

High intellectual abilities in school

Josep Pradas

Translated into English by Ester Astudillo

In early 2013, the Catalan autonomous government published an upgraded high capacities handbook analyzing the problems of school intervention among high abilities students. The handbook (hereinafter Martínez, 2013), was aimed primarily at teaching professionals, was paper printed and is also electronically available (find it at the top link of the post). For similar documents in Spanish, see page 48 for references and web links. The handbook far exceeds the claims of its earlier 2006 edition, not only because of its page count but also because new material has been included, several questionnaires aimed at families, and numberless references to new recently implemented theories in schools, as in the case of multiple intelligences, which brought about a major shift in perspective for the overall theory of human intelligence.

In this post we will discuss the controversial issue of the need for school intervention on cases of high capacity students that should be identified and treated. First we will discuss the elements that define giftedness, then the detection, identification and evaluation procedures, and finally the possible courses of action inside the schools. All this taking into account the capital baseline: namely, that it has been unanimously accepted that the schools' non-intervention among the gifted population leads such students to a probable path of academic and personal failure, which makes it the more surprising that there is little effort on the part of schools to diagnose gifted students, the first necessary step to ensure they are offered appropriate attention. It has been estimated that among the school population, as much as a 4-6% are highly gifted; nevertheless, diagnosis rates vary greatly across countries (Martínez, 2013: 10). Actually, very few of those students are identified: according to a recent review, only 3% of highly able students in Catalonia are conveniently treated, while only 3.8% of them are diagnosed. These figures place Catalonia among the autonomous communities with a poorest agenda as far as gifted students diagnosis in Spain is concerned. If among 1,000 children chosen at random, 50 of them will by and large be highly able, only 2 of them receive adequate attention (report in *El Periódico.com*, January 26, 2013, sighted on June 23, 2013), available in this link: <https://docs.google.com/file/d/0B75X7ZHKmZyvbnBsUFExTXFjem8/edit?usp=sharing>).

The new official handbook offers guidance to grammar school teachers in the primary task of early identification of high ability students. Still, all efforts will turn out useless if schools don't get involved in all and every step of the whole process (identification, assessment and treatment).

Higher ability revisited

Theories on high intellectual abilities have changed over time. Differential criteria have evolved, and so have labels applicable to ‘very able’ subjects. The word *genius* is not used any more, and there’s even some reluctance to use the word *giftedness* applying to individuals who develop a specific type of intellectual exceptionality.

Apparently, *high abilities* goes far better with the spirit of the times, free as it is of derogatory connotations as regards the average population. Also, it does not disrepute those who are marginally exceptional. However, it must be borne in mind that this category includes three minor subcategories, each with its own specificity: a) gifted students, b) talented students and c) precocious students. All three categories require to manage appropriately their statistical significance: average vs. exceptional. High intellectual abilities are by definition statistically rare (i.e. high abilities students lie out of the statistic definition of ‘average’; the setting of boundaries between ‘average’ and ‘exceptional’ is crucial to understand the latter, and thus to offer appropriate treatment when needed).

Intellectual exceptionalism falls at the very right end of the normal distribution (Gaussian function or bell curve), as mapped through intellectual performance measurements. Exceptional subjects are, therefore, a minority, both above and below average measurements. However, statistical boundaries are necessarily arbitrary, so we’ll better proceed from this statistical definition first and then go on to elaborate on the several traits characteristic of ‘exceptionally able’ students (Genovard & Castelló, 1990: 81-82).

In quantitative terms, the control group and the two exceptional groups (below *and* above average, or in other words, left and right marginal ends of the bell curve) are no different, as they have undergone the same variables to be sampled. Quantitatively, an exceptionally able child and an exceptionally deprived child are the same, there is no clear-cut divide between the two. But from a qualitative point of view, differences between the central and the two exceptional groups are not a matter of degree; rather, differences emerge from the different nature of their qualities, there is an apparent discontinuity. Exceptionality is the same as specificity, from a qualitative point of view. The differences between a *normal* subject and an *outstanding* subject cannot be expressed as a matter of degree, but rather as a matter of all-or-nothing. The qualitative explanation of this discontinuity can be quantitatively accounted for: the summation of differences of degree (performance tests, for example, but not solely) necessarily leads to qualitative leaps in subjects well into the exceptionality range, as shown in specific peculiarities in their cognitive and social behavior. This qualitative approach is admissible from the point of view of multifactorial intelligence models, making use of different variable combinations; the differences attributed to a single variable, as in one-variable-only models, will always be quantitative and continuous (Genovard & Castelló, 1990: 83-84 and 88-89). But such one-variable-only models are no longer in vogue. Nowadays, rather, the setting of intelligence profiles proves further operative, such as that of child prodigies, who show exceptionalities only possibly accounted for beyond

the one-variable-only model approach, eg. multiple intelligences (Gardner, 2011: 27-29).

There is no doubt that the definition of high capacities has changed over time. The starting point was far too academic. Thus, Terman's large study, dating from 1921, in California, as based on subjects with outstanding school performance & overachievement (IQ > 130), used the Stanford-Binet 1916 with an aim to track the sample population's performance throughout their adult years (Genovard & Castelló, 1990: 95). No offense meant to this longitudinal study and its beneficial aftermaths. However, it was overtly biased in that it went along solely on IQ scores, thus measuring only convergent thinking mental processes (language and mathematical abilities, analytic procedures, formal analysis, etc.). It was not until the contributions by Guilford and Torrance, in the 1960s, that further variables were considered relevant enough for the understanding of exceptionally high abilities, in particular by way of creativity, i.e. divergent thinking (imagination, intuition, synthetic thinking, creativity). This way, creativity became the central factor to account for giftedness and other forms of higher intelligence. Some time later, Renzulli developed his own three-ring model in the 1980s (Genovard & Castelló, 1990: 101-102). Summing up later contributions by Gardner, the final bottom line is that intelligence, by and large, is too complex an issue to be measured / defined by IQ tests only. Such simple procedure has ceased to be valid any more. There are many different paths to smartness, and high abilities may take many different forms, so the issue should not be oversimplified (Martínez, 2013: 6; Gardner, 2011: 286).

