

# **Gifted Education from a Systemic Perspective**


## **The Importance of Educational Capital and Learning Capital for the Development of Actiotopes**

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# Outline

- Gifted education: We need a paradigm shift
  - Some evidence that we need a systemic approach
  - Development of excellence: Three basic findings
  - Educational and Learning Capital
  - An empirical study
  - Summary
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# Aladdin's magic lantern

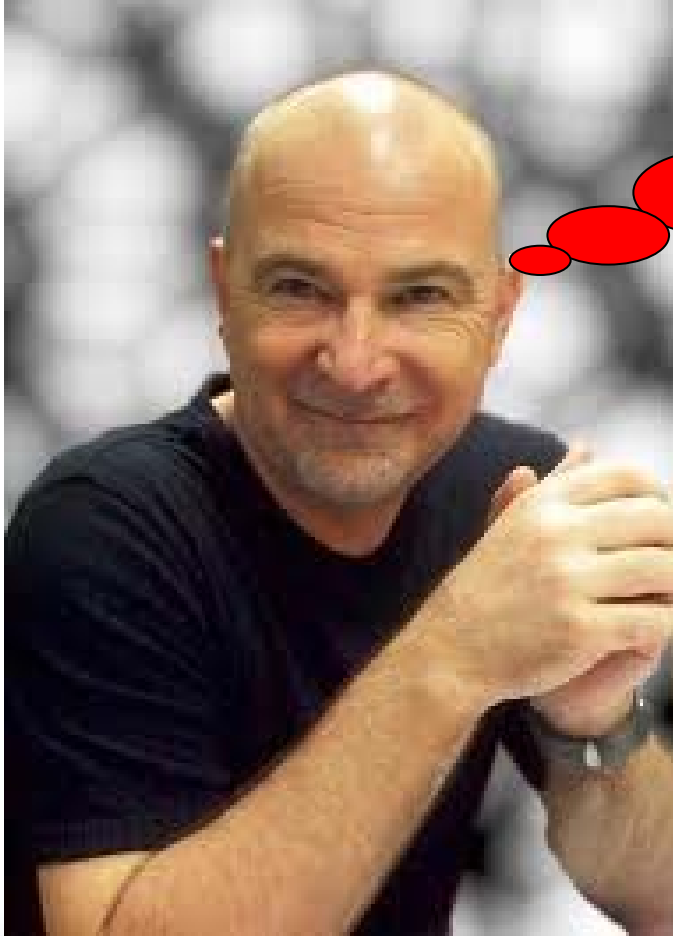




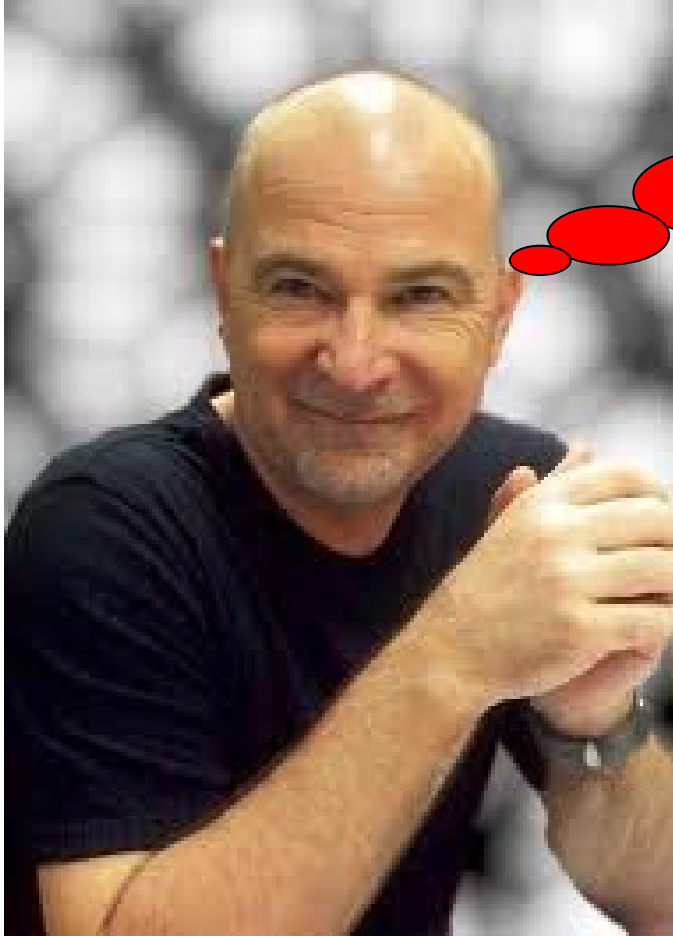
**I am the giftedness genie that will grant you not only three, but ten wishes. You can use them to maximize the number of persons attaining excellence in your country.**



