

# Facing the new paradigm of overgiftedness and other capacities

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The new standard set by the Spanish Education Act is characterised by:

- ▶ A complete turn towards catering for diversity.

A different education from that practised so far, materialised in generalised precise curricular adaptations with permanent interaction within the group, places the classroom in the perspective of the new 21st century educational paradigm following the Bologna Process.

The current priorities are:

- ▶ The diagnosis of the Ministry\*: «A diagnosis of everybody is the first step in the educational process. In Spain there are about 300,000 overgifted pupils in compulsory school, of which only 2000 (0.6%) have been identified. 70% has a poor performance and 35 to 50% drop out.»
- ▶ A university course in a virtual classroom offering specific teacher training.

\* Book report: *Alumnos Precoces, Superdotados y de Altas Capacidades* (Spanish Ministry of Education and Culture, 2000)

Psychometric intelligence and creativity used to be traditionally the key in scientific research on overgiftedness. During the second half of the 20th century, a wide range of studies analysed its distinctive cognitive features, and towards the end of the century it finally became possible to study emotional factors and motivation. The result of this research has led to new standards in neuroscience, neurodidactics and the new paradigm of overgiftedness.

Today we know that education adapted to each pupil increases the number of dendritic branches<sup>1</sup>, creates and multiplies new synapses<sup>2</sup> and increases the amount, quality and functional capacity of neural connections. In other words, the adequate emotional stimulus develops new connections, new functional capacities and allows to settle new ways of learning.

This occurs from the earliest interactions through windows of opportunity, specific, very short-lived windows by which children can be emotionally stimulated so they feel certain emotions in their life, as brain development is not linear but there are specific phases and moments to acquire different knowledge and abilities, which not only creates a context but also affects directly the way the brain is *wired* and interconnected.

### The Spanish Education Act found a specific basis in these scientific definitions, which has meant an important step forward.

As we already know, intelligence can be taught and learned, education is the architect of the brain, overgiftedness is not performance and not properly educated talents eventually disappear.

Ever since J. Renzulli introduced the concept of task commitment, other researchers have studied emotional and motivational aspects. Franz J. Mönks established five emotional-motivational variables in overgiftedness: overall self-concept, overall situation within the group, schooling self-concept, learning style and motivation.<sup>3</sup>

E. Sánchez Manzano placed overgiftedness in an interaction between the cognitive system and emotional factors: affection, sensitiveness, empathy, interests and motivation.

I. Garrido claims: «The new paradigm of overgiftedness and neurodidactics may allow to set an end to the dramatic situation by which overgiftedness is characterised as the overgifted and highly skilled are considered to be the biggest human capital a society has».<sup>4</sup>

In 2005, the University of Girona considered the need of including the latest scientific progress into the old 1972 *International Marland Definition*. With the collaboration of over thirty specialised scientists from different countries, updated definitions were given on a conceptual human intelligence base for the first time, the *High Capacity Definitions, University of Girona, 2005*.

Then, the Higher Council of Experts in High Capacities, with sixty-seven specialised scientists, studied them in-depth, widened and finally adopted them, leading to the current *High Capacity Definitions*.<sup>5</sup>

The Spanish Education Act (LOE) found a specific basis in these scientific definitions, which has meant an important step forward as care for diversity has become the rule.

The Ministry thus expresses it in its document «*Atención a la diversidad en la LOE*» («Care for diversity in the LOE», *Trabajadores de la Enseñanza*, no. 76): «Care for diversity is set as a basic principle in the LOE to which the whole of basic education is subject», and «this kind of education requires individualised planning for everybody but does not oppose group teaching».

The LOE has managed to overcome the ambiguity of previous laws, stating explicitly that «precise curricular adaptation or diversification», specific, known and classified measures are needed, which takes us far from previous wordings the ambiguity of which contributed to what

**Scientific research carried out by the National Institute of Mental Health and the University of Montreal through magnetic resonance imaging on 307 children between 1989 and early 2006.**

(*Nature*, 13 April 2006)

This scientific research shows the different development and the diverse final morphological setup of the brain in overgifted persons.

The difference in cortical thickness in overgifted persons is characterised by a considerable thickening in overgifted children, more common during their first years of life, which allows them to develop a network of neuronal circuits of high-level thinking. Furthermore, a rapid cortical reduction occurs from a time between the age of 12 and 13, which turns their brain more flexible than that of standard intelligent children, who have the highest cortical thickness at 6 years.

In cortical thickness reduction, unused neural connections die (cerebral apoptosis) as the brain gives priority to maturation operations, developing a network of cerebral circuits of high-level thinking.

Finally, the cortex in overgifted persons features a considerably lower thickness than in standard persons.

Other significant differences in the brain of overgifted are a different pruning of redundant neural connections as well as a longer thickening trajectory of the frontal lobule and a strip in its highest end where complex mental tasks are done.

