Teaching Knowledge and Practice in the Context of Remote Classes to High-Ability/Gifted Students

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Abstract

Emergency remote teaching was regulated by the National Council of Education through Decision nº5/2020, approved on April 28th 2020, in Brazil, as an alternative to cover for the absence of face-to-face teaching. The Ordinance states that remote teaching activities must be applied to students of all education levels, steps, and modalities. As such, the main objective of this study was to investigate, through a bibliographic research, what are the skills that teachers of high ability/gifted students should have in the context of remote classes. We undertook a qualitative bibliographic research by surveying material readily available for consulting on the internet, such as educational books, periodic publications, and laws pertaining to high ability/gifted students and their learning process. After sorting through this material, we conducted an analysis to discuss data and later compiled suggestions of potential methodologies that could be applied to online classrooms. Our findings emphasize that both teaching knowledge and practice must offer high ability/gifted students optimized challenges, which integrate provocative novelties and motivate the development of their abilities and the dynamicity in activities. Furthermore, they also foster the students' autonomy, making individual interests deeper, as well as their creative, critical and research abilities. Therefore, active learning methodologies are an asset to the teaching-learning process of students with specific educational needs.

Keywords: high-ability/giftedness; remote teaching; teacher knowledge

1. Introduction

In March 2020, governments of Brazilian states and municipalities suspended activities in public and

private teaching institutions during a period postponed until the present moment. From that moment onwards, students at Brazilian schools and universities saw the closure of their institutions and the cancelation of classes, due to the *Coronavirus Disease 2019* (Covid-19) pandemic, which rapidly spread throughout the world. Sanitary measures such as social distancing and gathering prohibitions, aiming to halt disease transmission on a global scale, prevented the comeback of face-to-face classes after the first suspension, thus affecting 87% of the global student population, according to the United Nations Brazil (2020). Over 1.5 million students in 165 countries were affected by the closure of educational institutions. Nevertheless, measures such as the Global Education Coalition, an initiative of the United Nations Educational, Scientific and Cultural Organization (Unesco), with multilateral partners such as the World Health Organization (WHO), the International Telecommunication Union (ITU), the private sector, including Microsoft, Google and Zoom, as well as non-profit philanthropic organizations and media agencies sought to develop free and safe connectivity and content options, which support and help teachers and students in the execution of remote classes.

Emergency remote teaching in Brazil was regulated by the National Council of Education through Decision nº 5, approved April 28th, 2020, as an alternative to cover for the lack of face-to-face classes. This Decision states that remote teaching activities must apply to students of all education levels, steps, and modalities. Therefore, the emergency remote teaching is also applicable to high ability/gifted students and those with disabilities and with Autism Spectrum Disorder (ASD), the target audience of Special Education (Conselho Nacional de Educação, 2020). To this audience, remote classes, mediated by technologies or not, are also guaranteed with a quality standard, i.e., accessible to each educational specificity of each segment. The Specialized Educational Assistance (SEA) is also guaranteed during this emergency period, as well as the articulation between SEA teachers and teachers of regular classes together with the school staff, to adapt resources, provide orientation and support for families, and any assistance needed.

Regarding high-ability/gifted students, defined as those showing above-average potential in intellectual, academic, leadership, psychomotricity and artistic areas (isolated or combined), as well as high creativity and involvement with activities in areas they are interested in (Ministério de Educação, 2008), remote classes can serve as an opportunity to grow and develop the high potential in outstanding performance, as long as they include the application of necessary conditions to the learning process of these students.

The search for these learning conditions for high-ability/gifted students in the emergency remote teaching model drove this research, which aims to identify the knowledge teachers of high-ability/gifted students should have in the current scenario of online classes based on official documents available for public access on the internet. Considering the objectives and limitations of this research, we do not specify the identification processes of these students, although we recognize they are essential elements to both the student under development and the teacher responsible for the student. Since the identification of high-abilities/giftedness is not, in most cases, an easily completed process, we deal with students with indicatives (still in the identification process) or already-identified high-ability/gifted students in this study. In this context, we performed a qualitative bibliographic research, based on the survey of materials readily available for public access on the internet, such as educational books, periodic publications, and legislation regarding high ability/gifted students and their learning processes. After sorting through the material, we conducted an analysis to discuss data and later compiled suggestions of potential methodologies to be used

in online classrooms.