Since the high ability group is not homogeneous, and given that each subject presents their own characteristics and particular cognitive profiles (i.e. Gardner's multiple intelligences), several overall profiles have been set for different cognitive abilities, which give rise to three different high ability groups (Martínez, 2013: 6-7):

- Giftedness
- Talent
- Precocity

Apart from the trite myths and preconceptions about intellectually gifted children (see Martínez, 2013: 9 for a list of them), differences between these three groups are crucial to plan adequate school treatments (as well as family treatments too), assuming that identification protocols are working well enough. So we'll make a short list of the specificities of each group. It mustn't be forgotten that these are loosely cut profiles that may take many forms, some of them may even overlap, particularly between specimens belonging to the giftedness and the talent groups. The difference between these two categories was apparent only after Terman's overrating of IQ score as the crux factor leading to giftedness was finally discontinued from diagnosing protocols (Carreras, *Protocol ...* and Castelló & Martínez, 1998).

Giftedness

Gifted people (children as well as adults) generally show the following traits:

- High performance and overachievement relating to all intellectual and cognitive abilities, with efficient outputs in all fields (it has been termed *general intelligence* or *g factor*, somehow ill-fitting the multiple intelligences theory). Ability is particularly salient in language and mathematical reasoning and in spatial aptitude. However, gifted individuals may put to use as well simultaneous resources to problem-solving that will not be solved by means of one single resource at a time (Martínez, 2013: 7). This general intellectual ability is mapped in a high IQ score (130 or over; 120 or over according to some; still 140 or over according to others). Still, IQ score is progressively losing some of its weight for the definition and the assessment of giftedness. All three traits allow for a high school performance, as gifted students will invest less time than their peers' average and attain higher depth, a greater amount of content and develop an easiness to relate data belonging to different academic fields (Carreras, Valera & Reig, 2006: 8; Feenstra, 2004: 169). Hence the blurry borders between gifted children and children with a scholastic talent.
- High level of creativity, as underlined above: they are original and rare (Carreras, Valera & Reig, 2006: 8). In their early school years they resist instructions to colour inside the lines, and their artistic productions are unusually detailed (Feenstra, 2004: 169). Gifted students tend to show right hemisphere dominance and therefore they are good at *divergent thinking*, which is a factor leading to creativity (Feenstra, 2004: 183-184).

Estilo favorito de aprendizaje de ambas partes del cerebro:¹

El hemisferio izquierdo	El hemisferio derecho
<ul style="list-style-type: none">• Prefiere una explicación verbal.• Utiliza el lenguaje para memorizar datos.• Procesa datos sucesivamente.• Produce ideas de manera lógica.• Prefiere tareas intelectuales concretas.• Trabaja en una sola tarea a la vez.• Prefiere actividades analizadoras.• Utiliza el material tal como está pensado.• Le gustan las experiencias estructuradas.• Prefiere aprender datos y detalles.• Afronta los problemas intelectuales de forma seria.	<ul style="list-style-type: none">• Prefiere una explicación visual.• Utiliza imágenes para memorizar datos.• Procesa datos de forma global.• Produce ideas de manera intuitiva.• Prefiere tareas intelectuales abstractas.• Trabaja en varias tareas a la vez.• Prefiere actividades sintetizadoras.• Utiliza el material de manera creativa y libre.• Le gustan las experiencias sin estructura.• Prefiere aprender un total en vez de datos aislados.• Afronta los problemas intelectuales de forma juguetona.

1. Fuente: James T. Webb y otros. *Guiding the gifted child*. Ohio Psychology Press, 1982.

- Implication: they devote a lot of energy to satisfying their curiosity, to problem-solving or to join activities inside their range of interests. They show high levels of perseverance and an ability to lead several projects simultaneously (Carreras, Valera & Reig, 2006: 8). They like to exhaust the topics within their range of interests and to get to the bottom of things (Feenstra, 2004: 170).

So these are the elements Renzulli posed for his three-ring theory, by which giftedness is defined: high intellectual performance, high levels of creativity and high involvement in all tasks undertaken; the three factors are interconnected and lead to giftedness.



IQ is not the only defining criterion, rather it is necessarily combined with the other two (Genovard & Castelló, 1990: 105). It was generally thought that only high IQ scores lead to giftedness, when in fact each of the three factors has an essential role in the emergence of *giftedness* (Carreras, Valera & Reig, 2006: 5). The benefit of this model is that it requires a combination of skills that enables interaction between convergent and divergent thinking, leading to a quantitatively different mental processing, and which clearly tells gifted and talented individuals apart: giftedness refers to a general, all-encompassing ability, while talent is more akin to the old IQ-dependent notion of giftedness: i.e. high performance by means of a specific skill in one or more academic fields (Genovard & Castelló, 1990: 105).

