



FLASH MIND

White Paper

A project funded by Erasmus+ programme



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INTRODUCTION

This white paper, produced within the Erasmus+ project FLASH MIND, aims to explain the framework where the project ideas has been developed.

The framework is composed of:

- state of play of national contexts and strategies with regard of achievement on basic skills;
- proposal of educational strategies to boost inclusiveness and provide students and teachers with complementary tools;
- explanation of the rationale and the pedagogical approach behind the educational materials produced within the project.

Edulog (France), EELI (Greece) Euphoria (Italy), Les Apprimeurs (France), Logopsycom (Belgium) and UPIT University (Romania) jointly contributed to the White Paper. Each partner – Les Apprimeurs on behalf of France – wrote the sections dedicated on its own country.

**All the project's results are available
on the project website:**

WWW.FLASHMIND.EU



PROJECT IDEA, ITS VISION, DEVELOPMENT OF OUTPUTS AND ACTIVITIES

VISUAL PEDAGOGY FOR LEARNING!

Did you know that more than half of all pupils have a so-called "visual" memory? And that this memory is even more effective if several

senses are used at the same time?

Based on this observation, we have created Flash Mind, a learning platform for secondary schools based on the principles

of visual education.

Dozens of customised lessons in science, math and reading, and thousands of flash cards to help you revise while having fun!



FLASH... WHAT?

The principle of flash cards is simple: two related pieces of information are written on the front and back of a card. For example, the name of a country and its capital, a mathematical operation and its result. The information can also combine media: text + image; image + sound, etc. Memorization is achieved by repeating and presenting the information in different combinations until it is fully assimilated. A simple and highly effective revision tool.

FLASH MIND: THE CHOICE OF AN INCLUSIVE PEDAGOGY

Because all students are different and each one has his or her own

learning pace, the Flash Mind courses are designed to address key points of a concept in an interactive and visual way, alternating teaching sequence, self-assessment and revision.

The visual adaptation of abstract concepts is a particularly effective tool for students with learning difficulties such as specific learning disorders (SLD).

And to go further in supporting students, practical sheets have been produced by our teams of teachers, speech therapists and experts in inclusive education to help personalize the learning pathways for students. They can also be freely consulted and downloaded from the website.

To go further: create your own learning paths and flash cards

The Flash Mind platform has been designed to be 100% adaptable and customisable. It is possible to create your own learning paths or series of flash cards. Tutorials are available on the website.

A PROJECT FUNDED BY THE ERASMUS+ PROGRAMME

Flash Mind (2019-1-EN01-KA201-063156) is a collaboration between 6 partner organisations, funded by the Erasmus+ programme over two years (December 2020 - February 2022). All resources are freely available in English, French, Greek, Italian and Romanian.



PART 1



CONTEXT AND CHALLENGES OF LEARNING BASIC SKILLS

Flash Mind proposes a set of educational materials and resources to support the development of basic skills, e.g. reading, mathematics and science, with an inclusive and innovative approach.

WHY ARE BASIC SKILLS KEY?

They are the key knowledge and skills essential for full participation in society, personal fulfilment and development,

employability, social inclusion and active citizenship.

Basic skills are used in our daily life, and we build them from a very early age. As soon as we start to read, write and learn, we are building

basic skills. We also use basic skills to learn other skills.

Basic skills are the ground to build our educational and professional paths, and to play a role in the society.



DATA FROM EUROPEAN UNION AND OECD

The importance of basic skills is endorsed at European level, with the EU setting the objective that less than 15% of 15-year-olds should be classed as 'low-achieving' in basic skills by 2020, in the framework for European policy cooperation in education and training (ET 2020).

Since 2000, OECD recognized the key role of basic skills in education and in society, launching a Programme called PISA (Programme for International Student

Assessment) which measures 15-year-olds' ability to use their reading, mathematics and science knowledge and skills to meet real-life challenges.

The assessment takes place every 3 years and it measures the effectiveness of educational systems. The aim is to compare the performance of students from different learning environments in order to understand what best prepares them for adult life.

PISA's results are meant to drive the policy makers' choices and shape national education reform.

The latest 2018 PISA results show some notable data: more than one in five pupils in the EU has insufficient proficiency in reading, mathematics or science.

In 2018, the underachievement rate stood at 21.7% in reading, 22.4% in mathematics and 21.6% in science. Over the 2009-2018 period, performance in science and reading deteriorated at the EU level, while remaining stable in mathematics.

These figures reveal that there is still a significant room for improvement in the educational development of basic skills.



COUNTRIES' PERSPECTIVE ON BASIC SKILLS

Let's have a closer look at the state of play of basic skills in the countries involved in the project: Belgium, France, Greece, Italy and Romania. We will take into consideration the latest PISA survey carried out in 2018, whose results were published later in December 2019. The next PISA assessment was expected in 2021, but OECD members decided to postpone it to 2022 due to the post-Covid difficulties.