2. **High-abilities/giftedness**: characteristics and types

Overall, high-abilities/giftedness are understood as an above-average potential in one or more knowledge areas (usually the logical-linguistic), revealed in the students' school/academic performance and measured through a certain score in intelligence tests. However, this definition exhibits shortcomings regarding the concept and the aspects that indeed cover the reality of the characteristics and types of high abilities/giftedness.

In this perspective, at the end of the 1960s and the beginning of the 1970s, a North-American educational psychologist, Joseph S. Renzulli, identified the confluence of two major characteristics and two types of behaviors specific to high-ability/giftedness, aside from the action of cognitive skills. He conducted an extensive review of studies on the nature of human abilities and investigated several case studies of young people and adults with *uncommon* human accomplishments, who could not reach high scores in intelligence tests and, as a result, were not assisted by special programs for gifted people (Renzulli, 2004).

This discovery was published as the **Three-ring Conception of Giftedness**, which aimed at identifying and developing the giftedness behavior. Although the turnaround caused by this new conception is undeniable, especially within the Psychology and Education fields, the theory applied by Ranzulli was heavily criticized at the beginning of the 1970s, because its principles shook the traditional scientific definition of intelligence, as a unique and fixed human skill, measured solely through standardized test scores (Renzulli, 2004).

Ironically, the Three-ring Theory was only accepted for publication in a journal outside the gifted education field (Renzulli, 2004). However, the emergence of fundamental studies such as those by Sternberg[1], Gardner[2] and other theorists in the field about the multiplicity and complexity of human intelligence contributed to the establishment of a new view on intelligence and, consequently, on high-abilities/giftedness.

On the Three-ring Concept, Renzulli (2004) proposed the role of three factors or main characteristics of high-abilities/giftedness: the *above-average ability*, the *motivation or commitment to perform the task*, and the *high creativity*. It should be noted that these characteristics are not ranked among themselves, as they may be at similar development levels or not, and are associated with time (are not exhibited all the time), people (only occur in certain people), and circumstances (social, economic, educational, cultural, emotional, affective), since these may also contribute to the exhibition, development or inhibition of high potential.

When listing motivation and creativity as fundamental characteristics of giftedness, the theorist presented two realities which be measured by standard tests, since they are under continuous degree and intensity variation. This fact is noticeable among students with already-identified superior potential who did not exhibit these characteristics in a pronounced manner or at above standard levels. They are also noticeable on many students who were not accepted in special programs for gifted people for falling short at intelligence tests scores but exhibited high levels of these characteristics.

[1] Triarchic Theory of Human Intelligence (Marques & Costa, 2018).
[2] Theory of Multiple Intelligences (Marques & Costa, 2018).

Therefore, Renzulli (1978 cited in Renzulli, 2004) explains that, despite the intersection, the triad formulated by himself does not necessarily need to be equal in performance or development at the same time, i.e., the gifted student will exhibit all three characteristics at once or will be *capable* of developing all three and applying them to some area of human knowledge.

This theory was "translated" into a Venn Diagram, in which three circles (rings or main characteristics) are overlayed on a *pied-de-poule* background, which mirrors the dynamicity, interaction, changes, and the continuous energies influenced by the interaction of personality factors and the environmental dimensions, thus contributing to the onset of rings/characteristics (Renzulli, 2004).

Coupled with this concept, in the 1980s, Joseph Renzulli changed the focus of his theory, from "having or not having" a high ability to *developing* this potential as a behavior, since available studies on giftedness highlighted two main objectives for the provision of special education to this segment of students: the development of the student's potential and the increase in the supply of human resources trained to create solutions to the problems of the present society (Pérez, 2004; Renzulli, 2004).

Naturally, a person who has opportunities to develop their potential and abilities, to the point of applying those into everyday activities feels a sense of accomplishment, can understand itself and its skills, and is recognized by them. In turn, society benefits from the product created through the application of this potential. Therefore, the two objectives complement each other and highlight that Education – and the public expenses invested on it – should focus especially on the composition and growth of the group of notable producers of human society evolution.

Based on this premise, we note that the "having-or-not-having" duality is no longer the main concern of the investigation. As a result, the observation of factors which contribute to or enable the onset of the giftedness behavior, especially the behaviors that identify "producers of knowledge and art", becomes the research focus. This change was justified by the possibility of including, from that moment onwards, all students, even those who could not show a good performance in education programs (Renzulli, 2004; 2014b).