Certainly, gifted individuals show many other peculiar traits in their learning styles and emotional behavior: generally, they have a high predisposition to learning and motivation, they are curious and will drill teachers with their picky questions; their interests are different from those of their peers', they have deep knowledge about subjects outside their classmates' range of interests; they often loathe repetitive, monotonous drills and memorizing but like active and participative learning best (self-discovery). More often than not they show poor handwriting skills and are usually careless about the formal outlay of their work (Feenstra, 2004: 170, 173 and 179). This

results in lower grades than expected, and indeed there are high rates of school failure among gifted students, especially if they have gone through their schooling years undiagnosed and thus demotivation and low grades are attributed to other causes (lack of attention, indifference, for example). If school performance is low, these children go unnoticed in the classroom, teachers often fail to recognize in them the signs of giftedness (as they expect very high academic performance), and thus early intervention and treatment are precluded. Hence the importance of an adequate strategy for detection and diagnosis of giftedness.

On the other hand, gifted girls may give in to peer pressure more easily than boys, and will come lower in academic performance in order not to stand out and be placed inside the exceptionality group. Girls often go unnoticed as gifted children in the classroom, which is why some people believe giftedness is a predominantly male phenomenon (Carreras, Valera & Reig, 2006: 9).

Finally, gifted children may suffer from *emotional dyssynchrony*, caused by a stark discrepancy between intellectual maturity rate, faster than their age-group standards, and emotional development rate, which is usually within their age-group standards. When hypersensitivity and a certain proneness to sensory overload are thrown in as well, they add insult to injury in the general picture of giftedness, which befuddle parents and teachers alike, and may even put child psychology professionals on the wrong track, since these are mostly associated with slow maturity rates and backward personalities, and then preclude all chances of diagnosis and subsequent therapeutic intervention (Carreras, Valera & Reig, 2006: 9). The gifted child has a hard time mastering something that most children achieve with absolute easiness: getting to know themselves through their school years; he rather has to fight for it, since he does not compare well with his peers (Feenstra, 2004: 171).

Talent

Talented children are not gifted children. Whereas gifted children excel –or have a potential to excel- in all cognitive domains, talented children excel only in a narrow range of domains, and their abilities are domain-specific (Martínez, 2013: 7). Likewise, talent is defined as the ability focused on a particular domain of cognitive or behavioral skills (Genovard & Castelló, 1990: 103).

The classification of talents (simple and complex) is by and large as follows (Martínez, 2013: 7):

- Scholastic
- Kinetic
- The arts
- Social
- Logical operations

- Creative
- Mathematics
- Language

The most interesting feature of this classification is its almost exact mapping with Gardner's classification of multiple intelligences; what's more, the occasional overlapping of both perspectives for designing treatment strategies in the classroom is striking. The difference, however, is that Gardner's approach applies to intelligence as a whole, and thus does not focus on particularly overachieving individuals. Gardner's great contribution to the theory of human intelligence was to assign a particular intelligence profile to all individuals irrespective of academic performance, and the consideration that identifying such profile does not demand prior nor later specific school intervention (for more information, see my review of Gardner's book here: <http://escuelaconcerebro.jimdo.com/rese%C3%B1as/inteligencias-m%C3%BAltiples-de-h-gardner/>).

Precocity

Precocity is an evolutionary, temporary feature in an individual as he is still developing: the child has a faster development rate as shown in higher intellectual skills and performance if compared to age peers. It then follows that at the end of the maturation process, once maturation is complete, standard skills will be achieved and he will compare well with his age peers. Only he will reach that plateau ahead of his time.

However, this early overachievement is generally a sign that higher abilities are working at the back (giftedness or talent), since almost every gifted child is precocious, and most precocious children are spotted by their outstanding ability in at least one academic field. It should be desired that all precocious children will be assessed as established, since most of them will sooner or later require specific school intervention, and the earlier, the better (Carreras, Valera & Reig, 2006: 13, and Martínez, 2013: 7).

Detection and diagnosis

The main holdback for the detection and diagnosis of highly able students is, to our knowledge, school-based strategies focusing on learning difficulties while disregarding abilities. The sequels of such strategies, though, are more than they appear at first sight: high ability students are overlooked and neglected, while students with learning difficulties are subjected to stressing corrective reinforcement regardless of their other potential abilities, still unidentified. Gardner's proposals (and long before him, Neill's) aimed at overcoming this default school intervention protocol, since students with learning difficulties sure have some other capabilities in areas that go unnoticed because they lie outside the curriculum. In fact, one possible avenue for intervention in the

classroom is random enrichment, strikingly similar to Gardner's and Neill's classroom intervention proposals, as shall be explored below.

A first step for identification is to gather information about class behaviour from direct observation of the personal traits and performance traits gifted children typically show (Genovard & Castelló, 1990: 107; Feenstra, 2004: 170). However, such information should ideally be supplied by families, since they surely have evidence of the child's earliest achievements and landmarks (Martínez, 2013: 10). Parents are the ideal informers, particularly because in the early stages they spend most time with their kids and have access to behaviors that do not occur in the classroom, since they involve non-scholastic activities, or either the activities are best tackled by the kids in the home context, where they feel free from the pressure of school performance and assessment (Genovard & Castelló, 1990: 117).

Identification thus is fast, because it does not focus on specific skills, and is relatively smooth if both the home and the school get involved. Results are reliable because they are conceived only as indicators of evidence, and do not compromise at all the student's school life. More dependable results would obtain from subject-specific tests and measurements once students with a potential have been identified, but this also means higher expenses. Such measurements, however, should not be based on IQ scores only: given the complexity of the issue, IQ is obsolete as the sole differential criterion and its use may result in socially and culturally biased diagnoses (Martínez, 2013: 6 and 10). Identification of highly able students, following the handbook, should obtain from a thorough analysis of the full range of abilities, using various assessment tools that will skip cultural and socioeconomic biases, and importantly, it should make a point to assess student motivation, since it is a crucial learning factor. Assessment tools should be administered immediately after a child shows signs of discomfort and fretting, even in cases of apparently poor school performance (Martínez, 2013: 10).