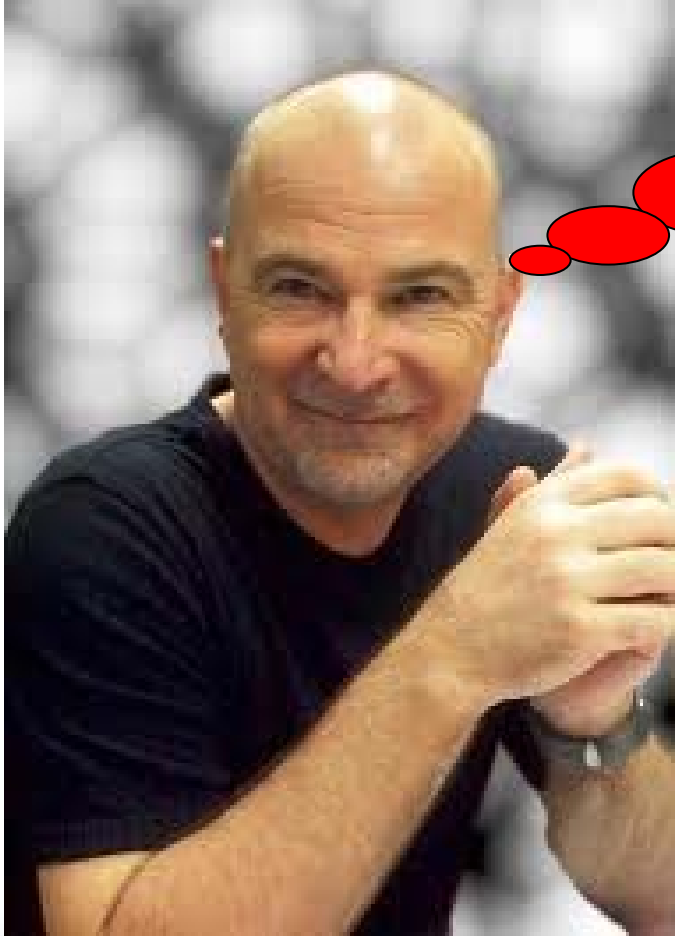
**You can wish five gifts for the  
social systems in your country  
and five gifts for the individuals  
of your country**



**For the social system?  
Plenty of schools for the gifted,  
many teachers specialized in  
gifted education and enrichment  
programs?**



**For the individuals?  
Intelligence, creativity,  
learning strategies?**



**For the individuals?  
Intelligence, creativity,  
learning strategies?**



**Got ya! 😊  
Reconsider giftedness and  
then try again!**

Traditionally, giftedness research has focussed exclusively on the individual. The desire was to know whether and how a certain person could achieve excellence.

But what about these  
questions?

How high is the probability that in the next 30 years a woman from China will win the Nobel Prize for physics?


How high is the probability that a ski jumper from Saudi Arabia will win a medal in the Winter Olympic Games of 2014 in Sotschi?

How high is the probability that in the PISA results of 2018 the average performance in mathematics in the 97th percentile of British pupils will lie above the average performance of the 97th percentile of French pupils?

Answering these questions is beyond an individualistic approach – but they might just be the type of questions your Minister of Education would ask you.