By focusing his theory on the giftedness behavior, Renzulli (2004) highlighted environmental and personality factors mirrored on the background of the Venn Diagram, and added six cognitive factors to them, which integrate and contribute to the development of the three rings. These factors are listed by Virgolim (2014a): optimism, courage, romance with a topic or subject, sensibility for human matters, physical/mental energy, and vision/sense of destination.

The interaction of these factors in the development of the talented student contributes to the infinite possibilities of manifesting giftedness behaviors. Among those, Renzulli (2004) specifically focuses his studies on two not opposable nor mutually exclusive giftedness behaviors. On the contrary, they can interact with each other and contribute to their individual and collective development. Over the following sections we present a brief explanation of the types of behaviors and their characteristics.

*2.1 **Type one**: academic/school giftedness*

Also known as testing giftedness[3], the academic/school giftedness is the easiest type to identify, since it is

[3] To Virgolim (2014b), *test* or *learning lesson abilities*; to Pérez (2004), *intellectually gifted*.

mostly covered in the above average ability ring, and it can be rapidly measured through knowledge tests such as IQ. The abilities and performance of those academic gifted are notably demonstrated in the knowledge areas more valued by society, and especially in educational institutions. This makes them the most recognized (and desired) type in these environments, as well as the only ones to fit within the selection of special programs, since they can surpass the traditional scores which classify human cognitive ability in the below, average, or above average categories (Renzulli, 2004; 2014a).

According to Renzulli (2014a), the academic potential is continuously reflected in highest scores obtained in IQ tests and classroom assessments and exams. It also remains stable over time, since the learning process is focused on training structured thinking, as well as on the acquisition, storage, and retrieval of information, i.e., the most formal and traditional learning approach: **the deductive model**. In this approach, the curriculum is standardized to obtain good grades in exams, and assessments are formulated to receive answers that fit within a certain parameter. This approach focuses on the application to future problems, thus generating certain criticisms regarding this indefinite time.

To develop the abilities of academically gifted students, specialized theorists and educators suggest methods endorsed by the Brazilian legislation, such as curricular acceleration and summarization for students who can demonstrate superior performance in a certain curricular unit or subject, as long as their learning pace and emotional structure are respected.

*2.2 **Type two**: productive-creative giftedness*

While in the previous case the student is mostly represented by the above average ring, with little reference to creativity and superior motivation, the productive-creative giftedness behavior is exactly the opposite. In this second type, above average creativity and motivation are more easily recognized than the superior cognitive potential, and are explicitly directed towards a knowledge domain, which highlights the circumstantial and temporal character of high abilities/giftedness.

For Renzulli (2014a), this type of behavior shook (and still shakes) the stability, organization and "convenience" of the numerically defined approach to the high-abilities/giftedness identification, since productive-creative students *force* educators and specialists to look below the top 3 – 5% of the normal curve of cognition tests, because these students usually cannot demonstrate their abilities through standardized answers.

In other words: while academically gifted students ask "why?", productive-creative students will ask "why not?", thus revealing an even more out-of-pattern behavior than the former, characterized by independent thinking, lack of commitment and interest in the classroom, low grades, apparent rebelliousness or a false pathology, which results in potential failing or dropping out of school.

The main *issue* is focused on the shaking of educational pillars, which results from these students' abilities, because they represent the unknown and cannot be easily controlled or trained. Therefore, they become marginalized or excluded until proving their potential through a discovery deemed acceptable and useful by society.

We can see that the learning situation of productive-creative gifted students must be more connected to the inductive method, in which there is more freedom in the thinking process, activity timelines, and the rigid pattern that dictates most *exhausting* classroom events. In other words, the objective of productive-creative

learning is to develop the thinking process to create solutions, materials and original products, which help solve current problems of society. According to Renzulli (2014a, p. 236), this type of behavior "involves acting on what one believes in and knows, instead of simply accumulating and storing knowledge for itself". These students feel the need to produce something innovative and adequate (either physical or thinking material), which has an impact on a certain audience or public and results in credibility and recognition of their potential. This determination creates passion, commitment, and energy to develop the product, thus highlighting the contextual or specific aspects of the productive-creative giftedness, and the need for a different learning approach.