BELGIUM

In Belgium, the competence level of pupils/students in basic skills is well above EU-average but has decreased in the Flemish Community, while it remains around the EU-average in the French Community. International (PIRLS) and community-level



assessments show a long-term decrease in basic skills. While nationally the PISA2018¹ average outcomes remain above the EU average in reading, mathematics and science, they confirm the long-term downward trend, especially in the Flemish Community for all basic skills and all types of achievers. In the French Community, average outcomes have remained relatively stable compared to 2015, closing the gap with the decreasing EU average. Specifically, according to the PISA 2018 results report, Belgium achieves:

In **reading literacy**, 15-year-old score 493 points compared to an average of 487 points in OECD countries (Level 3 proficiency in reading). Girls perform better in reading than boys with a difference of 22 points (OECD average: 30 points higher for girls). Socio-economic and cultural status explains 17,5% of the variance in reading performance in Belgium (OECD average: 12%). The average difference between advantaged and disadvantaged students in reading is 109 points, compared to an average of 89 in OECD countries. However, 9% of disadvantaged students are academically resilient (OECD average: 11%).

In **mathematics**, on average, 15-year-olds score 508 points compared to an average of 489 points in OECD countries (Level 3). Boys perform better than girls in mathematics, by 12 points of difference (OECD average: 5 points higher for boys).

In **science**, the average performance of 15-year-olds is 499 points, compared to an average of 489 points in OECD countries (Level 3). Boys perform better than girls in science, with a difference of 5 points. OECD average shows that girls perform better than boys with a difference of 2 points. The shares of low and high achievers in basic skills show that the Communities have difficulties combining both equity and excellence. Nationally, about one out of five 15-year-olds is underachieving in science (20%), reading (21.3%) and mathematics (19.7%) (European Commission, 2019a). While the Flemish Community ranks second in the EU for the share of top achievers in all three subjects, at national level low achievers in all three domains – those failing to meet minimum standards required in all three subjects - represent 12.5% ⁽²⁾ (above the EU average of 11%) ⁽³⁾. Reading has worsened in all three communities, while there were some improvements in mathematics and science in the French Community⁴. However, mathematics and science remain above the EU and national averages. In the Flemish⁵

1. OECD (2019), PISA 2018 Results (Volume I): What Students Know and Can Do, PISA, OECD Publishing, Paris, <https://doi.org/10.1787/5f07c754-en>

2. PISA (OECD), 2018, table BI.B1.27.

3. EU average without Spain.

4. Mathematics (22.8%; -1.2 pps), science (22.6%; -0.5 pps), reading (23.8% ; +1.2 pps).

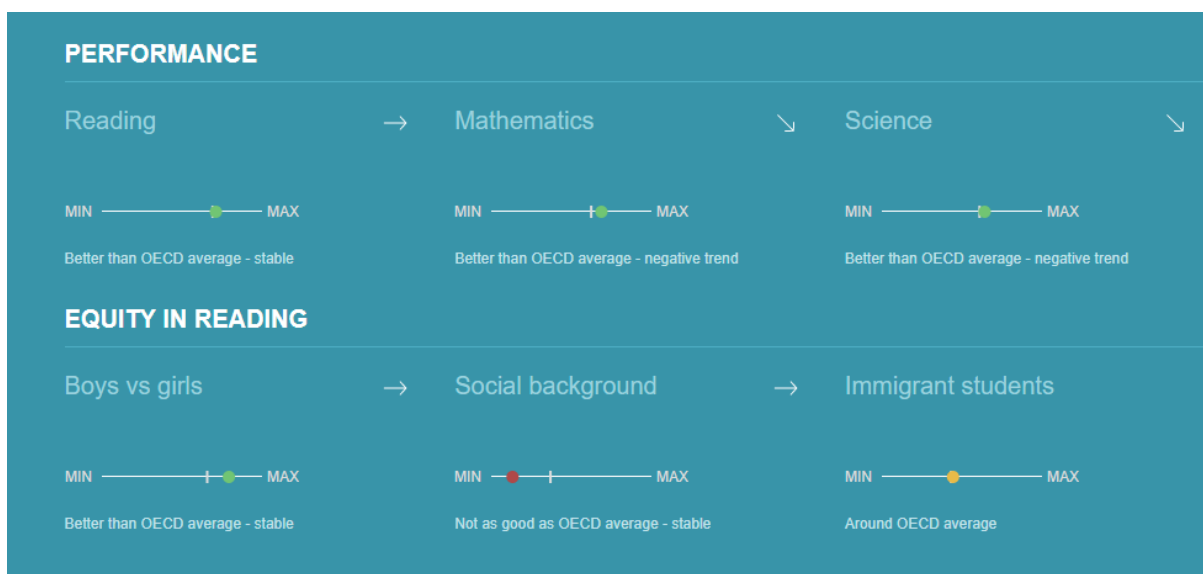
5. Mathematics (17.3%; + 0.4 pps), reading (19.3%; + 2.2 pps) and science (18%; + 0.9 pps).



and German-speaking⁶ Communities, the share of low performers remains below the EU average for reading and mathematics. Nationally, the share of top achievers is increasing slightly in reading (9.5% compared to EU average of 8.9%). The decrease in mathematics (15.7% compared to 11.2%) and science (8% compared to 10%) is worrying for future growth and innovation. The gap in educational outcomes linked to socio-economic and migration background remains high in both Communities and has not significantly narrowed over the last decade. Educational inequality linked to socio-economic background in the Flemish and French Communities is among the highest in the EU (gap in reading of respectively 110 and 107 points on the PISA scale, equivalent to 2.5 years of schooling); In the Flemish Community the difference in reading performance between pupils with a migrant and non-migrant background, after accounting for socio-economic status, is among the highest in the EU (32 PISA points), but is low in the French Community (11 points). These results suggest that targeted policies and measures are needed to address the diversity challenges and promote equity.