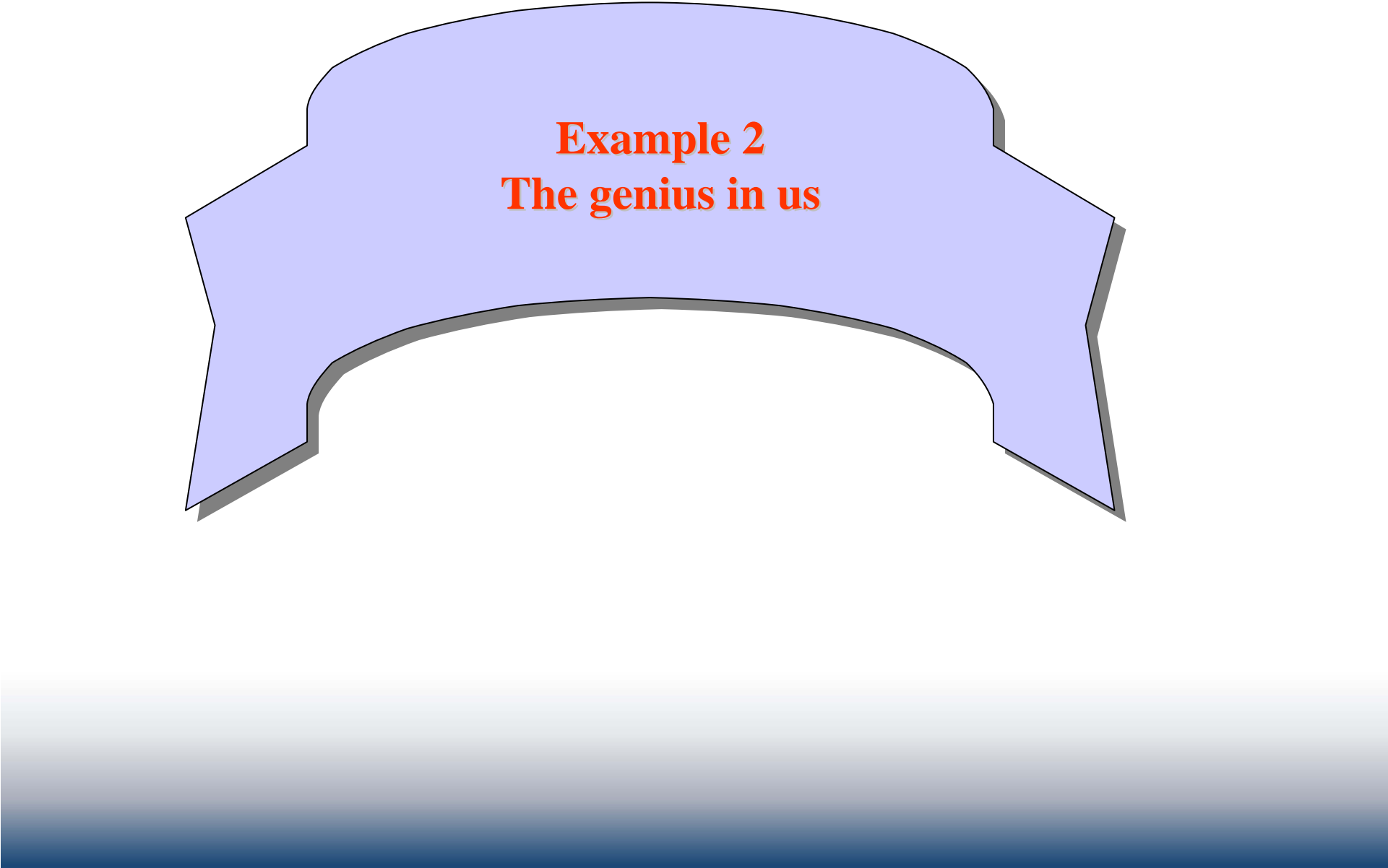
A systemic approach is needed that comprises individuals **and** their (social) environment

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**Example 1**  
**The individual and his/her context**



**Example 2**  
**The genius in us**

### **Example 3**

**Brought up in a challenging environment: The role of adaption**

Persons acquire specific action repertoires in challenging contexts.

Thus, we have to go beyond the individualistic approach and have to consider the acting individual **and** the specific environment with which he/she interacts in his/her actions.

## **Definition of an Actiotope:**

**An actiotope consists of the acting individual and the environment with which he/she interacts in his/her actions.**

[Of course, over the course of the development of excellence, actiotoxes change dramatically.]

## **Components of an Actiotope:**

**1 Action repertoire**

**2 Goals**


**3 Environment**


**4 Subjective Action Space**




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- It takes at least 10 years or 10,000 hours of deliberate practice
  - The number of individual learning episodes might well be over 2,000,000
  - Surprising is their largely negative – and to some extent downright aversive – quality as experiences
- 

## Questions you might ask:

- How can some persons succeed in directing their actions steadily over such long periods, when they experience these actions negatively in great part?
  - What keeps this process alive?
- 



**What gifts do you want?**

**My answer:  
The wise investment in  
Educational Capital and  
Learning Capital**

**Gifts for the social systems:**

## **Educational Capital**

Educational capital are all resources available in a society which can (but needn't be) employed for improvement of education and learning. (Please note: Also individuals have access to educational capital)

**Gifts for the individuals:**


## **Learning Capital**

Learning capital include all resources which are exclusively accessible to individuals for improvement of education and learning.