Regarding this behavior, Renzulli (2014a) mentions theorists who distinguish two categories: the scarcity-talented, who contribute to big changes in human knowledge and thinking, and the surplus-talented, who touch the deepest of the human soul through artistic, philosophical, literary, and musical productions, elevating it to a superior and mysterious level. To better understand this, it is enough to cite names such as Martin Luther King Jr., Picasso, Mozart, Freud, among other historical records.

Despite proposing the distinction of both types of giftedness behaviors, Renzulli (2014a) does not exclude one in favor of the other, since they interact with each other and contribute to understanding the complex concept of high abilities/giftedness. If students with superior potential are offered the opportunity to develop their abilities in a way that generates a dynamic interaction between these two behaviors, the process will result in the construction of autonomous, highly-creative investigators, causing a real impact on their lives and on society.

With that in mind, what can be done in a classroom, in the current scenario, to encourage these students to develop their potential in a brilliant manner, to the point of becoming the next pioneers of big changes? We will discuss that throughout the next section.

3. Teaching knowledge and practices in the context of remote classes to high ability/gifted students

In the face of such peculiarities related to the types of giftedness behaviors, we realized that these students, although exceeding in cognition and abilities, need a specialized and individualized education assistance, as guaranteed by law (Ministério da Educação, 2008; Câmara dos Deputados, 2010; Decreto nº 7.611/2011). In this sense, Pereira (2019) clarifies that the educational interests and needs of a high ability/gifted student are not like those of its peers and, therefore, they need to be sensibly looked and listened regarding their specific educational interests and needs.

However, this assistance must not be left to teachers of resource rooms only, since part of the responsibility for the learning process of these students belongs to the regular classroom teacher. The role of the latter is not superior nor rival to the former, but on the contrary, mutual collaboration between them contributes to a high-quality education. This education, as proposed by Renzulli (2004; 2014b) in the Triarchic Enrichment Program, may promote the development of the superior potential if well planned, focusing on motivating the production and creativity of the talented student. This results in a product that impacts either a specific group or society in general.

Although creativity is one of the most complex human skills and cannot be measured, it may be influenced

or inhibited ("turned on/turned off") just as motivation. On this matter, Armstrong (2010 cited in Marques & Costa, 2018) highlights the role of the teacher as the agent capable of promoting *crystallizing* or *paralyzing* experiences in and out of the classroom.

Crystallizing experiences are those in which the teacher identifies the student's areas of interest and develops flexible and adaptive methods to include various techniques that stimulate/challenge the use/development of the students skills and talent. Paralyzing experiences refer to actions that "turn off" the student's potential, such as when the teacher refuses to accept the student's different learning rhythm (faster/slower) and mandates that they become equal to the overall class level, or when the teacher accepts only one way of learning and applying knowledge, thus limiting creativity, commitment to the task, and consequently the development of the superior potential.

Regarding creativity, we emphasize the difference between three phenomena described by Csikszentmihalyi (1996 cited in Renzulli, 2014a). The first refers to *brilliant* people, those whose thoughts are uncommon and stimulating; *personally creative* people, who experiment the world in new and original ways, have lively perceptions, perceptive judgements and may even make important discoveries, but only to themselves; and, lastly, those that may be called *creative* without the need for qualifications, because they contributed to society with a **significant change**. The three types represent different ways of being creative.

When we think about the high ability/gifted student, the focus is on the third creativity phenomenon, because this corresponds to an intrinsic need of the student. However, there is one more criterium to be considered: significant productivity only happens when the three big characteristics of the superior potential interact with each other (Renzulli, 2004).

In other words, being creative is not possible without a minimal level of systematized knowledge. Thus, learning according to the deductive method is not rejected, nor is the inductive approach prioritized. The key lies in searching for a balance in the use of both methods in the classroom, to the point of them interacting continuously mediated by a supervisor/assistant teacher.

Although the theory is easily understood, the daily practice or implementation is the cause of most criticism and difficulties, since it requires professors to break out of their comfort zones and even work twice in the search of HOW and WHICH methods may activate the student's intelligence in an online classroom. This may reach the point of turning them into knowledge and art producers, instead of mere knowledge consumers. This first phase is what we know as learning, subject, class planning.

