazil is the number of students in the classrooms that can reach 60 students, depending on the school. Thus, teachers with so many students have a large spectrum of needs to deal with and a wide range of skills to analyze and attend. Obviously they cannot go easily beyond the scholar's curriculum or accelerate fast learning students due to the high level of students demands (RENZZULLI and REIS, 1997).

According to some authors of different countries, many teachers also do not identify gifted students due to "apathy, indifference, ignorance, hostility and fear of their intelligence" (NOVAES, 1977, DELOU et al., 2012, MAIA and AMARAL, 2012). All these obstacles have avoided HSG identification, wasting their talent and causing boredom, failure, rebel behavior, anxiety and school dropout (DELOU et al., 2014, KOSTOGIANNI and ANDRONIKOF, 2014).

HSG have specific characteristics that require a good teacher training to create more challenging learning opportunities in accordance with their capability and interests. These students must have [...] access to different educational approaches...to ensure equal opportunities... to that each can fully develop their potential (SABATELLA and CUPERTINO, 2007, SIMOES et al., 2010).

TEACHER TRAINING: PROBABLY THE MOST IMPORTANT ISSUE

According to the Brazilian Law of Directives and Bases (LDB), Article 62, the training of teachers should be performed at the universities and colleges. The LDB rules about the teacher professional training stating that it will happen in collaboration with different Brazilian academic levels, including those from federal, state and municipal levels (BRAZIL, 1996). From the perspective of inclusive education, the official Brazilian document from CNE/CP No. 1/2002 resolution that establishes Guidelines for the National Teachers Training Curriculum states that higher education institutions should provide training including knowledge about HSG. However, the analysis of all these documents raises important questions about the continuing education of educational professionals during and after their graduation, including time for training and type of courses/disciplines offered.

The LDB, art. 62, the second paragraph, proposes that the continuing education and training should be carried out using online resources and distance learning technologies. However, since most of the professionals are not used to the virtual environment for teaching purposes, Barros says that: [...] Online education brings specific pedagogical issues with new challenges...(BARROS et al, 2008). Despite of that, the online

education may specially help countries as big as Brazil, where the offer of courses about topics that are important for attending HSG are still rare (eg. Special education).

Continuing education is very important when considering an inclusive school where the educational professionals should be prepared to work on different environments and with different public. According to some authors, the current Brazilian university [...] does not enable teachers to work in public education classes on the perspective of inclusive education...there is not enough supply and adequate specialization courses in secondary and higher level... (DELOU, 2012). Currently, the disciplines of the Brazilian teachers formation courses do not offer enough content regarding neither inclusive education nor all educational needs of HSG (DELOU, 2012).

Each HSG is different and has specific characteristics that need to be identified by the teacher (BRAZIL, 1998, VAIVRE-DOURET, 2004 and 2011). The identification of each one requests time and is directly related to the teaching-learning process (DUAN and SHI, 2014). According to the literature, the lack of training of the current teachers is not only due to the lack of disciplines offered at the university, but also of specialists in this area to offer them good courses to fully understand these topics and issues (GUENTHER, 2006; DELOU, 2012; DELOU et al., 2014).

According to the Brazilian National Curriculum Parameters (NCP), "teacher training should have as main goal the implementation of an educational system that includes everyone, truly" (BRAZIL, 1998). Nevertheless, the role of the teacher in the classroom is clearly an issue for including HSG in Brazil in the present moment (ALENCAR, 2007, ARAÚJO, 2007, DELOU, 2012). According to the NCP, teachers competence cannot be replaced and the support of specialized professionals (eg. psychologists, speech therapist and physiotherapist) cannot eliminate the teachers responsibility of teaching or educating these students. The participation of these other professionals is important in the educational process, but they are not the "driver" of the educational process but only the teacher support (KNOBEL et al., 2002; DUAN, SHI 2014).