## **Educational Capital**

1. Economic educational capital
2. Cultural educational capital
3. Social educational capital
4. Infrastructural educational capital
5. Didactic educational capital

## **Learning Capital**

1. Organismic learning capital
  2. Actional learning capital
  3. Telic learning capital
  4. Episodic learning capital
  5. Attentive learning capital
- 

**Economic Educational Capital** is every kind of wealth, possession, money or valuables that can be invested in the initiation and maintenance of educational and learning processes.

Have you ever wondered why

- Nobel Prizes for science are won exclusively by researchers from institutions in economically strong countries with high per capita gross national product?
- There is a strong correlation of parents' income and giftedness of their children?

**Sample item:** I had enough money to my disposal that I could pursue my PhD without a side job.

**Cultural Educational Capital** includes value systems, thinking patterns, models and the like, which can advantage – or hinder – the attainment of learning and educational goals.

Examples:

- Golden ages (Bach, Beethoven, Mozart, Haendel, Schubert, Haydn, Wagner)
- Women usually have negative Cultural Educational Capital in the STEM fields (stereotype of the “untalented women”)

**Sample item:** My parents always believed that girls and boys are equally talented for STEM.

**Social Educational Capital** includes all persons and social institutions that can directly or indirectly contribute to the success of learning and educational processes.

Examples:

- Teachers, trainers, mentors, ambitious parents
- Women usually have also negative Social Educational Capital in the STEM fields (e.g. They invest more time than their partners in domestic work)

**Sample item:** Whenever I needed social support I could get it.

**Infrastructural Educational Capital** means all materially implemented possibilities for action that permit learning and education to take place.

Examples:

- A sports field in the neighbourhood increases the probability that a child will come there to play football; a nearby swimming pool raises the chances that a child will learn to swim.
- Preschools with high-quality play and learning materials, schools with learning media, institutions of tertiary education facilities, research centres.

**Sample item:** A university where I could do my PhD was close to the place where I used to live.

**Didactic Educational Capital** means the assembled know-how involved in the design and improvement of educational and learning processes.

Example:

- For almost all domains that attract enough interest, in recent decades the average and top performance levels have risen. These rises are due not least to enormous increases in Didactic Educational Capital (improved training methods, superior teaching planning, perfected instruction techniques, pedagogically better organised learning feedback, more finely structured learning sequences, etc.).

**Sample item:** The lectures of my professors were of outstanding quality.

**Organismic Learning Capital** consists of physiological and constitutional resources of a person.

Examples:

- The body of a person is an important constituent of every learning process. This seems trivial for what regards sports, in which health, conditioning, flexibility, endurance, power, etc. are the all-important determinants of effective training.
- Bodily fitness is however also an important precondition for top-level cognitive activity (e.g. Bellisle, 2004; Gottfredson, 2004).

**Sample item:** I was in such a good shape that I could learn for a long time without losing my concentration.

**Actional Learning Capital** means the action repertoire of a person – the totality of actions they are capable of performing.

Examples:

- Persons differ as to what actions they could possibly carry out at a given point in time. That can be organismically grounded, for example, in differences in mobility, power or endurance.
- These interindividual differences can however also rest on differences in procedural or declarative knowledge. Research studies have shown that the current action repertoire of a person is an excellent predictor of later performance

**Sample item:** I knew a lot of learning strategies.

**Telic Learning Capital** comprises the totality of a person's anticipated goal states that offer possibilities for satisfying their needs.

Examples:

- Goals are helpful for the creation of favorable framework conditions of learning (e.g. planning rest-periods, so that the next learning step is undertaken in a condition of optimal fitness; setting up a functional workplace).
- Functional learning goals promise greater competence growth (cf. The functionality of learning goal vs. performance goal orientations)

**Sample item:** From the very beginning of my university studies I had the goal to become an excellent student.

**Episodic Learning Capital** means the simultaneous goal- and situation-relevant action patterns that are accessible to a person.

Examples:

- Automatic actions, accessible solution routines or intuitions.
- In sports it has been demonstrated that experts better recognise and remember strategic moves, are better able to anticipate actions of their opponents on the basis of their relevant experience, and to structure flexibly and highly functionally the typical temporal progressions of play and their consequences.

**Sample item:** I know my learning style very well and was therefore able to come up with excellent learning plans.


**Attentive Learning Capital** denotes the quantitative and qualitative attentional resources that a person can apply to learning.

Examples:

- No distractions from your talent domain.
- It is a characteristic of an increasing development of excellence, that ever better attentional performance is achieved.