For this purpose, the Ministry of Education's official website provides four books (Virgolim, 2007; Fleith, 2007a; 2007b; 2007c) that guide teachers and families in the construction of education practices for high ability/gifted students. Based on the analysis of these educational practices and of the current education scenario – the emergency remote teaching with online classes –, we highlight the second book, which covers student stimulation activities, organized by Fleith (2007b). More specifically, the first chapter written by Neves-Pereira (2007) on the *Strategies for Promoting Creativity*, which presents a series of teaching methodologies that generate experiences to motivate the student's creative ability.

Analyzing these methodology suggestions, we realized they place the students at the center of their own learning process, as protagonists and not only as passive beings who receive and store new information. Methodologies with this purpose are known as **active learning methodologies** because they guide the

development of the learning process by using real or simulated experiences, aiming at discovering and overcoming challenges of the social/professional practices in its several distinct contexts (Camargo & Daros, 2018).

Applying active methodologies in the current classroom is therefore more than redressing the traditional methodology or using technological tools during class. In other words, using technology does not necessarily equal to using an active methodology.

When we reflect about these methodologies in online classrooms, we realize that the guesswork of conditioning these methods to the use of technological tools has been a source of concern in the current education context, because transposing the format of face-to-face teaching with no changes/adaptations to the remote online model is not enough.

In *The Innovate Classroom*, Camargo and Daros (2018) present a concise historical trajectory of studies on active methodologies, which highlights the theme as a discovery discussed since the early 20th century. As such, the theme is not so novel. However, the current context has mandated teachers of all levels to lean over this approach to reduce further losses in the classrooms.

Tied to that, Camargo and Daros (2018) expose relevant and provoking data for the change in the teacher's placement based on the urgent need for a learning process focused on developing competencies to the point of offering students the experience of acting based on the studied subjects, turning them into critical, creative, reflexive, humanized persons, able to contribute and to transform society.

Analyzing the already tested active methodologies of Camargo and Daros (2018) and those suggested by the material provided by the Ministry of Education for high ability/gifted students, we were able to relate and select a few, adapting them for use in the current context of online classes. We considered that most teachers and students are experiencing for the first time the online format, even though we have been a constantly connected society for quite some time.

In the following sections, we present a compilation of five suggestions and their goals. To reach them, we highlight feasible and relatively practical methodologies or strategies, proposed in the analyzed resources. We also suggest the use of some technological tools that can be adapted to the online classroom.

3.1. Suggestions of active methodologies

Suggestion one: Creating a welcoming and psychologically-comfortable online classroom that promotes creativity and values peace, cooperation and mutual support in the teaching-learning process. This is because talented students exhibit a trace of hyper-excitability or hyper-sensitivity during their development (understanding/learning/applying), which influences the onset of inadequate behaviors in the classroom, such as the high inability to stay still (table 1) (Fleith, 2007a).

Table 1. Methodologies for a welcoming online classroom

METHODOLOGIES (STRATEGIES)	OBSERVATION
Spiral learning Comprised of three phases: 1. *Synchresis* (individual student approach over a certain problem/theme), which may be requested before or during the class for a time determined by the teacher. 2. *Confrontation* of the student's	- For subjects requiring higher systematization, complexity, and criticism. - Positive side: avoids asymmetry in

individual synchresis analysis as a pair before or during the class, by using fast communication apps (e.g., *WhatsApp*, *Telegram*. In this way, the teacher gets closer to the student's virtual context). 3. *Synthesis*: collaborative analysis during the class with other pairs joining previous reflections and creating a consistent and founded conclusion, with the support/guidance of the teacher regarding the problem/theme.	students' participation because all students will be effectively involved in the process steps and will receive or provide support to their colleagues. For the talented student, this is the opportunity to develop responsibility and humanization.
***Brainwriting* ("silent thought organization")** Debating and discussing ideas around a given problem/theme, in which students will be divided into groups with sheets for cataloguing their ideas/opinions. Sheets will be exchanged between groups so that everyone analyzes and build or rebuild their own opinions. Fast communication apps can be used to support the interaction between groups. Sheets can be presented during the online class through apps or platforms such as *Canva*, *Padlet* and *Google Jamboard*, which allow synchronous editing, according to suggestions made by the class and the teacher's guidance.	Positive side: high potential students are encouraged to present their ideas, even if those are uncommon, to the group and, with their support, defends their opinions to other colleagues.
Debate in pairs, groups, and everyone Based on the premise of "sharing, hearing, creating", the debate covers a certain problem/theme and happens in three phases: between two students, then between two pairs of students and, lastly, between all groups of four components. The last phase occurs during the class and is mediated by the professor. Fast communication apps can be once again a big help and innovation to the class.	Positive side: offers support to shy students, creates tutoring curricular enrichment, fostering a sense of responsibility in the high potential student, and prevents elitism in the classroom.

