



NEXT MONOGRAPHIC

REVISTA COMUNICAR, 60(XXVII)

Monographic 2019.3

How to become a genius

Personalized learning and high capacities in the connected society

Cómo llegar a ser un genio

Aprendizaje personalizado y altas capacidades en la sociedad conectada

Thematic Editors

- **Dr. Sylvia Sastre i Riba. University of La Rioja (Spain)**
- **Dr. Antoni Castelló Tarrida. Autonomous University of Barcelona (Spain)**
- **Dr. Christopher Perleth. University of Rostock (Germany)**

A process of change is taking place in today's society, a change caused by technological innovations that allow a massive, fast and updated access to knowledge. This enables processing a larger amount of information and representing reality by means of more complex mental models, which should lead to higher performance and achievements. It is nevertheless a challenge to the cognitive processes and the underlying brain activity to operate in a manner that suits such technological advantages. Since many recent technologies have no correspondence with traditional knowledge sources, the accepted ways to deal with knowledge should accommodate to the new requirements.

Emerging technologies and new digital spaces interact with our body and mind, though no much research has been devoted to this interesting topic. Such an interaction may improve or, at least, modify our cognitive abilities and the way we exploit the resources of the human brain. High potential brains, hence, should operate in a different manner in order to achieve excellence and generate high quality, exceptional products. Thus, adults considered as 'geniuses' by the outstanding quality of their

contributions will face a different developmental path where their brain resources must adjust to and coordinate with powerful technological cognitive appendices.

Traditional exploitation of the human brain may soon be overwhelmed by the hybrid cognition that combines outstanding brains with the best knowledge-related technology. Many questions arise about how to exploit memory, how to gather information and how to process it; filtering useful knowledge, detecting flaws, integrating large amounts of information, and providing meaning to it, are just instances of the new kind of cognitive processes that are going to be a must to achieve excellence outcomes.

Approach

Throughout history, some unparalleled people have made achievements, which, despite being reduced in number, have had a strong social impact because of their value. These privileged minds have contributed, as adults, with innovative and useful tendencies and products that support substantial progress in a variety of socially significant fields. Examples of such people are: Pablo Picasso, Simone Weil, Steve Jobs, Wolfgang Amadeus Mozart, Martha Graham or Coco Chanel, among others. These people have been considered geniuses because of their high level, creative productivity in their field, a result that involves an optimal development of their intellectual potential, which must crystallise in exceptional performance in adulthood. High intellectual potential does not ensure exceptional adult performance, since only a few are capable of reaching the highest standings. Developmental paths, in the sense of how the brain's resources are used to produce cognitive activity and knowledge, are the key element that distinguishes exceptional achievers from mediocre productivity.

Many researchers are still wondering why the development of a high neurobiological potential, genetically determined, and modulated in its manifestation by external factors, such as motivation, persistence, personality traits, and so on, as well as social and technological factors, produces excellence outcomes in only few cases. There is no doubt that high intellectual assets are a reservoir for societal advance in any kind of field. Notwithstanding, its crystallisation in the highest-level products is not warranted and the appropriate developmental paths become the central concern to be investigated.

Nowadays society has introduced a new external instrument that may aid the expression of high intellectual abilities: the swift advances in computer technology, which permit a wide access to information (and, maybe, to knowledge) stored in the digital space. This new scenario can be considered as a revolution that shifts the way human intelligence is deployed, generating new challenges regarding the use of these instruments for our well-being and the configuration of individual minds that can take advantage of the sustained advances in communication and technology.

A chief aspect of this new social and cultural reality to be kept in mind is that the most sophisticated cognitive processes are rooted in well-articulated knowledge structures. Individual contents must be well represented, but they become knowledge once properly inter-connected. The intellectual resources of an individual do not directly support reasoning; it is rather grounded in the quality of the knowledge structures that this person has built. Therefore, independently from the intellectual potential, reasoning based on weak structures (which lack important nodes, with ill-represented contents or poorly organised) yields mistaken conclusions or, at best, mediocre outcomes. The consequence is two-fold: on the one hand, high ability does not lead to a high reasoning level. It may support fast learning and effective representations, which are necessary components of knowledge, though they still need a lot of organisation, filtering and transformation work. On the other hand, granting access to huge amounts of information can be an advantageous situation or a constraint, depending on how this information is filtered, represented and organised. Mere compilation of data does not produce excel-

lence; on the contrary, it will probably flood the cognitive resources and overwhelm the processing power of any human brain. A genius is someone who is able to convert data into sophisticated knowledge structures that integrate it, making it meaningful, beyond the simple addition of data units.

An obvious consequence focuses on the importance of appropriate knowledge structures that guide and bring order to the abundance of fast moving data supported by the digital revolution. How modern digital technology impacts in high ability crystallisation is therefore a crucial concern, particularly when these technologies were created and materialised by such privileged minds.