**Sample item:** I had no distractions and could focus solely on my university studies.

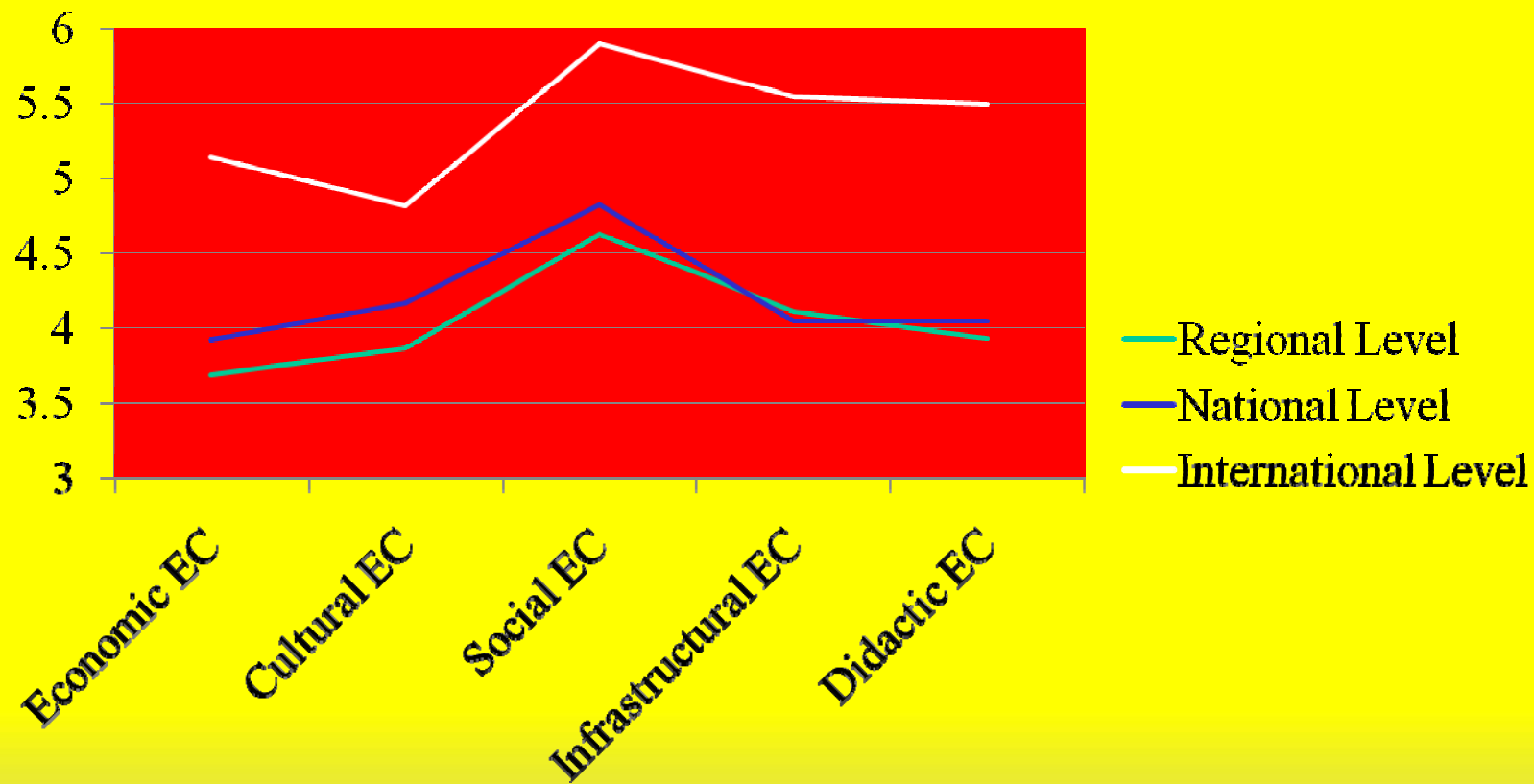
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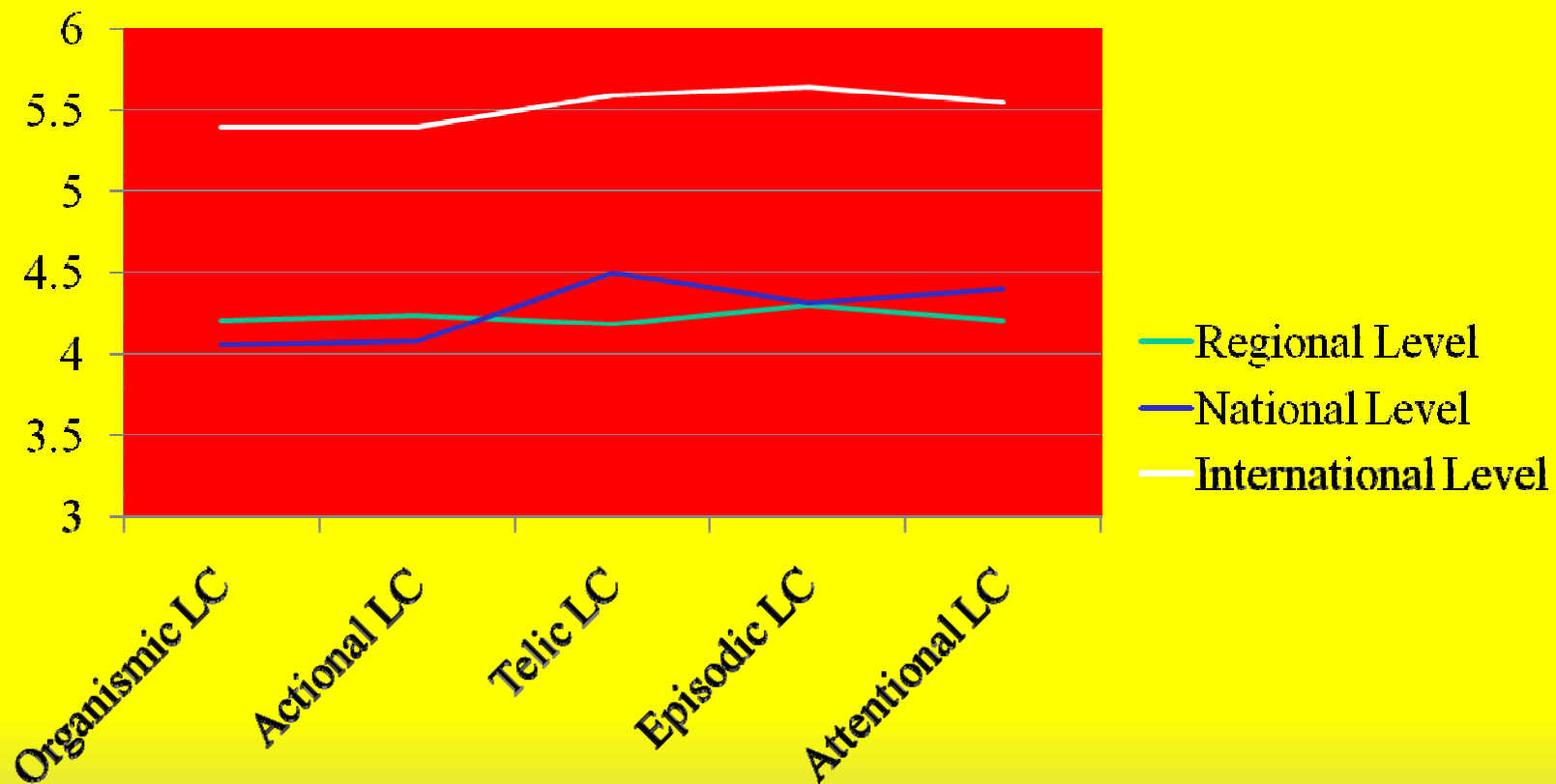