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FRANCE



In May 2018, 6,300 15-year-old students enrolled in both French collèges and lycées took part in the international PISA survey, along with their counterparts from 79 other

6. Reading (20.6%; + 6.3 pps) and science (20 %; + 5.8 pps), mathematics (15.1%; -2 pps).
7. Source: <https://www2.compareyourcountry.org/pisa/>



countries. In France, this survey is conducted by the DEPP (Direction de l'évaluation, de la prospective et de la performance).

In 2018, the major focus was on reading comprehension as in 2009, which is therefore the benchmark. After a sharp drop between 2000 and 2006, France stabilised its results in 2018.

In **reading comprehension**, the average score of French pupils is stable at 493 (496 in 2009) and well above the OECD average (487 points). French students are on a par with Germany and Belgium, ranked between 20th and 26th in the OECD.

In **mathematics**, the average score is 495, slightly above the OECD average (489 points in 2018 against 490 in 2015). 11% of students are high achievers compared to 37% in Singapore.

In **science**, France ranked between 16th and 23rd in science performance, with an average performance on a par with that of Austria, Belgium, the Czech Republic, Denmark, Ireland, Norway, Sweden and Switzerland. Around four in five students in France attained Level 2 or higher in science (78.5%, compared to 79% on average across OECD countries). Some 7% of students were top performers in science, meaning that they were proficient at Level 5 or 6.

France's results are among the most strongly correlated of OECD countries with the socio-economic and cultural level of families. Although still very strong, the weight of socio-economic determinisms is no longer increasing: 107 points difference (OECD average 88) compared to 110 points in 2009.

The gap between the results of girls and boys in reading comprehension is smaller in France (25 points) than the OECD average (40 points). This gap is narrowing as it stood at 40 points in 2009.

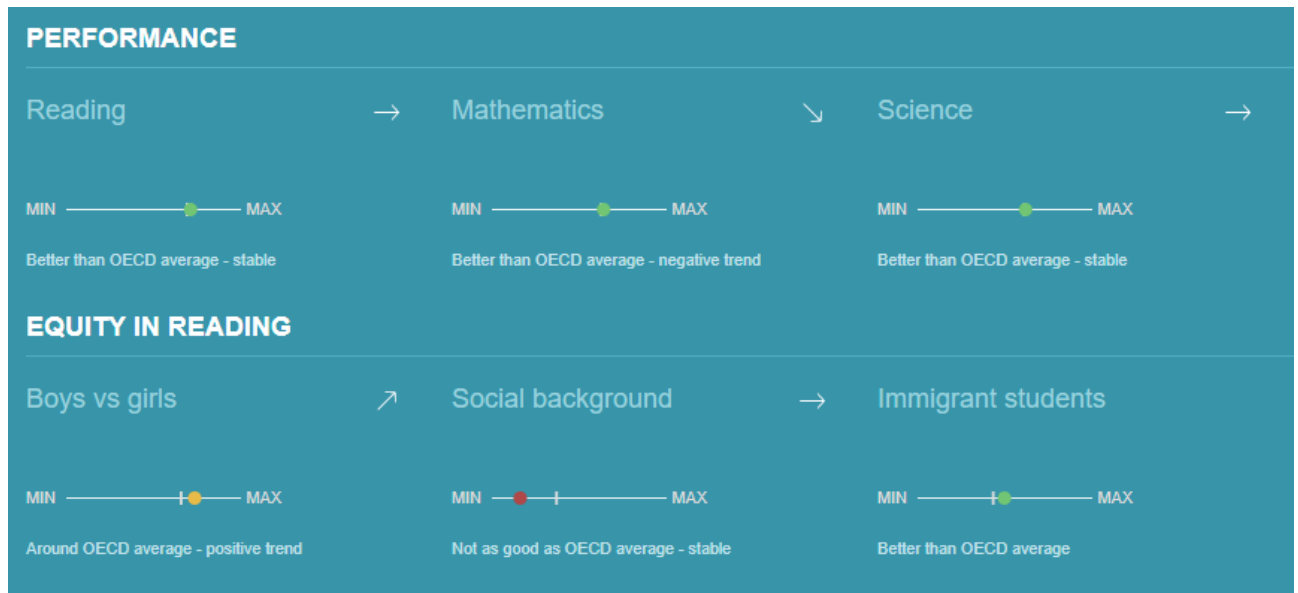
French 15-year-olds in general and technological lycées score well above the OECD average. On the other hand, students in vocational high schools and middle schools score well below the OECD average.

Three quarters of French pupils plan to go on to higher education, but their career plans differ according to gender. While they are no more anxious than their peers in OECD countries, French students are less confident about their ability to cope with difficulties.

These observations confirm the diagnosis made two and a half years ago, which led to the policy of raising standards and promoting social justice.



In order to tackle educational difficulties at the root, priority was given to primary schools: education beginning at the age of three, doubling the number of first- and second-year classes in priority education zones for 300,000 pupils, and finally reinforcing reading and mathematics methods.