It goes without saying that no exceptionally able subject should go through his schooling years unnoticed. New laws and regulations have been passed to this end (see Martínez, 2013: 5 for Catalonia). The updated handbook includes plenty of recommendations to schools on the need to change some common strategies as far as high abilities are concerned, focusing on the spotting & diagnosis of students and the planning of activities appropriate to each case, which should be reflected in the educational project of every school. It also stresses the need to update teachers' training with a view to promote a smooth two-way relationship between schools and families, to improve teaching approaches (methodologies), to implement monitoring protocols as applied by early childhood professional teams, and to reverse the trend of professionals to intervene only when students' apparent impaired abilities are at stake (Martínez, 2013: 4-5).

At this point, it should be noted that these recommendations can be broadly understood: improving teaching approaches, bringing higher abilities to the front of teachers' concerns, working for the betterment of the relationship between schools and families (i.e. listening to their queries, taking seriously their concerns, misgivings and needs...).

After all, this is what users expect from public service workers. But it is obvious that schools neglect this task: strategies in the handbook are not applied, neither to intact classes nor individually. This is why diagnoses are usually arrived at out of the schools, when a desperate student and/or family will not take any more the consequences of not having been diagnosed in time: boredom, discouragement, depression, social withdrawal, hazardous patterns of social interaction, etc. The result is a 70% rate of school failure among the highly able population.

Grades and performance, for example, should not be taken as evidence neither to include nor to discard a student among the gifted group: gifted children do not always excel in academic performance, though it's true that as a rule they do ok enough — except when other variables meddle in the picture, such as lack of motivation. An industrious student could well be mistakenly taken for a gifted child when he may simply be a talented child with a scholastic ability. In contrast, a gifted child may get lousy grades and show unruly behaviour, or rather be tightly over average. If teachers do not make an effort to get the whole picture of a gifted child, his behavior will be misconceived and his intellectual performance (boredom, discouragement, resistance against repetitive tasks, absent-mindedness) will be construed as disciplinary offenses and treated accordingly (Feenstra, 2004: 170-171). As a rule, teachers take gifted students for standard children, discreet, pliable and easy enough to deal with, so many gifted students wind up performing below their potential, which is the most ominous hazard for an undiagnosed gifted child, leading straight to dissatisfaction and even academic and personal failure (Carreras, *Protocol ...*; Feenstra, 2004: 171).

Feenstra provides a very simple questionnaire that teachers may fill in to use results as guidance in the diagnosing of gifted students:

Cualidades intelectuales y creativas	Sí	No
1. Tiene una comprensión rápida.		
2. Tiene un interés amplio, es capaz de hablar sobre muchos temas.		
3. Detesta los trabajos rutinarios.		
4. Es curioso, pregunta mucho y es insistente en sus preguntas.		
5. Ve relaciones entre ciertos datos que otros niños no descubren.		
6. Habla con frases bien formuladas y dispone de un amplio vocabulario.		
7. Hace cosas, comentarios o preguntas que otros niños a veces no entienden.		
8. Aporta soluciones originales e inhabituales.		
9. Tiene un sentido del humor muy desarrollado.		
10. Le gusta trabajar en solitario.		
11. Es ingenioso.		
12. Dispone de una rica fantasía		

Actitud de trabajo y desarrollo socioemocional	Sí	No
1. Es capaz de trabajar independientemente.		
2. Se concentra bien.		
3. Está motivado por el trabajo de clase.		
4. Está integrado en el grupo de alumnos.		
5. Ayuda a los demás alumnos.		
6. Pide la atención del profesor de modo positivo.		
7. Se siente a gusto en la escuela.		
8. Tiene confianza en sí mismo.		
9. Exige de sí mismo logros realistas.		
10. Es perseverante.		
11. Es uno de los mejores alumnos.		
12. Destaca en un área determinada.		

Fuente: Feenstra, 2004: pág. 172

Cuántas más veces se obtenga la respuesta “sí” en el primer cuadro, mayor es la probabilidad de que se trate de un alumno superdotado. Cuando un alumno saca mayoría de síes en el primer cuadro y mayoría de noes en el segundo, probablemente existe una serie de problemas que dificultan el reconocimiento de la superdotación. Puede tratarse de un alumno que está rindiendo por debajo de su nivel. El alumno con minoría de síes en el primer cuadro y mayoría de síes en el segundo es un niño trabajador y armonioso, pero seguramente no superdotado.

FUENTE: Feenstra, 2004, pág. 171.

It is crucial to concentrate on children with low school performance and at the same time giving signs of potential giftedness. Reaching a diagnosis is vital to avoid them going undiagnosed through school—and maybe for their whole life. Feenstra (Feenstra, 2004: 173-175) insistently recommends further work in these cases, especially if the child:

- Has difficulty concentrating.
- Is the dreamy, absent-minded child, but shows a helpful, toward attitude with peers.
- Loathes working on assignments and doing his homework.
- Academic grades get worse and worse, or are surprisingly uneven, inconsistent or mixed, concentrating on the very high or very low ends of the score. Sometimes grade reports may look a bit like the filling-in of a pool!, with ticks here and there quite randomly.
- Makes silly mistakes (carelessness, sloppiness, poor formal layout). He has poor handwriting skills.
- There is a stark discrepancy between speaking and writings skills.
- High quality extra work (elaborating on a somewhat different topic, research project, etc.). Gifted children will prefer higher-level topics than their age-peers, and will consistently opt for bizarre, untypical issues. Extra work assignments, if offered, get them moved and further involved than their peers.
- Shows a liability to be taken ill and to feel unwell, and skips classes over average rates. Some will resist attending school (phobia).