**Educational Capital of  
Swimmers at a regional,  
national, and  
international level:  
Results of an empirical  
study**


# Educational Capital of Swimmers at a regional, national, and international level




# Learning Capital of Swimmers at a regional, national, and international level

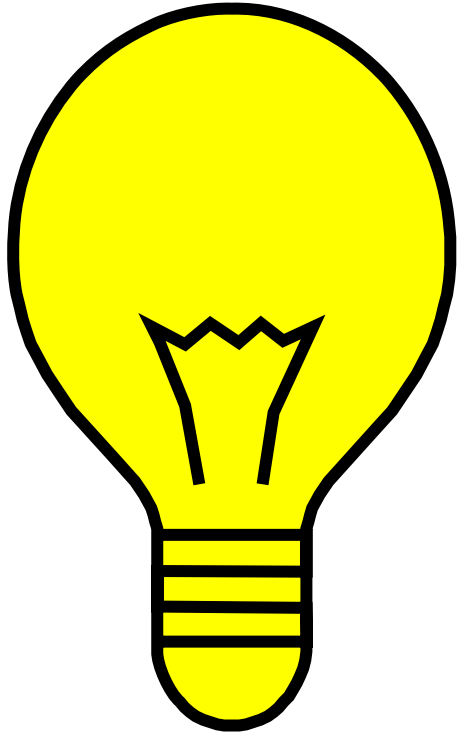


Very similar results (all to be presented at the IRATDE conference in Saudi Arabia):

