

## CREATIVE THINKING: LEARNING FROM A NEW PERSPECTIVE

Rui Braz<sup>1</sup>, & Ana Lúcia Luís<sup>2</sup>

<sup>1</sup>IPAM – Instituto Português de Administração de Marketing - Lisboa (Portugal)

<sup>2</sup>ISG – Business & Economics School (Portugal)

### Abstract

Creative thinking is one of the most fundamental human skills. It is an essential requirement in a globalized and ever-changing world. The new technological era will present challenges that did not exist previously and require us to be focused on finding new answers through creative thinking and disruptive and innovative lines of thought. Creative thinking is a mental process that involves generating new and original ideas, concepts, and solutions. It is the ability to see beyond the obvious and explore innovative possibilities. It spans all areas of life, from solving everyday problems to pushing science and technology forward. The selection of creativity as one of the skills assessed in PISA 2022 is significant. It indicates that creative thinking is of growing importance and value in the education of young people. The motivation for this paper emerged with the results of PISA 2022, where Portugal was among the 12 countries above the OECD average in creative thinking. This work aims to analyze and reflect on the importance of this performance. The necessary debate is not so much about the importance of creativity but how education can adapt to new forms of learning to stimulate students with creative skills. By comparing the results of various countries and analyzing current Portuguese educational policies, we concluded that, despite the encouraging results for Portugal, there is still a lot to be done to enhance creative thinking in the school context. From teacher training to curriculum changes, new approaches are required.

**Keywords:** *Creative thinking, education, PISA, skills.*

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### 1. Introduction

PISA 2022 (Programme for International Student Assessment) evaluated creative thinking for the first time, recognizing it as a vital competence necessary for young individuals and adults to navigate and adjust to the complexities of contemporary society and the labor market of the 21st century. Since 2012, PISA has focused on assessing key competencies relevant to this century, alongside the traditional three core subjects: Mathematics, Reading, and Science. In 2012, it included problem-solving, followed by collaborative problem-solving in 2015, global competencies in 2018, and now, in the 2022 assessment, it has examined the creative thinking abilities of 15-year-olds across 64 countries and economies worldwide.

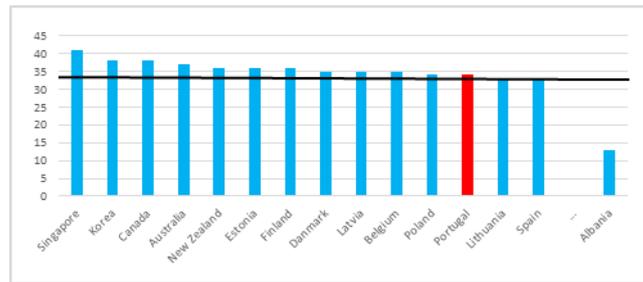
Creativity can manifest in numerous ways, but the literature usually distinguishes between *big-C* and *little-C* (Csikszentmihalyi, 2013, Simonton, 2013). The *little-c* type of creativity represents the ability to solve small everyday problems that result from our capacity for change. On the other hand, *big-c* creativity is something quite different and rarer, which occurs when someone creates something that has a significant impact on people's lives. The PISA 2022 framework defines creative thinking as the ability to actively participate in generating, assessing, and refining ideas, which can lead to innovative and effective solutions, the creation of new knowledge, and significant expressions of creativity (OECD, 2024). This interpretation of creative thinking corresponds to the concept of *little-C*, which reflects the capabilities of 15-year-old students about everyday contexts, distinguishing it from creative thinking specific to particular fields, such as the arts.

### 2. Key results for Portugal

Portuguese students' results were above the OECD average (33 points), achieving a performance of 34 points on a scale of 0 to 60 points. In the total sample of 64 countries, the highest score belongs to

Singapore with 41 points, a significantly higher score than all the others, and the lowest to Albania, with just 13 points (Figure 1).

Figure 1. Performance in Creative Thinking.



Three large groups of countries can be observed: 12 countries with a statistically significant score above the OECD average, including Portugal, 8 countries whose score is not statistically different from the average, and 44 countries that are statistically below average. The 12 countries performing above the OECD average are, in descending order: Singapore, Korea, Canada, Australia, New Zealand, Estonia, Finland, Denmark, Latvia, Belgium, Poland, and Portugal.

It was expected that countries with the best results in the core subjects (OECD, 2023a) would also have better results in creative thinking. Portugal was the exception, showing a lower correlation between core subjects and creative thinking than the average for OECD countries (Table 1). Of the 12 countries that perform significantly above the OECD average in creative thinking, Portugal is the only country not above the OECD average in any of the other core domains assessed.