It is important to notice that the current time spend with stimulation of creativity and new ideas and strategies in Brazilian classes is far from the necessary (NELSON, 2010). The emphasis on knowledge reproduction without developing skills with flexible, imaginative thinking is a negative characteristic of the Brazilian educational system (ALENCAR, 1996, DELOU, 2012).

Therefore, teacher training should take into account the changes that recently occurred in teacher-student relationships. In the twenty-first century [...] the main function of the teacher can no longer be the dissemination of knowledge, which now can be reached more effectively by other means, but encourage the students learning and thinking. The teacher now becomes a facilitator of the collective intelligence groups that are at their command. Their activities should focus on monitoring and learning management, stimulating the knowledge exchange... (LEVY, 1999).

CUSTOMIZING HSG EDUCATION: SOMETHING TO PURSUE

The effect of the lack of teachers (in)formation about HSG is the non-identification of these students, which avoids their attendance by specialized educational services in Brazil. As a consequence, there are a low number of specific rooms with specialized educational services for these students in most of the Brazilian schools (DELOU, 2012).

According to Brazilian documents (...) *certain segments of the community also remain discriminated and outside the educational system. This is the case of people with high skills...that due to the specific needs and motivations - including the rejection of curricular rigidity and aspects of everyday school life - are seen by many as cumbersome and unruly... Thus, these students often drop out of the educational system, including due to relationship difficulties* (BRAZIL, 2013).

The Brazilian report No. 17/2001 says that it is a challenge to offer the basic content to HSG with good quality. The Brazilian scholar's curriculum presents a large program that favors the development of few intellectual skills. This is due to the fact that learning and the knowledge access by the students must be performed in a short period of time and generally when they are at school.

In 2005, the implementation of Activity Centers for HSG in all Brazilian states had the goal of not only attending HSG, but also guiding the HSG families and offering further education for teachers. Guidelines to guarantee inclusive education have been disseminated throughout Brazil to ensure offering this service to the HSG in public schools. However, the absence of specialized teachers compromises the effectiveness of this strategy.

Interestingly, the Brazilian guidelines pointed to the urgent need of training qualified teachers to help in the HSG identification (BRAZIL, 1971, 2013). However, currently these students are still invisible in the Brazilian educational system and need the school's attention urgently (MAIA and AMARAL, 2012). According to the Resolution CNE/CEB 4/2009, HSG need curriculum enrichment activities along with tasks that may enroll higher education, universities and research institutes. Depending on their higher skills, these students may help in developing and promoting research, enrichment in arts and sports (BRAZIL, 2009)

Since non attending and/or non-identified HSG may present behavior problems within the classroom that can be reverted by new strategies that develop and improve their skills, partnerships with universities and enterprises may be important to help and avoid HSG dropout (MAIA and AMARAL, 2012; DELOU et al., 2014).

Apparently, HSGs are only noticed by teachers, coordinators, directors or by the special education staff when they display a problematic behavior that generally is not correlated with the HSG condition by these professionals (KOZIOL et al., 2010). Their unique achievements as well as their ability of changing previous patterns of established models, and of producing unexpected solutions are being lost in Brazil due to issues that surely can be solved through the

investment on the professionals that can deal with them (GARCIA-SANTOS et al., 2012).

EDUCATIONAL ROBOTICS: A TEACHING STRATEGY FOR HSG

Considering that the students live in a world where computers, robots and electronic technologies are part of everyday life, it is worth to use technological strategies and didactic resources that can contribute in the educational process (KLOC et al., 2009, SILVA et al., 2004). Since "strategy" and "didactic resource" are terms frequently misused, herein we consider as didactic resource the material employed to construct a student project, in this case, the robotic kits. We consider as strategies the way the student uses the material to provide learning, in this case, educational robotics.

According to Luckesi (1994), an active teaching method is characterized by: A) offering experiences and challenging problems, which interest the students and stimulate the reflection; B) giving the access to information and instructions to help the students in the search for solutions; C) encouraging the organization of provisional solutions with little help; e) guaranteeing the opportunity of testing the solutions to determine their usefulness for life.