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8. Source: <https://www2.compareyourcountry.org/pisa/>



GREECE

In **reading literacy**, the main topic of PISA 2018, 15-year-olds in Greece score 457 points compared to an average of 487 points in OECD countries.

Girls perform better than boys with a statistically significant difference of 42 points (OECD average: 30 points higher for girls).

On average, 15-year-olds score 451 points in **mathematics** compared to an average of 489 points in OECD countries. Boys perform better than girls with a non-statistically significant difference of 0 points (OECD average: 5 points higher for boys).

In Greece, the average performance in **science** of 15-year-olds is 452 points, compared to an average of 489 points in OECD countries. Girls perform better than boys with a statistically significant difference of 11 points (OECD average: 2 points higher for girls).

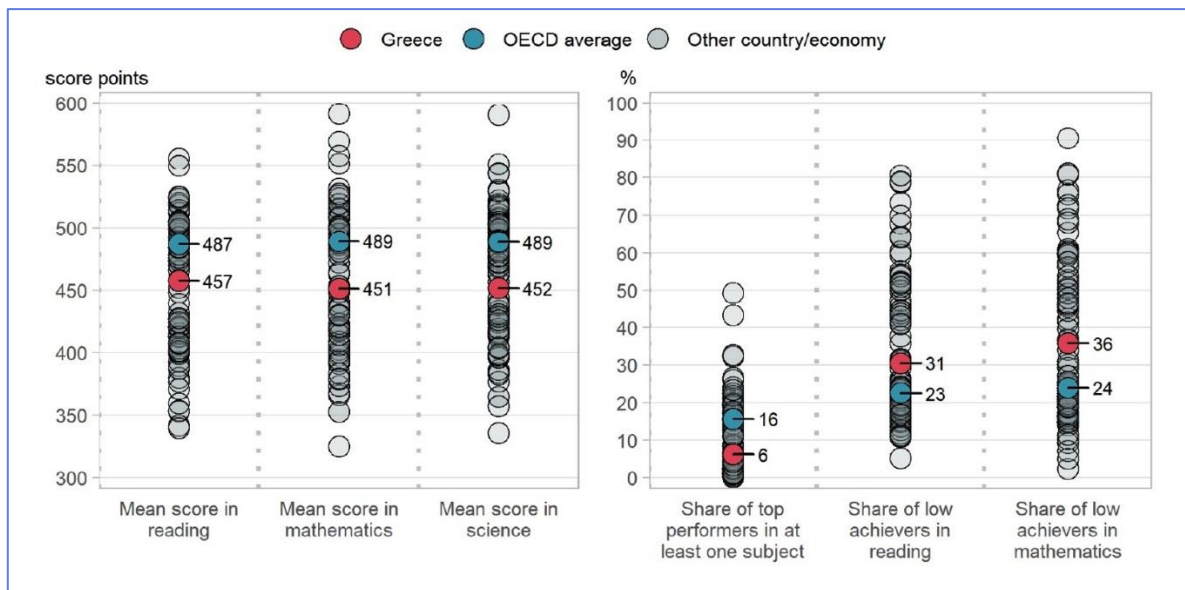
Socio-economic status explains 11% of the variance in reading performance in Greece (OECD average: 12%).

The average difference between advantaged and disadvantaged students in reading is 84 points, compared to an average of 89 in OECD countries.

However, 12% of disadvantaged students are academically resilient (OECD average: 11%).

Students in Greece scored lower than the OECD average in reading, mathematics and science.

Compared to the OECD average, a smaller proportion of students in Greece performed at the highest levels of proficiency (Level 5 or 6) in at least one subject; at the same time a smaller proportion of students achieved a minimum level of proficiency (Level 2 or higher) in at least one subject.



WHAT STUDENTS KNOW AND CAN DO IN READING

- In Greece, 69% of students attained at least Level 2 proficiency in reading (OECD average: 77%). At a minimum, these students can identify the main idea in a text of moderate length, find information based on explicit, though sometimes complex criteria, and can reflect on the purpose and form of texts when explicitly directed to do so.
- Some 4% of students in Greece were top performers in reading, meaning that they attained Level 5 or 6 in the PISA reading test (OECD average: 9%). At these levels, students can comprehend lengthy texts, deal with concepts that are abstract or counterintuitive, and establish distinctions between fact and opinion, based on implicit cues pertaining to the content or source of the information.