Source: Fleith (2007b) and Camargo and Daros (2018)

Suggestion two: Organizing the class to stimulate the student's imagination through structured activities that explore and challenge the student's abilities and potential, requiring more attention and investigation about a certain problem or situation, instead of simply generating standard answers (table 2).

Table 2. Methodologies to stimulate and challenge the student's abilities/potential

METHODOLOGIES (STRATEGIES)		OBSERVATION
The Five Whys Diagram The teacher establishes a problem or situation to be studied, and students suggest answers of HOW and WHY it happens. When first causes are found, these will be questioned until fully saturated or explored. To make this activity more visible and attractive, the *Padlet* and *Canva* may aid in building a diagram highlighting the problem at the center, and its causes as ramifications. These tools allow synchronous or	**Problem tree** Students are induced to reflect on the causes and effects of the studied problem by building a tree in which the **trunk** is the problem, the **roots** are the causes, while the effects are the **branches** and **leaves**. This can be supported by the same tools	- Positive side: freedom to make questions in the class since the quantity of questions is essential. - Awakens the sleeping investigator among high potential students. - Improves reflection about the problem, making it more visible

asynchronous editing.	mentioned before and after *brainwriting*.	through a diagram or tree.
Problem Matrix[2] This methodology can come after previous ones, after creating the Five Whys Diagram of the Problem Tree, because it seeks to classify problems into four criteria: important and urgent problems; urgent, but not important; important, but not urgent; not important nor urgent.		Positive side: develops students' criticism and reflection, generating a higher perception of the reality of the teaching-learning process.
Exchange with the author The student is taken to discuss, give opinions and criticize the author of the text that should be read, and latter presents their conclusions.	**Different perspectives with one text** After individually reading the text provided by the teacher, the student confronts others with their perspectives on the text. This strategy may be used during an entire week outside the classroom. The final presentation ends with the teacher's mediation during class.	Both methodologies can be used for the same texts in different phases before/ during class. If before, fast communication apps can be a good help. Positive side: During class, the discussion is richer and more attractive.

Source: Fleith (2007b) and Camargo and Daros (2018)

Suggestion three: Highlighting the direct relationship between curricular contents and the social reality, i.e., for a complete understanding it is necessary to evidence its application in daily situations as a solution to problems. Without this, students may lose interest and even drop the class (table 3).

Table 3. Methodologies that enable applying curricular content into social reality.

METHODOLOGIES (STRATEGIES)		OBSERVATION
Concept applicability by visual representation using a case study or learning unit The teacher can transform the conceptual study into a practical activity to apply the studied concept into a real-life project, with the final product being a live stream, video, tutorial, and podcast organized by the students/groups. The tools *Anchor.fm* and *Vocaroo* may aid in the recording of podcasts.		Positive side: high ability/gifted students are immersed in possibilities for creating solutions for a given problem.
Building a case study The teacher will present a problem to be solved without pre-defined answers or solutions. The product can be an argumentative text about the case study.	**Building situations-problems** In this case, the created scenario must be organized with well-defined beginnings and endings, as well as the necessary knowledge and theoretical-methodological resources to solve it.	Positive side: strategies help visualize knowledge in practice, making the student realize the need for appropriation of knowledge the teacher will present.
Mural with facts and news The teacher must ask students in advance to bring facts and news related to the theme addressed in class and they build a mural together that will be discussed later. News may be sent during class, and the professor can build the virtual mural through *Canva*, *Padlet* or *Google Jamboard*.		Positive side: all participate in the building process, and visualizing the mural provides a global view of the content to be addressed.