Sometimes diagnosis happens via a detour: as a result from naughty behaviour in the classroom and other disorders, or because the student’s usual performance is clearly on the decline (Carreras, Valera & Reig, 2006: 4). But if these eventually become hardened habits or attitudes on account of not being treated properly, they will become deeply rooted in the student and will be extremely hard to correct or reverse, which leads straight to school failure, again! (Feenstra, 2004: 174).

Diagnoses may occur very early on: the earlier, the better. There are plenty of questionnaires that provide guidance to parents and educators. The handbook provides relevant information to identify giftedness in children between 0-3 years (Martínez, 2013: 12) and between 2.5 and 5.5 years (Martínez, 2013: 13-14).

It also includes questionnaires addressing children between 3-4 years (Martínez, 2013: 15-16), between 5-8 years (Martínez, 2013: 17-18) and between 9-14 years (Martínez, 2013: 19-20), both for parents and teachers alike. It also includes questionnaires for teachers in third and fourth grade of grammar school (Martínez, 2013: 30-36). Once children have been diagnosed, there follows the assessment of professionals, for whom the handbook also devotes one section (Martínez, 2013: 37-40).

This handbook is far more detailed than its earlier 2006 version, particularly because it supplies protocols for the detection of multiple intelligences both by teachers and parents (Martínez, 2013: 21-29).

Schools' intervention

The idea behind all intervention strategies on high ability students is that teaching non-standard students demands non-standard teaching methodologies, appropriate to their different learning styles, because these students do not generally fit well with standard teaching methods. If subjected to such common teaching practices they will typically become bored, demotivated, apathic, depressed and more often than not, will incur in antisocial behaviour and school failure. According to Gardner, "a gifted child is more easily thwarted than stimulated. And just because we know so little about these beautiful possibilities, it is mandatory that parents and teachers *do no harm*" (Gardner, 2011: 91).

If through the teacher's ignorance, preconceptions or carelessness a gifted student is subjected for long to stereotyped traditional teaching practices, the result will surely be poor school performance and diminished learning expectations. The image below is a good sample of a high ability student's work:

a) $3,6,259 + 4,65 + 526 + 36,7 + 4,585 =$

+8-

b) $2,68 + 15,3 + 64,217 + 436 + 1,687 =$

c) $5,649 + 3,628 + 435,7 + 86,2 + 4,368 =$

d) $29,47 + 358 + 43,1 + 27,496 + 3695 =$

e) $968 + 35,687 + 16,8 + 4392,65 + 37 =$

f) $1,682 + 965,4 + 36 + 28,75 + 96584 =$

g) $8,6297 - 5,284$

y) $584,3 - 69,582$

h) $9,265 - 68,593$

w) $684,1 - 8,629$

i) $62,845 - 46$

l) $425 - 6,8275$

a

$$\begin{array}{r} 22,21 \\ 36,259 \\ 4,65 \\ \hline 526 \\ 36,7 \\ 4,585 \\ \hline 72,712 \end{array}$$

b

$$\begin{array}{r} 22,22 \\ 12,68 \\ 15,3 \\ 64,217 \\ \hline 421 \\ 1,687 \\ \hline 84,320 \end{array}$$

c

$$\begin{array}{r} 11,25 \\ 43,7 \\ 82,2 \\ \hline 4368 \\ \hline 5264609 \end{array}$$

d

$$\begin{array}{r} 21,27 \\ 29,47 \\ \hline 358 \\ 43,1 \\ 27,496 \\ \hline 3695 \\ \hline 100,7935 \end{array}$$

e

$$\begin{array}{r} 11,8 \\ 35,657 \\ 93,168 \\ \hline 2,65 \\ 37 \\ \hline 4446375 \end{array}$$

f

$$\begin{array}{r} 11,282 \\ 965,4 \\ 36 \\ \hline 28,75 \\ \hline 96584 \\ \hline 99412784 \end{array}$$

g

$$\begin{array}{r} 8,6297 \\ -5,284 \\ \hline 3,3457 \end{array}$$

h

$$\begin{array}{r} 9265,000 \\ 128,593 \\ \hline 9393,593 \end{array}$$

i

$$\begin{array}{r} 62,845 \\ 46,000 \\ \hline 16,845 \end{array}$$

j

$$\begin{array}{r} 584,300 \\ 19,882 \\ \hline 514,418 \end{array}$$

k

$$\begin{array}{r} 684,100 \\ 218,229 \\ \hline 675,171 \end{array}$$

l

$$\begin{array}{r} 425,0000 \\ 128,275 \\ \hline 418,725 \end{array}$$

Más colocando

526

421

358

968

96584

7

7

7

8

7

7

$$\begin{array}{r}
 9258175 \\
 \times 283 \\
 \hline
 174065400 \\
 18516350 \\
 \hline
 2620063525 \\
 4234248 \\
 2836948 \\
 \times 568 \\
 \hline
 122745784 \\
 170276688 \\
 \hline
 1671386964 \\
 12034937 \\
 \times 826 \\
 \hline
 172341622 \\
 24029874 \\
 983341986 \\
 \hline
 025277962 \\
 \hline
 7162839 \\
 \times 295 \\
 \hline
 16446551 \\
 14325678 \\
 \hline
 2112037905 \\
 118251 \\
 5128493 \\
 \times 639 \\
 \hline
 146756437 \\
 15385474 \\
 \hline
 3077095827 \\
 3277107027 \\
 8521649 \\
 \times 567 \\
 \hline
 270004543 \\
 5862984 \\
 428582451 \\
 \hline
 488972483
 \end{array}$$