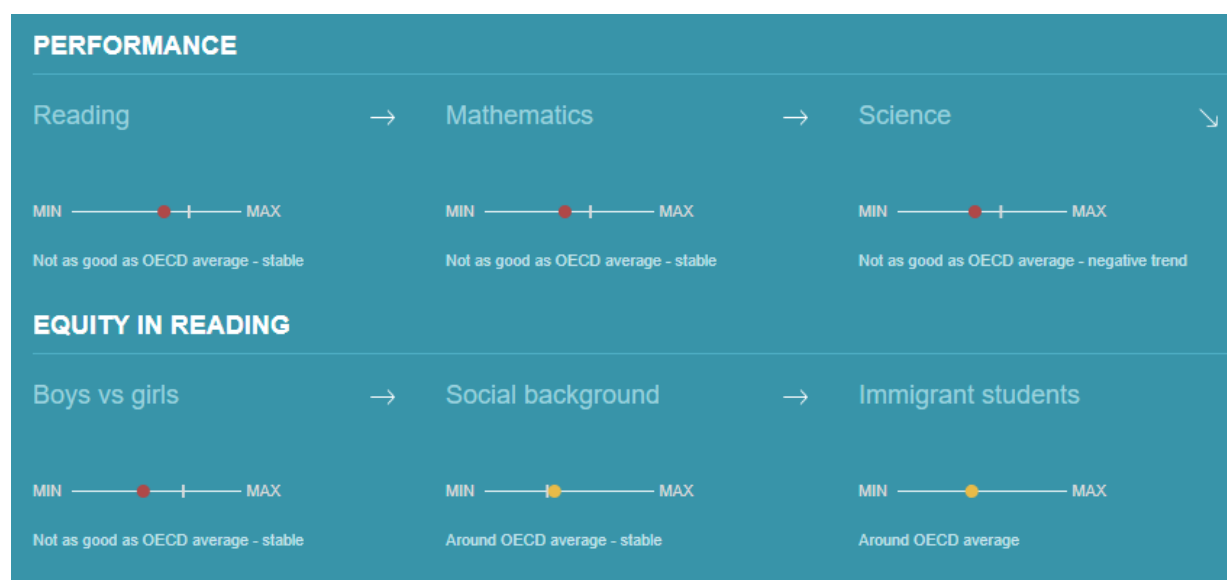
WHAT STUDENTS KNOW AND CAN DO IN MATHEMATICS

- Some 64% of students in Greece attained Level 2 or higher in mathematics (OECD average: 76%). At a minimum, these students can interpret and recognise, without direct instructions, how a (simple) situation can be represented mathematically (e.g. comparing the total distance across two alternative routes, or converting prices into a different currency).
- In Greece, 4% of students scored at Level 5 or higher in mathematics (OECD average: 11%).



WHAT STUDENTS KNOW AND CAN DO IN SCIENCE

- Some 68% of students in Greece attained Level 2 or higher in science (OECD average: 78%). At a minimum, these students can recognise the correct explanation for familiar scientific phenomena and can use such knowledge to identify, in simple cases, whether a conclusion is valid based on the data provided.
- In Greece, 1% of students were top performers in science, meaning that they were proficient at Level 5 or 6 (OECD average: 7%). These students can creatively and autonomously apply their knowledge of and about science to a wide variety of situations, including unfamiliar ones.



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9. Source: <https://www2.compareyourcountry.org/pisa/>



ITALY

In 2018, Italy scored below the OECD average in reading and science, and around the OECD average in mathematics. Mean performance in Italy declined, after 2012, in reading and science, and remained stable (and above the level observed in 2003 and 2006) in mathematics. Reading performance declined, in particular, amongst girls (and remained stable among boys). Science performance declined most markedly amongst the highest-achieving students, by a similar amount for both boys and girls ¹⁰.

In **reading comprehension**, the average score of Italian pupils is at 476, below the OECD average (487 points) and the levels observed in PISA 2000 and PISA 2009.

Girls performed better than boys in this field, with an average of 25 points above.

In **mathematics**, the average score is 487, and in **science** is 468, both below the OECD average of 489 points.

Mean mathematics performance improved between 2006 and 2009, then remained stable after 2009.

In 2018, mean science performance was significantly below the level over 2009-2015, and returned to a level last observed in 2006.

Boys performed better than girls in mathematics, obtaining on average 16 points above.

The survey does not reveal any significant difference in the scientific performance.

In all three subjects, average performance in Italy was lower than that in Belgium, France, Germany, the Netherlands, Poland, Slovenia, Sweden and the United Kingdom (amongst other countries).

Both the overall socio-economic background and the gender stereotypes have an impact over the expectations for the future.

For example, many high-achieving students who are socio-economically disadvantaged hold lower ambitions than would be expected according to their academic performance.

Only about three in five high-achieving disadvantaged students – but seven in eight high-achieving advantaged students – expects to attend tertiary education.

10. [Title] (oecd.org)