Source: Fleith (2007b) and Camargo and Daros (2018)

Suggestion four: If the professor can emphasize the relationship between the class content and the reality of life in society, then the next step is promoting the passion for discovery/creation of new things, the fun in learning and applying what was learned, the need of the productive-creative itself. For Neves-Pereira (2007), the act of creating is tied to the pleasure and fulfillment dimension (table 4).

Table 4. Methodologies that stimulate the student to discover/create/produce something new

METHODOLOGIES (STRATEGIES)	OBSERVATION
Short-term Design Thinking This is one of the bolder and funnier strategies proposed by Camargo and Daros (2018), as it is based on teamwork: ideas generated collectively to solve a problem through the creation of an innovative product. This idea focuses and frees students' creativities in the learning process but does not exclude the use of reason to analyze, adapt and test the proposed solutions. The student experiences the stages that comprise the double diamond: *discovering*, *defining*, *developing*, and *delivering*. In this case, the product can also be presented through alternative means such as social media, an open room on *Youtube* with the support of *StreamYard*, which also has a support for *Facebook*.	Positive side: helps in the development of leadership by transporting students to a new reality level: producing a solution and presenting this solution to the class. They not only create but must also prove the quality of their creations.
Daily-life Problems The teacher can use a real (or similar) problem of a daily-life situation and guide the search for a solution. Using this methodology creates a challenging and reflecting situation, which brings involvement, interest, and creativity and thus the student's participation. To help visualize what must be done, *ThingLink* is a useful and innovative tool, as it enables the teacher to present an image related to the class, based on strategic points with links, the image is brought to life and the problem becomes clear.	Positive side: students understand that the concepts studied in class are significant, since they can be applied to real situations involve them.

Source: Fleith (2007b) and Camargo and Daros (2018)

Suggestion five: Stimulating students to participate in all activities proposed, including their own assessments, helping them learn and respect differences (learning types, rhythms, difficulties, strengths), thus reducing the elitism so prevalent in the high ability/giftedness reality. Additionally, this method seeks to turn mistakes into the building blocks of growth and development (table 5).

Table 5. Methodologies for including students in all steps of their teaching-learning process

METHODOLOGIES (STRATEGIES)
Reminiscent End-of-unit methodology which seeks individual or teamwork in the application of what was learned. However, it may also be used to highlight the student's previous knowledge about a certain theme. For revision purposes, tools such as *Wooclap*, *Mentimeter*, *Sli.do* and *Kahoot!* are suggestions that enable in-class real-time revision. For the student, a good option for revising that can be continuously fed is the construction of mental maps that help settling the content. A way to make this task more pleasant and attractive is by using tools such as *CmapTools* (also functions offline and can be downloaded for free), *Padlet* and *Canva*.
Relevance zones

This methodology can also be used to analyze the learned content through questions made by the teacher about the studied unit. Students can list the unit's most relevant answers or subtopics by using the *Nearpod*, a tool which combines slides, quizzes, videos, and games with synchronous interactions and user identification.

Source: Fleith (2007b) and Camargo and Daros (2018)

A support tool for close follow-ups with students is the *Google Classroom* platform, which is currently available for free. This tool offers teachers a space for asynchronous activities, with the possibility of giving individual feedback and corrections together with the student.

Since the purpose is to increase the number of productive-creative students in the classroom, we highlight the chapter "Development of Research Projects", by Maia-Pinto (2007) because the research activity is the mean through which the student, if well-guided, can become a first order investigator who produces and, therefore, brings innovation to knowledge areas (Renzulli, 2014a).

According to Maia-Pinto (2007), the teacher's role in this practice is to guide the search for a solution to the problem, not presenting finished answers. Instead, teachers should help students formulate questions with no pre-determined answers and generate data that can be investigated and analyzed. For this practice to be efficient, the teacher needs to know and understand what research is, what are its systematization steps, and how to apply its final project.

In this perspective, Camargo and Daros (2018) suggest two methodologies which complement each other, since their goals aid in the construction of this scientific paper (table 6):

Table 6. Methodologies which aid in the construction of a scientific paper

METHODOLOGIES (STRATEGIES)	OBSERVATION
Color palette using the Scientific Paper The main objective is to help the student visualize the parts of a scientific paper. The teacher requests students to choose a scientific paper of their interest before the class. Afterwards, collaboratively, each part of the paper is presented, discussed, and later painted in a specific color. The goal is "teaching to see" the parts that make up the paper. After this first moment, the teacher may present another paper in which the students will have to recognize each part.	- Simply advising students to investigate problems and create solutions is not enough; they should be taught how to systematize their discoveries in a scientific paper, which is the formal mean through which they will publish such discoveries. - Positive side: from early years, teachers start developing the researcher in students, which will be further improved in higher education.
Planning the scientific writing through a diagram After the color palette, this is the moment to help the student organize and release ideas that will become a scientific paper. By using a structure (pyramid or diagram), the student presents the ideas to the teacher, which will make up each part of the paper. In collaboration, both will reorganize and build the official script.	