A didactic challenge used for teaching purpose of HSGs should target their participation in collaborative activities. The strategies should contribute to enhance their possibilities of learning, by encouraging them "learn to learn" (GUENTHER, 2006).

Topics regarding real situations, allows exposing the gifted student in a direct contact with daily difficulties. Using group activities are not considered just as technique, but as a basic condition of mental development (LUCKESI, 1994). Collaborative work takes place, not only between student-student, but also between teacher-student, changing the teachers perspective that generally consider their student as a static "deposit" of knowledge (FREIRE, 1970).

Using robotics requires the assembly of prototypes, and it is necessary to "give life" to the project (KLOC et al., 2009). At this point, it begins a programming activity, aiming at making the prototype perform an action. The acquisition of a programming language is important for HSGs development, as it enlarges not only their languages abilities, in which HSG may express their ideas, but also on training in translating their reasoning in different languages. According to Vygotsky, cognitive development occurs through the process of internalization of social interaction with materials provided by the culture (PEREIRA et al, 2014, SILVA et al, 2004).

To enable HSGs contact with the programming language, different tools can be used such as Lego Mindstorms NXT 2.0, which has a programming environment based on the "Easy to use" system and "drag and drop" command blocks. Open-source Arduino Platform, with its programming environment based on command lines may also be used (PEREIRA et al., 2014). The interaction with two programming language kits can be significative for the intellectual development of the individual. According to Vygotsky, "[...] *Language is fundamental to structure the*

thinking as it is using it that we communicate knowledge and individual ideas and understand the thinking of others involved in the process.”(SILVA et al, 2004).

Learning a programming language makes HSG able not only to work with technological objects, but to rework, rebuild, and reinvent them to meet the local demands (PEREIRA et al., 2014). This leads HSGs to move from users of technology to those who alter it, becoming aware of all aspects involved, including the social and political dimensions. According to Freire, looking through a critical perspective, the technology is no more than a natural expression of the creative process in which human engage when produce tools to transform our world (FREIRE, 1981).

Planning activities to HSGs should guarantee a creative environment in each task, in order to achieve the main goal of education, that is to “[...] create men who are capable of doing new things, not simply repeating what other generations have done, men who are creative, innovative and discoverers” (PIAGET, 1996, p. 5 apud KLOC et al, 2009, LUBART and GEORGS DOTTIR, 2004; LUBART et al., 2003).

HSGs submitted to the proposals of constructing their own learning are able to develop creative and communication skills. The use of educational robotics as a didactical resource for teaching HSGs using an interdisciplinary approach should aim their contact through a scientific-technological perspective, helping them to understand the world that surround them.

IV. CONCLUSIONS

Although, Brazil legally recognizes gifted students since 1971, the Brazilian teachers are still unaware of HSG. Unfortunately, the lack of training of these professionals turns working with HSG a real challenge nowadays.

According to our analysis, HSG have been usually wrongly evaluated due to the absence of identification in the first place (*i.e.* They begin to get distracted, chatting and disrupting other students - as they know the current content - being labeled as “lazy” and/or troublemakers). It is necessary that these students are early identified as HSG and receive attention for attending and develop their skills and special needs.

Thus, training teachers on "High Skills / giftedness" is the first step to input some progress in the HSG education not only in Brazil but in developing countries. Offering training courses, online or not, may enable these professionals to identify these students and to perform a specialized care, not only in resource/helping rooms but also in the regular classroom.

It is also important to have partnerships not only for training teachers but also to open the university space for conducting research with these students as collaborators/participants at the level of primary and secondary education. These partnerships would be important for curriculum enrichment and inclusion of HSG with a positive effect also on the teachers involved.

Teaching and stimulating HSG with technology and robotics material may develop their full potential in the technological area, with contribution not only to them but also to the whole society.

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