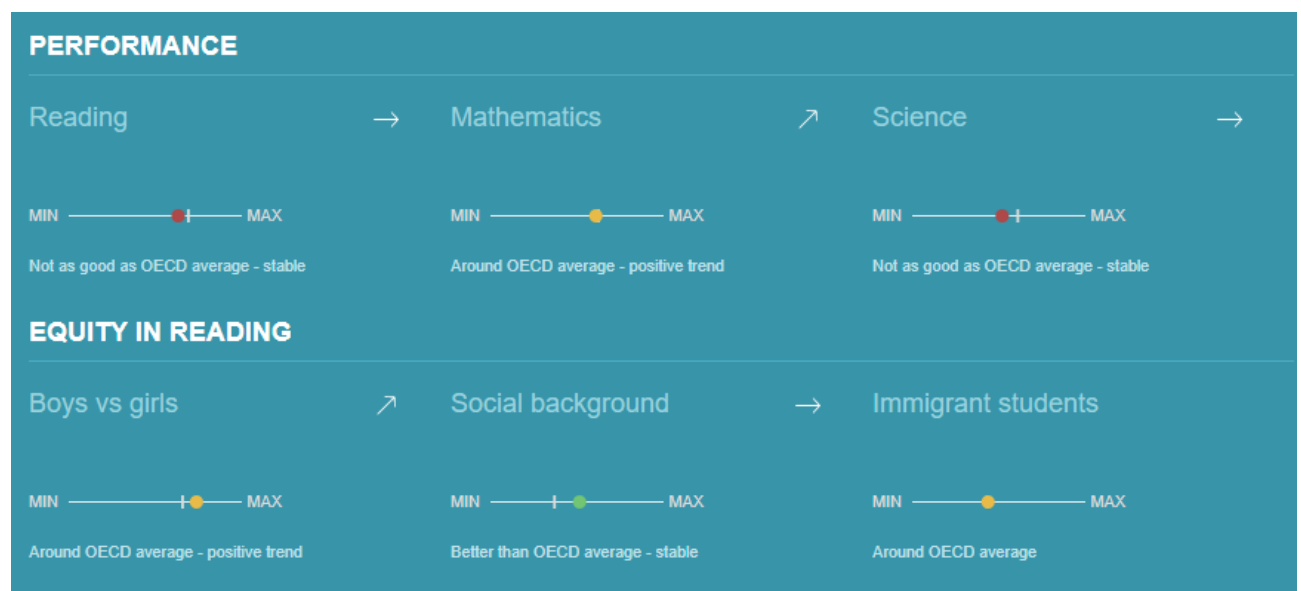


Amongst high-performing students in mathematics or science, about one in four boys in Italy expects to work as an engineer or science professional at the age of 30, while only one in eight girls expects to do so.

About one in four girls expects to work in health-related professions, while only one in nine high-performing boys expects so.

Only 7% of boys and almost no girls in Italy expects to work in ICT-related professions.

Compared to 15-year-old students in other OECD countries, students in Italy missed out on a greater amount of learning time due to absences and indiscipline in class.





ROMANIA

At the first participation, the one from 2000, Romania ranked 34th out of 42 in the hierarchy of participating countries, at PISA 2006 it ranked 47th out of 57 participating countries, at PISA 2009 it ranked 49th out of 65 of participating countries, at PISA 2012, it ranked 45th out of 65 participating countries, slightly ahead of previous cycles, and in 2015, 48th out of 72 participating countries. From the point of view of the obtained scores, the students from Romania improved their performances in mathematics and in reading / compared to results obtained in 2006, but not compared to those from 2012.

As OECD and national reports - and the PISA results themselves periodically confirm the presence of discrepancies significant at the level of students' results, largely explainable by differences in socio-economic background. Socio-economic status explains 18% of the variance in reading performance in Romania (OECD average: 12%).

When it comes to **reading literacy**, 15-year-old Romanian students score 428 points (lower than the OECD countries average of 487 points in OECD countries). Girls perform better than boys with a statistically significant difference of 34 points (OECD average: 30 points higher for girls).

For **mathematics**, 15-year-olds old Romanian students score 430 points (lower than the OECD countries average of 489 points in OECD countries). At mathematics, boys perform better than girls with a non-statistically significant difference of 5 points (OECD average: 5 points higher for boys).

For **science**, 15-year-olds old Romanian students score 426 points (lower than the OECD countries average of 489 points in OECD countries). At science, girls perform better than boys with a non-statistically significant difference of 1 point (OECD average: 2 points higher for girls).