Source: Fleith (2007b) and Camargo and Daros (2018)

The Flipped Classroom methodology can also be a suitable and attractive suggestion to the online classes model, since the purpose is to study the theory before the actual class by using an adapted resource (video/tutorial/podcast) or group discussion. The practice takes place in the classroom and is guided by the

teacher. In this case, the student goes over the subject previously, and only brings questions to the class, which will provide the teacher with a perception about what still needs to be structured in the learning process.

The proposed methodologies and suggestions compiled here are not in any way a pattern to be strictly followed, but as the name itself suggests, are possibilities of innovation in an online classroom, which presents an entirely adaptable structure and can be modified/altered based on many distinct educational realities. Furthermore, we emphasize that the use of each methodology must be balanced and carried out with considerable conscience of its end and purpose. In this sense, gamification proposals are motivating learning suggestions, but they must be used with a lot of caution and well-planned frequency, so that it does not lose its sense of "news" or leads the student to feel as if they are not watching a real class.

A few points in common between these methodologies must be highlighted, such as the principle of introducing a theme through a problem or question, instead of simply presenting the theme to be memorized. Challenging the student to reflect and to expose their previous knowledge about the theme in question through brainstorming, for example, is a way to induce them to build a concept and then reach the necessary understanding. However, this understanding will only be significant if its application is made explicit during the learning process, necessary to develop students' competencies.

According to Renzulli (2014a), high ability/gifted students are not only those who exhibit a notable potential in one or more knowledge areas, but also those who demonstrate superior performance in a practical manner. This is the biggest challenge for teachers: creating favorable conditions which enable the above average potential to transform into notable performance. Although creating is one of the priorities in the learning process, it should not be taken as an activity that does not need to have its characteristics and relevance evaluated. Creativity must be treated as an essential element to the student's cognitive development, but with the constant support of scientifically systematized knowledge.

Beyond these topics, the role of the teacher as a supervisor who motivates their students to learn is also perceptible. Not the ones who impair, mandate, or punish, but those who help their high ability/gifted students to find themselves and to "control" their asynchronous development, which is sometimes disturbing. Those who are willing to create open and attractive classrooms, not through the excessive use of new technologies, but because learning and understanding are essential to development.

4. Final considerations

Returning to the objectives of this study, which was to investigate, through a bibliographic research, which knowledge teachers of high ability/gifted students should have in the context of remote classes, we can cite active teaching and learning methodologies. In this case, these include flipped classrooms, pair learning, innovative classrooms, problem- and project-based learning, case studies, among other presented throughout this paper. These methodologies place the students at the center of the teaching-learning process, stimulate their autonomy, prominence, and collaborative learning, as well as enhance their creativity, skills, and abilities.

Regarding this aspect, some psychologists pointed by Renzulli (2014a) who study motivated behavior recognize that each person, whether with a superior potential or not, exhibits two inherent desires: self-

determination and competency. These can be respectively translated into the sense of autonomy (freedom to act according to personal interests) and the feeling of proficiency together with the certainty of being able to perform the task the student chose to engage in. Analyzing this premise, we understand that teaching practices must offer students optimized challenges that integrate new things and promote the development of their abilities.

The aim of this study was not to present an idealized formula of online classes, but rather to expose a series of possibilities that teachers of high ability/gifted students and students with indicatives of high abilities/giftedness can choose from and apply in their classrooms. These approaches are not limited to the use of technological apparatus. Instead, they occur through the shift in the teacher's position and placement of students at the center of the teaching-learning process.

Considering what was discussed here, we expect that this study will bring visibility to the teaching-learning process of high abilities/gifted students and to the early and continued training of teachers of/from the 21st century in the perspective of an equitable, inclusive, and lifelong learning.

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