Mal

Mal

Mal

$$\begin{array}{r}
 145232 \\
 5169364 \\
 \times 654 \\
 \hline
 3067456 \\
 25845820 \\
 \hline
 31016784 \\
 3380764056 \\
 3380764056 \\
 9536784 \\
 \times 759 \\
 \hline
 21858251656 \\
 147680420 \\
 6733288 \\
 \hline
 7237963656 \\
 1171322 \\
 2639486 \\
 \times 482 \\
 \hline
 13338922 \\
 21015888 \\
 19853944 \\
 \hline
 7272032252 \\
 \hline
 343752 \\
 4576284 \\
 \times 678 \\
 \hline
 113614372 \\
 38033988 \\
 27457704 \\
 \hline
 3702720552 \\
 111112 \\
 8541657 \\
 \times 382 \\
 \hline
 177303314 \\
 68233256 \\
 25624929 \\
 \hline
 3262912974 \\
 332341 \\
 6815943 \\
 \times 459 \\
 \hline
 1613434187 \\
 134079713 \\
 77263772 \\
 \hline
 3128517834
 \end{array}$$

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In this case, the 5th grade teacher subjects his students to a weekly battery of mathematical operations on old photocopies, akin to those old books with a repertoire of traditional exercises that readers over forty will surely recall (probably with anything but fondness). The student who produced this copy work shows all typical characteristics of high ability (Renzulli rings), and has been so diagnosed by an off-school professional after an episode of depression and school phobia in 2nd grade. But the school will not listen to queries from the family nor opt for any type of intervention aiming at promoting learning other than traditional practices. Only the providential shift of teacher, who showed caring & emotionally intelligent with the child and the family, allowed the student to overcome old hardened barriers and emerge from grammar school quite unscathed.

It's a common complaint from psychologists working in the field of high abilities that school programmes for attending diversity are primarily addressed to students with some sort of learning impairment, so that students with high abilities are left to their own devices —if they ever get diagnosed! Experts are set on the goal to persuade teachers that gifted children *do* need special attention, and to reverse the dominant misconception that because they are smarter, they need no extra support or care in school (Martínez, 2013: 4). Considering that with time these children will often grow emotionally fragile, specific intervention is mandatory if we wish to avoid damage deriving from demotivation, depression and phobia. However, Martínez goes on to report that even in the event that gifted students are diagnosed, schools will not alter their settled protocols for classroom practices, partly on account of the teachers lacking specific knowledge or training, partly on account of the widespread preconception that because they have extraordinary ability, these children do not need special help nor attention (Carreras, Valera & Reig, 2006: 4).

Gifted children are exposed to several hazards if no early diagnosis and the ensuing necessary attention occur:

- Long-lasting tedium and weariness: they learn fast and get bored at customary repeated lessons planned to meet the needs of standard students.
- Low rate of academic motivation as a result of boredom.
- During their first schooling years they tend to dislike coloring inside the lines. Though their plastic outputs are unusually detailed, they may have poor handwriting and spelling skills (Feenstra, 2004: 169 and 179). This can lead to difficulties with teachers who will not tire to correct students who resist instructions to color inside the lines or who show unwilling or uncooperative to go through their entire routine assignments.
- Gifted students often have right hemisphere dominance and therefore they are good at *divergent thinking*, which is a factor of creativity. To some extent, their favourite learning style (visual global processing, intuition, synthesis-oriented, creative, and carefree, skipping whole structuring and tending to light-headedness and lightheartedness) is incompatible with traditional teaching practices (verbal analysis, logical structure, formal and earnest learning contexts). To avoid style

conflicts, schools must be prepared to deal with divergent thinking styles (Feenstra, 2004: 183-184).

- Students with a scholastic talent will often get very good results, because their profile is scholastic-specific, and they have a top-notch memory power that will work fine with input gone through just once, so they produce very accurate outputs almost effortlessly. They may also be prone to boredom in the classroom because they learn very fast. Their very broad range of vocabulary and the discrepancy between their interests and their peers' inclines them to poor social behaviour. They develop high rates of self-esteem on account of their good grades and will often show scornful with peers, which together with their scant study habits and routines —they hardly need them— will make them candidates for likely school failure in the future (Carreras, Valera & Reig, 2006: 10).
- Strained relationship with peers (difference in maturity rates, different interests, different vocabulary range, disparate sensitivity, etc.).
- Down-heartedness and school failure. There is a possibility that these individuals come tangled in social dynamics of marginalization and self-marginalization, and that they develop hazardous patterns of social interaction (Genovard & Castelló, 1990: 122).

Sequels of the school factor

The recently published handbook is mainly addressed to professionals and teachers, main actors in the intervention protocol among the high capacities population. It is desirable that they will read the handbook attentively and will eventually gather the inspiration to act out the advice therein. Teachers can't possibly be satisfied with the training supplied in their years at university, particularly if it dates back longer than 2 decades. They are expected to be engaged in new training as new scientific breakthroughs in the field keep appearing: they are the crux factor to meet the goal of successful school attention of gifted children, just as school attention of impaired children has been standard procedure for long already. It is desirable that at least these children and their families are let through school smoothly, and that the professionals responsible for high ability school intervention in the classrooms (teachers and even psychologists) put to use in their task some extra resources other than old tips and standard preconceptions.