Table 1. Correlation in performance among creative thinking, mathematics, reading and science OECD average.

| Correlation between: |         |         |                   |
|----------------------|---------|---------|-------------------|
| Mathematics          | Reading | Science | ...and...         |
| 0.67                 | 0.66    | 0.66    | Creative thinking |
|                      | 0.80    | 0.87    | Mathematics       |
|                      |         | 0.80    | Reading           |

Source: OECD (2024).

According to the PISA report, 83 percent of Portuguese students reach the basic level of creative thinking (78 percent in the OECD) and 29 percent reach a high level of proficiency (27 percent in the OECD), demonstrating the ability to create, evaluate and improve original and diverse ideas for a range of different tasks set in more complex and abstract contexts. Nine out of ten Portuguese students believe that it is possible to be creative in any field and that creative thinking is not exclusive to the arts. In OECD countries, on average, this number is around seven out of ten students. A high percentage of Portuguese students have a very positive attitude towards teaching practices in the classroom: 71 percent believe that teachers give them enough time to develop creative solutions to tasks, 76 percent that they encourage them to give original answers, and 80 percent that they value the creativity shown in the classroom.

The differences in gender and socio-economic status follow the pattern of the OECD averages (OECD, 2023b). Girls always perform better than boys in creative thinking (2 points higher in Portugal and 3 in the OECD) and students from favored socio-economic backgrounds perform better than students from disadvantaged backgrounds (a difference of 9 points in Portugal and 9.5 in the OECD). As in the core domains, Mathematics, Reading and Science, socio-economic status is always a strong indicator of performance in creative thinking.

Despite their good performance, Portuguese students show much lower participation in creative activities at school when compared to the OECD average. Less than 15 percent of students participate at least once in art classes, creative writing or debate clubs. Only 10% of students participate at least once a month in theatre clubs, music-related activities, science clubs, school newspapers, etc. Despite the low level of participation in creative activities at school, creative thinking is one of the transversal competencies included in the *Students' Profile by the End of Compulsory Schooling* (Martins et al., 2017). This document seeks to establish a unified framework for all schools and educational programs in Portugal, within the realm of compulsory education, particularly concerning curriculum development, planning, execution, and both internal and external evaluations of teaching and learning processes. The mention of a profile is not intended to promote uniformity; instead, it serves as a reference point.

### 3. Public policy for education

In Portugal, educational policies to encourage creativity are practically non-existent. Two major shortcomings have been identified. Firstly, there is limited space for creative teaching in the curriculum. This can be fostered by taking advantage of opportunities arising from the formative work promoted in existing subjects such as Maths, Philosophy, Biology, Literature, etc. There is no benefit in adding new subjects to existing ones, so as not to further overload already heavy school time schedules. Secondly, to bring creativity into the classroom, teachers need specific training. With the right training, they may be able to change their classroom strategy to include humor, games, teamwork, creative reading, etc. systematically. By teaching more literature or more mathematics in a prescriptive and repetitive way, reducing free time and reinforcing the content of young people's workload, we are not better preparing young people for the skills required in the 21st century. With the rise of artificial intelligence (AI), any machine can carry out these tasks quickly and easily, relieving students of the time-consuming tasks associated with repetition and routines. AI is programmed to process data, find patterns, and optimize results according to algorithms and logic but lacks creativity, which is an intrinsically human characteristic. Creativity is a complex process, involving the ability to achieve divergent thinking, and originality. It involves breaking patterns in thinking and taking risks. This is why encouraging creativity in a school context gives us a glimpse of what the future will be like in this third millennium. The existing school education policy in Portugal overestimates school rankings and the final results of the so-called noble subjects obtained in national exams, which are by definition uniform and standardized. When certificated assessment becomes the objective by which training work in schools is defined, creativity is excluded.

### 4. Conclusions

In Portugal, creative thinking is not explicitly included in the curriculum or teacher training, even though it is an area of competence in the Students' Profile by the End of Compulsory Schooling. Public education policies in Portugal need to change to promote the development of creativity in the school environment. Despite the encouraging results in the context of creative thinking, there is still a long way to go. Learning from a new perspective will be imperative to navigate the complexities of the 21st century.

The selection of creativity as one of the skills assessed in PISA 2022 is significant. It indicates that creative thinking is of growing importance and value in the education of young people. Creativity is expected to be among the most valued skills by employers and is projected to experience a notable rise in demand in the upcoming five years (Di Battista, 2023). A new paradigm is therefore needed in which education adapts to new forms of learning. AI lacks the human emotions necessary for creativity. To program AI, capable of freeing us from routine and standardized tasks, and leaving room to use time in a more creative and meaningful way, human creativity is essential.

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