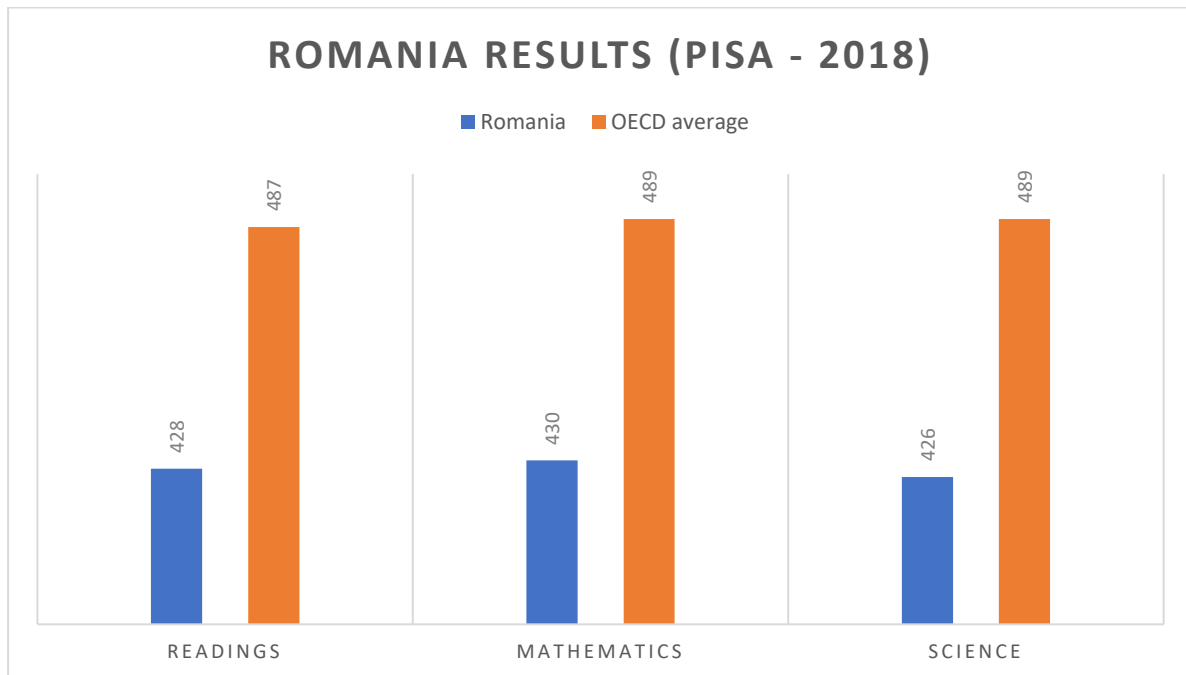


Figure n°2 - Romania PISA Results - 2018 (Source OECD)

The average difference between advantaged and disadvantaged students in reading is 109 points, compared to an average of 89 in OECD countries. However, 9% of disadvantaged students are academically resilient (OECD average: 11%). (Source OECD)

Table n°1 - Romania country profile and OECD average, 2018 (Source

<https://gpseducation.oecd.org/CountryProfile?primaryCountry=ROU&treshold=10&topic=PI>)

	OECD AVERAGE	ROMANIA
Student performance in reading (mean score)	487	428
Boys' performance in reading (mean score)	472	411
Girls' performance in reading (mean score)	502	445
Gender difference in reading performance, score-point difference (girls-boys)	30	34



Difference in reading performance between the 90 th and the 10 th percentiles (in score points)	260	256
Low performers in reading (percentage of students scoring below Level 2)	22.6	40.8
Top performers in reading (percentage of students scoring at Level 5 or 6)	8.7	1.4
Low-performing boys in reading (percentage of boys scoring below Level 2)	27.7	47.8

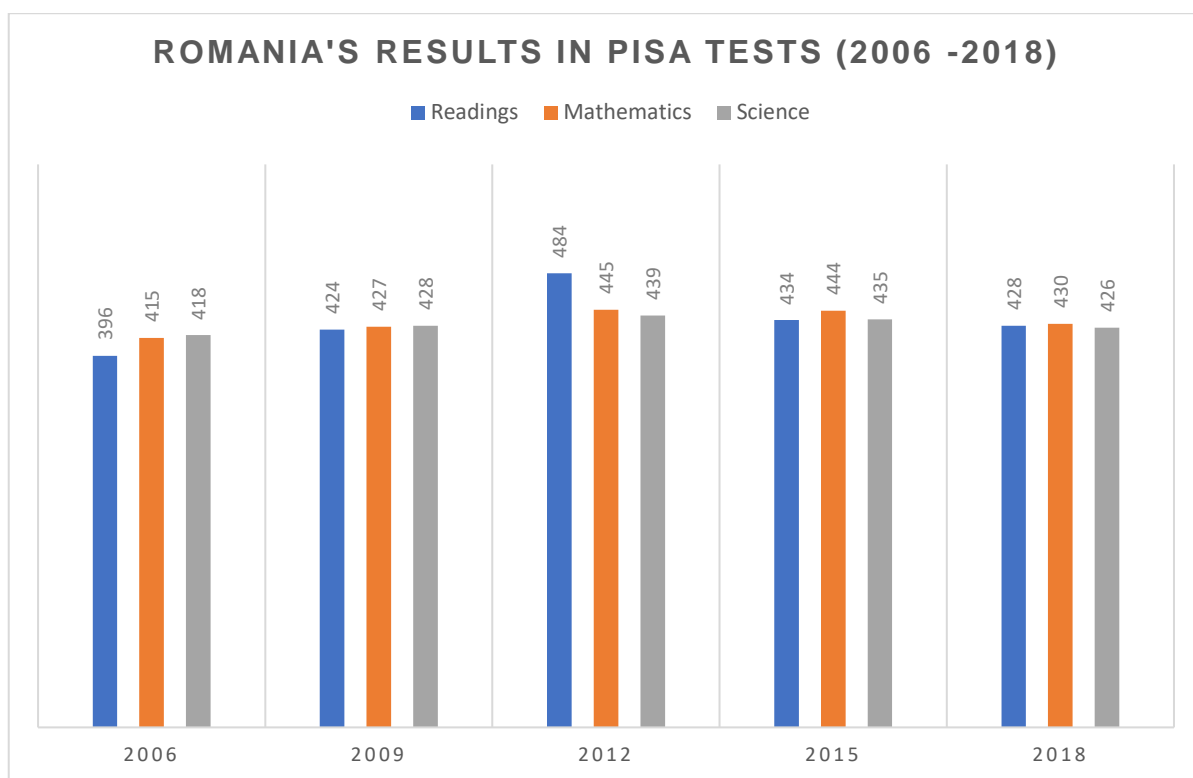


Figure n° 3 - Romania Trends in performance 2006 - 2018 (Source OECD)