Dr. Luciano Basauri, a neurosurgeon at the Brain Exploration Centre in Chile, concludes: «Early stimulus and interaction with the medium are crucial for brain development. The proof is in those countries having a good educational system in diversity and brain training, which is where the IQ medians are higher than in an egalitarian educational system».

the Ministry has acknowledged as excuses not to tackle education of highest skilled pupils. Besides, the LOE passes accountability from public authorities to schools, increasing their pedagogic autonomy.

The LOE is the first act that not only claims different education for the overgifted but extends it further to specific care of intellectual precocious pupils, those having one (simple talent) or several specific talents (compound talent), with all peculiarities that define a wider concept – pupils with high intellectual capacities.

This group of pupils amounts to at least 5% of all or, put in different terms, an average 1.25 schoolchildren per classroom in primary and 1.5 pupils in secondary school.

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This progress has a basic character, as it is an exclusive competence of national authorities. This is to avoid that regional legislative deployment

relapses to former ambiguity as occurred with the Educational Quality Act.

The different way the brain of highly skilled pupils processes information and goes through the learning process requires specific learning styles, indispensable to them and highly beneficial for the rest. These styles exclude any form of repetitive or mechanical learning. They are synthesised in self-regulated learning that generates new forms of process-oriented thinking instead of such geared to quantitative results. This includes the capacity of learning to learn, which implies monitoring, regulating and controlling metacognition and requires intrinsic and permanent self-motivation and strategic action.

**When teachers adapt the curriculum to their highly skilled pupils properly, including necessary interaction with the rest, they prevent drop-out, foster everybody's performance and place the classroom in the perspective of the new 21st century educational paradigm.**

These specific learning styles are the essence of their precise adaptation to the curriculum as well as the basic foundation of the new learning forms issued from the Bologna process within the European Higher Education Space, the new 21st century educational paradigm emerging in Europe. We even can assert that when an educational system, a school or a classroom come to this new perspective of learning processes, overgifted and highly skilled pupils have no major problem at school.

Also, when teachers adapt the curriculum to their highly skilled pupils properly, including necessary interaction with the rest, they prevent drop-out, foster everybody's performance and place the classroom in the perspective of the new 21st century educational paradigm.

There has always been some time elapsing between obtaining scientific results and their practical application. However, never before had there been such a big gap between scientific knowledge on learning in the brain and educational practice at our schools.

Only the orientation of the educational system towards the findings of scientific research will allow to fight against our persistent school drop-out rates and come close to the standard of Catalan pedagogy in the first third of the last century, when Catalonia was a landmark in Europe and the rest of the world. To do so, society needs to be unafraid from deep change.

However, it is necessary to make progress in knowledge of human intelligence. We need a general theory of the mind based on empirical data and create the science of human intelligence. Projects such as the European Institute of Scientific Intelligence Research<sup>6</sup> require a clear support by the whole society.

## The diagnosis

Emotional factors involved in the formation and development of talent require a complete diagnosis. Previous psychopedagogic assessment needs to be integrated into the differential diagnosis of dyssynchrony and interaction between cognition, emotion and motivation. The Spanish Ministry of Education states: «Catering for diversity requires a previous diagnosis of specific needs of pupils and adequate solutions for each case based on that diagnosis».

The rule of the Ministry –«Professionals with health, not just educational competencies need to take part in the diagnosis of overgifted pupils»– and the opinion of the Department of Health of the Government of Catalonia<sup>7</sup> –«In relation with psychology, only the branch of clinical psychology is considered a health profession»– make up the diagnosis of an administrative area that goes beyond the specifics of educational systems and old monopolistic situations.

## Necessary resources

This new vision of learning processes does not require almost any other resources than those needed for specific teacher training, and the articles 71.2, 72.2 and 72.4 of the LOE provide for financial allocations ensuring the latter.

The recently created online university course for teachers with pupils being diagnosed high skills allows to overcome the gap between the

LOE requirements and actual teacher training based on the old pattern geared to content transmission processes.

The practical part is based on laying out and deploying a precise adaptation to the curriculum of highly skilled pupils and the necessary psychopedagogic organisation of the classroom, oriented towards permanent interaction within the group and processes of self-regulated learning of the new educational paradigm.

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He has been teaching for forty years, initially as a professor, currently teaching highly skilled students at different universities. He is an advisor to MPs in different countries.



## Notes

1. Book report: *Alumnos Precoces, Superdotados y de Altas Capacidades* (Spanish Ministry of Education and Culture, 2000).
2. Expression used by the author to refer to dendrites (from Latin, meaning tree) – short, tubular ramifications through which every neurone receives signals from other neurones.
3. From Greek *travar*, a process to set free chemical substances of the pre-synaptic neurone exciting the post-synaptic by transmitting the information code.
4. Current «High Capacity Definitions». Higher Council of Experts in High Capacities. «L'Educació Intel·ligent», 2008 edition, pp. 246-260 (*Temas de Hoy*).
5. «Com afrontar la infelicitat dels superdotats?». *La Vanguardia* newspaper, 13-03-08.
6. <http://cseac.iespana.es>
7. Opinion issued on 29-07-05, referred to in the International Paper «Learning Styles of Overgifted Pupils». <http://instisuper2.iespana.es>, Area 3, Chap. 3.