Other extracurricular interventions must be borne in mind: off-school environment, family and community, which may either enhance or thwart the development of a talent (Gardner, 2011: 93). If parents are aware of their child's interests, they should strive to provide him experiences focused on them (trips, outings, visits); teachers, in turn, will do well to promote extracurricular tasks focused on those interest areas to enhance motivation (Feenstra, 2004: 174). Gardner's proposes to generate a school managerial community that will ensure crystallizing experiences to students. Although Gardner is

referring to all cognitive profiles, he believes that this is particularly in point for non-scholastic profile students, as is often the case with gifted children (Gardner, 2011: 107).

It is also highly recommended to work with a view to expand children's attention in the classroom as much as possible. Such intervention benefits all students, and this is crucial: it is often forgotten that interventions aiming at gifted students will nevertheless benefit the whole classroom. The newly published handbook includes a box with plenty of available activities in classrooms for guidance (Martínez, 2013: 42-43).

Other specific intervention strategies are included in the handbook and it would be too long to elaborate on them here (Martínez, 2013: 44-45). For short, interventions can opt for: a) moving the child up one grade (one grade at a time); grouping students of similar ability in the same class, and c) curriculum enrichment. Each of these strategies has its own pros and cons, and some are best suited for talented rather than for gifted children.

Of these, the most attractive one is c), curriculum enrichment, especially if applied in a random fashion. On the one hand, curriculum enrichment (non-standard curriculum activities for the regular classroom setting for the gifted child and age-peers) is the most effective strategy and has the least disadvantages (Genovard & Castelló, 1990: 126-127). In fact, some experts recommend it be applied to the entire intact class, always taking into account the discrepancies between students in the group, and as long as the teacher is able to shift methodologies if need be, and to settle activities open to creativity for the gifted children to express themselves, such as oral presentations, whole class speeches, independent research projects, etc. (Carreras, Valera & Reig, 2006: 16-17). Actually, the ideal teacher is someone willing to expand the usually impoverished content of textbooks.

Random curriculum enrichment entails planning enrichment activities including curriculum and extracurricular ones, but always focusing on the student's interests. The student is in charge of the definition of the project, as supervised by the teacher. This is a highly adjustable and useful resource for all gifted students. It's easy for the teacher to plan work, with little extra effort on his part, and it is highly engaging for students because it allows them to relate to their subjective reality by freely organizing and planning in their own terms (Carreras, Valera & Reig, 2006 : 21). As with the rest of strategies, it will be easily applicable to the entire intact class.

Gardner's teaching proposals go along these lines as well: let students express through their particular cognitive profile their preferences via activities especially designed for this purpose. Neill's Summerhill experience told the same story some decades prior: do not impose scholastic and formal teachings on every student; this way, students with non-scholastic profiles will develop fully their natural possibilities skipping harmful formal or moral constraints (low grades, reprimands of teachers, parents or the social environment). Clearly, Neill was not thinking of gifted students when he developed his liberal teaching approach: by then 'gifted' meant 'endowed with a scholastic talent'. Neill managed to materialise what the schools of today still face as an elusive challenge: he shifted the focus of teachers in their everyday classroom practices, namely, to

discontinue the focus on students' difficulties and rather to enhance the children's abilities. That will allow them to grow to their full extent (Neill, 2010: 68). Such is the goal of random curriculum enrichment.

Feenstra adds some more useful tips on curriculum enrichment (Feenstra, 2004: 178-179):

- Gifted students usually like poetry.
- They like work involving the study of other countries (in general, though particularly social environment and history).
- Activities involving the whole class are most effective.
- Gifted students with low handwriting and spelling skills should be allowed the use of a keyboard. Thus, they'll skip frustration from low grades on writing tasks, and they'll speed up when working with writing assignments.
- They should be encouraged to make oral presentations and speeches in class on topics inside their range of interests.

Teachers must always bear in mind the depth of the content already attained and thus strive to expand it from there. Classes must be dynamic and interactive, and help must be offered to students to plan their projects, their schedules and their work activities. Discrepancies among students in learning styles and emotional approaches must also be brought to the front of teachers' concerns. All this of course will mean extra adjustability required as long as class structuring, time distribution across tasks and sessions, and activity programming and scheduling are concerned. Teachers of gifted students should also be warned not to expect the same enthusiastic engagement or response for every settled task or assignment on a gifted child. Expectations from teachers must be realistic and down-to-earth, with some additional share of flexibility as to topics covered in the project, to planning and to structuring the task, also bearing in mind the student's emotional involvement, present emotional condition, etc. (Carreras, Valera & Reig, 2006: 23-24).

On the other hand, creativity must always be an important factor in the classroom. It should be an essential part of the training of teachers to develop the ability to engage students in creative practices, particularly if dealing with high ability students (because they tend to be on the creative profile). However, that should be applied to all children alike, as creativity is a primary need which, if unsatisfied, triggers boredom and frustration in the classroom (Carreras, Valera & Reig, 2006: 25).