In a sense, today, access to information is inexpensive; what is expensive is converting it into knowledge. In the last five years, the number of Internet users that get access through smartphones, instead of traditional computers has increased spectacularly. The pace at which technology spreads in each country is an important consideration, even though mobile devices are the main instruments to grant access to the wide information pool. This means that data in the network (or in the cloud) is gradually being embedded in the cognitive functioning of more and more citizens, alongside powerful communication capabilities. The access point—the smartphone—is a virtual part of its owner's body, available at any time, anywhere.

The use of such personal devices has made citizens of the second decade in the third millennium not only influenced by internet contents, yet also active contributors to the construction of messages in an hyper-connected environment. The communication ecosystem is swiftly evolving to a multi-sensorial interaction, both with contents and other users, thanks to 5G technologies, which are expected to be widespread by 2020. The expectations are that, setting aside the fast data-transfer rates, 5G technologies are going to feed the so-called automatisisation era, considered by many the fourth industrial revolution.

All the available data points at a forthcoming scenario in which digital, physical and biological systems converge. This will imply a media reorganisation involving a substantial shift in human cognition: the hybrid cognition, where biological resources (the brain) will operate alongside technological means in supporting cognition. In any event, those capable of fitting these new opportunities and demands could achieve levels of cognitive performance that surpass the excellence level that has been known hitherto.

Descriptors

- Access to knowledge and generation of geniuses.
- Multi-tasking ability in a hyper-connected society.
- The smartphone generation: cognitive ability and new cognitive resource construction.
- High Intellectual Abilities, connectivity and exposure to stimuli.
- Modern data-technologies, virtual knowledge and their influence on the development of talent and intellectual competences.
- Emerging technologies, virtual environments and creative talent.
- Giftedness, talent and digital technologies: developmental possibilities.
- Geniuses in today's educational context.

Questions

Some of the reflections and interrogations connected with the central issues of this monograph are:

- Are new technological devices and virtual spaces modifying the expression of geniality?
- How are mobile devices affecting the expression and management of intellectual resources?

- How do modern information technologies modify knowledge structures?
- How can talent and intellectual ability related to technological and digital advances be reliably identified?
- Is mobile communication and data access making new cognitive competences emerge?
- What is new in digital, physical and biological convergence?
- What kind of ethical and social debates are triggered by digital, physical and biological convergence?
- Can a new kind of high ability emerge from neurobiological amplification based on virtual environments and data-technology?
- How can society take advantage from multi-sensorial interaction, both inside and outside the classroom?
- How does information technology modulate personal and collective memories?
- Are new technological devices and virtual spaces modifying the expression of geniality?

About the Thematic Editors

Dr. Sylvia Sastre i Riba, University of La Rioja (Spain)

Professor of Developmental and Educational Psychology (University of La Rioja). Her research is directed interdisciplinarily towards the knowledge of early and differential cognitive development, she currently focuses on high intellectual capacity, with national funding and membership in international networks. She has been Vice-Chancellor of International and Institutional Relations (2008-2012) and she is the Head of the Department of Educational Sciences. He coordinates the Doctorate Program "Education and Psychology" and has directed Official University Masters programs such as "Educational Intervention and Innovation" and other Master's Degrees.

E-mail: silvia.sastre@unirioja.es

Google Académico: <https://bit.ly/2liEqFZ>

ResearchGate: <https://bit.ly/2wInpQl>

Dr. Antoni Castelló Tarrida, Autonomous University of Barcelona (Spain)

Senior Lecturer of Developmental and Educational Psychology (Autonomous University of Barcelona). His research focuses on the foundations of high intellectual ability, cognitive functioning and knowledge structures, developing computer tools to access these structures. His publications and research carried out during the 80s and 90s have had a notable influence on numerous research groups in Spain, as well as intervention programs generated from different Autonomous Communities.

E-mail: toni.castello@uab.es

ResearchGate: <https://bit.ly/2lijMGa>

Dr. Christopher Perleth, Rostock University (Germany)

Professor of Special Educational Psychology (University of Rostock), degree in Psychology, Mathematics and Theology (LMU University of Munich). The research interests are: high intellectual ability, intellectual functioning, diagnosis, tests development, educative intervention on high intellectual ability. Co-author of the High Capacity Multidimensional Model with Dr. Heller and the "Dynamic Intellectual Performance Model" of Munich. Member of the scientific committee of the Austrian Center for Research and Support for Giftedness and Talent (ÖZBF), etc., and member of the International Panel of Experts in Gifted Education in Europe (IPEGE). President of the "Arbeitskreis für Begabtenförderung und Begabungsforschung e.V (ABB)".

E-mail: christoph.perleth@uni-rostock.de

Web: <https://bit.ly/2lpRfKQ>

ResearchGate: <https://bit.ly/2L14Qty>

Instructions and submission of Proposals

Editorial Guidelines:

www.revistacomunicar.com/index.php?contenido=normas&idioma

Proposals for the Monographic through the Plataform: OJS

<http://recyt.fecyt.es/index.php/comunicar/login>

Key dates

Start date for sending articles: 2018-06-01

Deadline for sending articles: 2018-12-30

Publication date:

Preprint version: 2019-05-15 / Print Version: 2019-07-01

Website:

www.revistacomunicar.com

Institutional Coeditors