- Successful students (grades 8-10) vs average students
  - Female professors in STEM and equally successful peer female university students who didn't pursue a PhD
  - Top musicians vs average musicians
  - Top runners vs average runners
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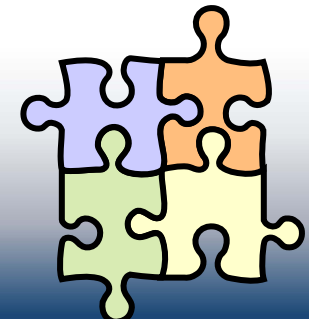
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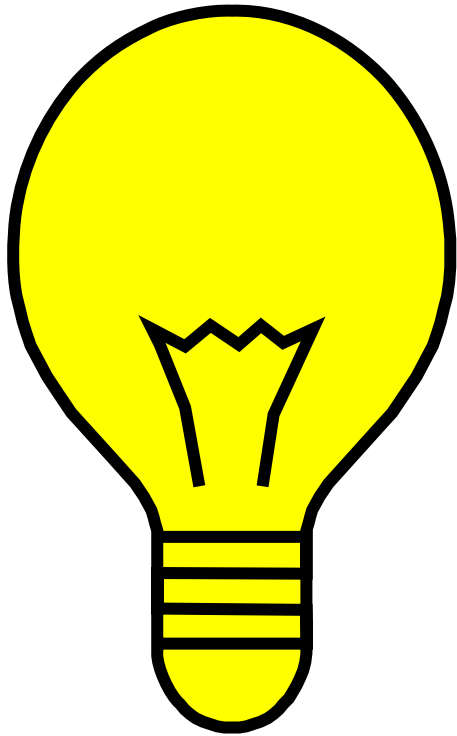
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**We need a paradigm shift?**

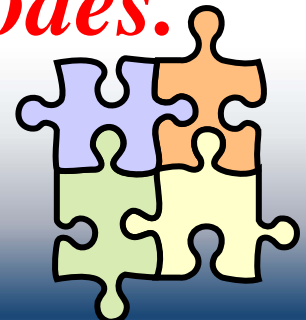
*The individual and his/her environment are of equal importance. Actiotopes are the basic units of gifted education.*

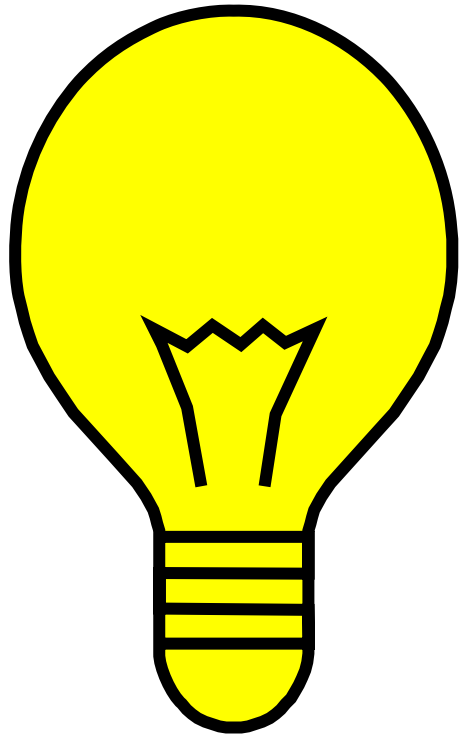




**What are the basic mechanisms in the development of excellence?**

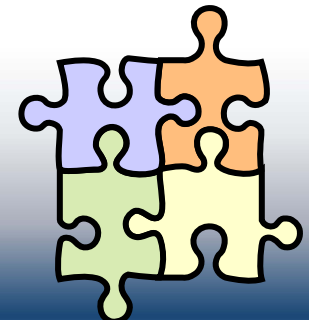
*The adaption to challenging environments and the regulation of an enormous number of learning episodes.*