In view of the educational proposals particularly suitable for gifted students, the question is unavoidable: could not they perhaps be also extended to the whole classroom? However true it is that a good proportion of students will put up ungrudgingly with repetitive tasks, repetitive topics and fill-in-the-gaps sort of assignments, it is also true that other alternative activities should be brought into the picture as well, particularly since these may result far more engaging to *all* students. It is sometimes the case that students are so used to those standardly protocolised settled

activities that when faced with other more participatory tasks they feel at a loss and grow fretful. So eventually, that is how traditional teaching methodologies remain deeply—and dearly, as it appears—rooted in schools amongst all groups of agents involved, even amongst students, who get the worst of it! And this is also how all modernising attempts in schools are kept at bay: most times, the pioneering teacher will have to cope with the protesting of his own students that the old traditional teaching protocols be brought back into the classroom!

Indeed, all interventions focusing on gifted children could well be applied to all children in the class, as far as the methodological changes required are introduced. That would certainly improve mainstream education practices and also avoid the drudgery of class work with standard textbooks. If, for example, a gifted child is allowed to improve on his language skills through the writing of a biography of a family member, as supervised by the teacher, that will also perfectly serve, with minor changes and extra effort from the teacher, as a language activity for the whole class, and it will be further preferable over the protocol assignment of activities as settled in the textbook. The baseline is not that creative tasks are reserved for gifted students, who certainly need them; the baseline is that these activities generate further stimulation and engagement in *all* students (however much some may reluctantly resist a shift in methodology and show at first signs of discomfort), so they should be an obligatory element in all teaching practices.

Sequels of the teacher factor

The characteristics of the ideal teacher who will allow for a gifted child to flourish have also been under much debate, subject to the influence of myths and preconceptions. Should he also be a gifted person? Should he rather belong to the traditional teaching stereotype? Certainly, the training available at university is clearly not enough (Feenstra, 2004: 169).

Intervention must be undertaken by a teacher with the most suitable profile, who is knowledgeable in the topic as well as willing to undertake the task ahead. Still, it is preferable that he is not himself a gifted person. He'll ideally show counselling abilities, and should be prepared for the child to grow quickly more knowledgeable than himself in certain areas. His role is to help the child in his search for information and to help him raise the appropriate questions, but he must also be an emotional adviser and offer the child guidance in social plights. The teacher must allow the student freedom enough to take up his own research and to make it grow as best he pleases: scientific research offers consistent data confirming that gifted brains work best when they feel free to control in their own terms the work undertaken (Genovard and Castelló, 1990: 123). The ideal teacher Gardner describes for managing multiple intelligences in the classroom fits perfectly well here too. The teacher's style at social interaction has its own particular outcomes as well: children, as everybody else, have their own personal likings and preferences, so some communication profiles will turn out more challenging

than others without an established pattern. Gardner also underlines the need for the teacher to feel free from curriculum uniformity (Gardner, 2011: 92 and 108; also Feenstra, 2004: 178-185).

The teacher must show certain emotional abilities: gifted students will close up and get stuck simply because they fear failing at the attempts undertaken. He should be able to offer encouragement and understanding and show an inclination to adjust well, always with an eye on the good health of the student's self-esteem. Routinary and repetitive assignments will turn out a dreary and boring burden for a gifted brain, who will be appreciative of a novelty every now and then (Feenstra, 2004: 175). A gifted student will also turn out rather trying for the most uncomplaining of teachers with his unending series of picky questions, so teaching candidates should be prepared to undergo close and critical judgment on the student's part, who may even attempt to correct them! (Feenstra, 2004: 179).

The teacher of a gifted student may have a harder time than any other standard teacher and may need to work a bit harder, but that's the only safe way out: otherwise, teaching a gifted child will be agony! (Feenstra, 2004: 181). Of course, a traditional teacher whose main concerns are orderliness and control in the classroom will not meet the requirements. The teacher must offer a pleasant and secure atmosphere in the classroom and strive to achieve a stimulating environment that best suits such students' needs. He must hold a personal interest in the child, not only in the child's academic landmarks and achievements, and be understanding, respectful and caring of the child's interests. Mostly, he must offer the child guidance to never tire to keep it going and persevering, and to help him hold back from calling it quits whenever the child will get disheartened, as he is sure to easily get (Feenstra, 2004: 180-181). Specific tasks to be carried out by the teacher of a gifted child are the following (Feenstra, 2004: 180-184):

- Offer support for him to develop a realistic idea of himself.
- Offer support to learn to fend off for himself. He will easily feel menaced due to his high sensitivity. He should never be shown as a model for the whole class, since that would trigger unhealthy social interaction patterns.
- Generate an atmosphere of respect in the classroom. Zero tolerance for scornful sneering in school. Promote class work that construes personal differences as an enriching social bonus. Scapegoats in school are always the product of unhealthy social patterns of interaction among children.
- Never hinder his volunteered answers, although it may well be the case that he'll volunteer for all questions posed in front of the classroom! All children must be granted the same chances to volunteer, so he should not be made an exception.
- Speed up or compact certain repetitive sessions and contents to allow him to move up fast. He should not be made to wait for the rest of his peers to catch up with him, since that would make him bored and dreary.
- Offer him tasks of certain responsibility within the classroom routines.

- Provide chances of joint work with other able students. However, most times gifted students will prefer to work on their own, and that option should be respected.
- Make your instructions and explanations to him as short as possible.
- Explain why he needs to keep learning and memorizing certain contents and items by heart.
- Never expect consistent good grades across time in all academic fields. Never push him, since gifted students are very sensitive.
- Provide him opportunities for *divergent* thinking, creativity and originality.
- Do not use the student's poor handwriting skills as a pressure measure; always seek for alternatives.

Again, the reasoning seems inevitable: is this not perhaps the kind of teacher we would wish for *all* our children, whatever their intellectual ability?

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