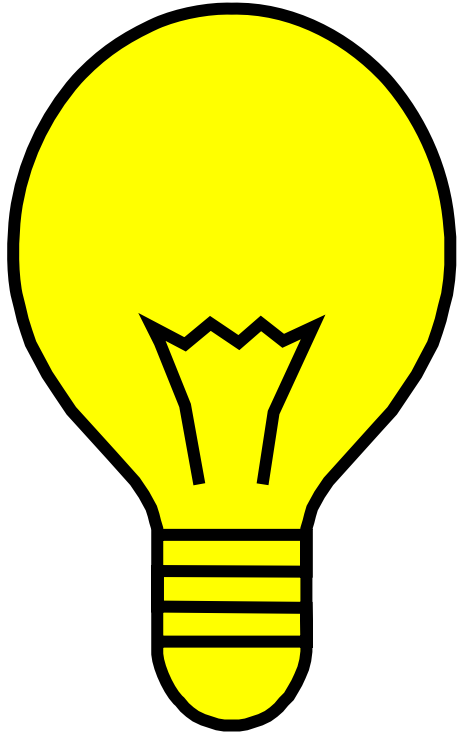




**What is regulated?**

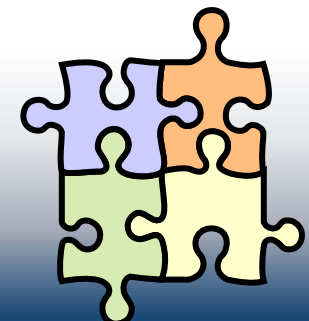
*The principle of co-evolution  
of actinotripe components*

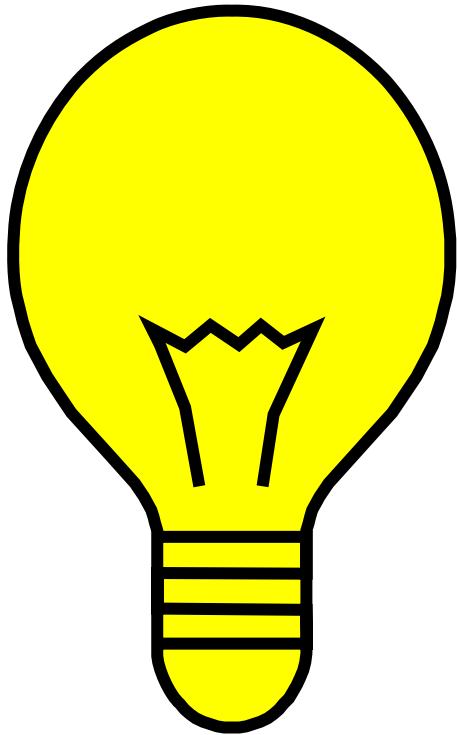




**Who should control the regulations?**

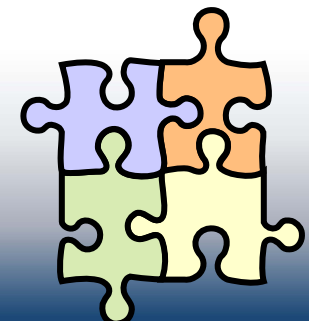
*The principle of dynamic-interactive regulation*

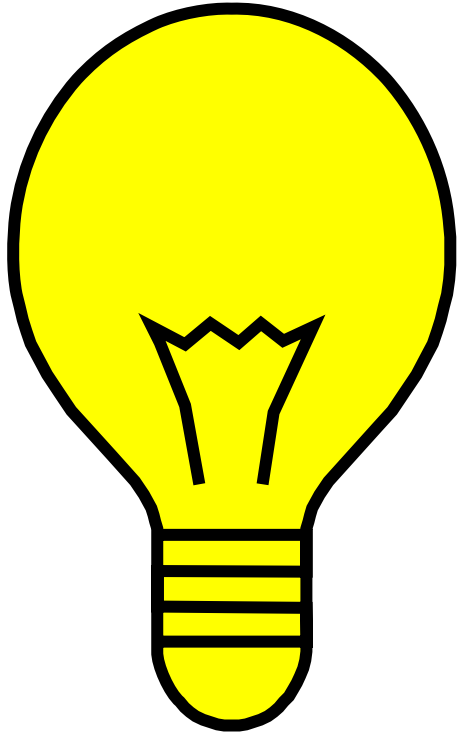




**What resources do regulations require?**

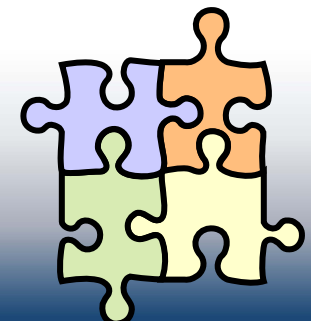
*The principle of capital orientation*





**What is the chronological horizon of gifted education and support?**

*The constructivist or learning path principle*



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