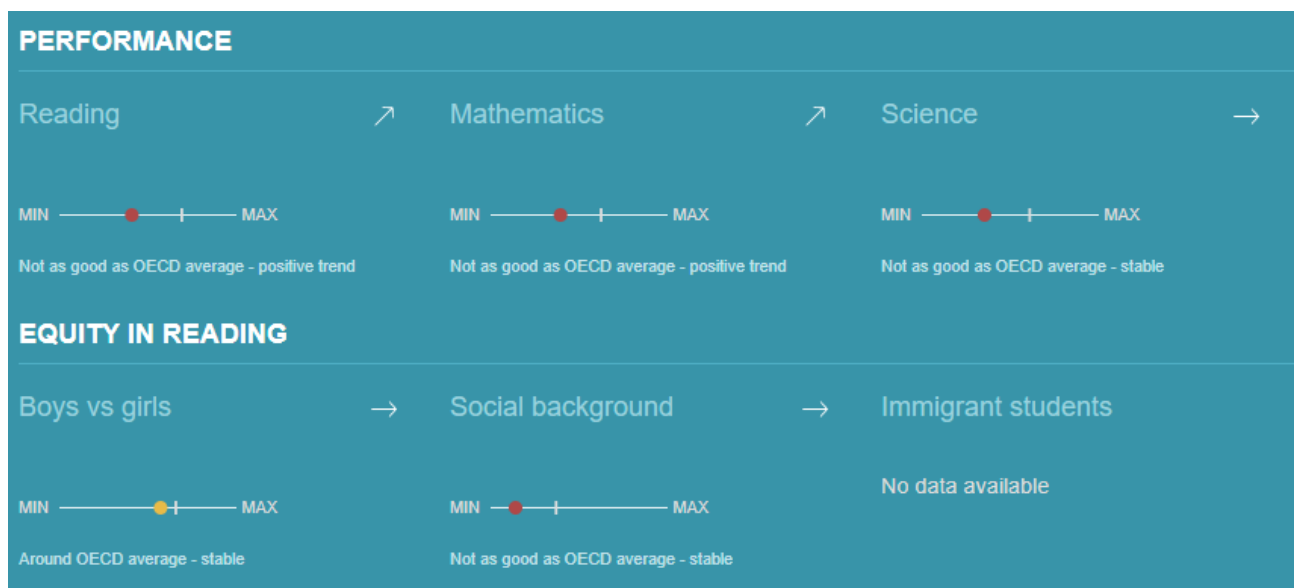
The OECD reports shows that 59% of students in Romania have reached at least level 2 in reading, (in comparison with the average of 77% in the OECD countries). This means that Romanian students can identify the main idea of a medium-sized text, find information based on explicit, sometimes complex criteria, and reflect on the purpose and form of a text. But transferring and working with complex information and texts are challenging for Romanian students. Student who reads a text cannot explain in depth what they have read and do not understand what it is about in that text.



In mathematics there are even more students who do not even cope with basic arithmetic operations, the percentage of those who do not reach level 2 of difficulty in the PISA 2018 tests being 47%. For example, they did not manage to compare the total distance of two alternative routes or to convert prices from lei into foreign currency.

The sciences mark an increase of up to 44% in the proportion of those who cannot make basic correlations in this field. These students cannot offer possible explanations in familiar situations or cannot draw conclusions based on simple investigations.

On average, the percentage of functional illiteracy rose from 39% in 2015 to 44% in 2018, marking an increase of 5%.



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11 Source: <https://www2.compareyourcountry.org/pisa/>



STRATEGIES OR PROJECTS TO SUPPORT DEVELOPMENT OF BASIC SKILLS IN PROJECT COUNTRIES

BELGIUM

NATIONAL CONTEXT, ISSUES AND CHALLENGES

According to the **European Semester 2020 Report**, education and training systems in the three Communities of Belgium (Flemish, French and German-speaking) seem to not achieving delivering all the skills needed in the labour market, in particular basic, language and digital skills. The shares of low and high achievers in basic skills show that the Communities have difficulties combining both equity and excellence in their education and training systems.

In particular, in Flanders, according to the OECD (2019), Assessment and Recommendations on the Skills Strategy Flanders Report, skills shortages are emerging in professional, technical and scientific occupations persist due to a low number of graduates in science, technology, engineering and mathematics

(STEM). Thus, investment in the training and education system and reforms promoting efficiency and effectiveness need urgently investment, so that citizens of all ages and backgrounds be able to develop, activate and use their skills effectively to take up opportunities of a rapidly changing society.

RECENT POLICIES AND PRACTICES

Reforms, such as the 'Pacte d'Excellence' in the French Community to reverse the decline in the educational outcomes are progressing slowly and will take time to achieve their full impact. Nonetheless, the first positive reforms of the Pact are currently being rolled out and aim at reinforcing the school and system governance and reducing performance gaps between schools, as well as measures to strengthen French language



learning for newly arrived pupils and vulnerable French-speaking pupils.

The Flemish Community has implemented positive reforms in secondary education and in all other sectors for the 2019/2020 school year.

On November 21 of 2019 the Flemish Parliament took note of Mr Ben Weyts (Flemish Minister of Education)'

'Policy Paper on Education 2019-2024', which among other contains the following strategic goals:

Achieve top-quality education with maximum learning gains for all learners

Attract and retain strong, professional and motivated teachers by giving the profession the appreciation it deserves

Give every child the right place in our education and provide the necessary guidance

Invest in learning and working environment with sufficient capacity (i.e. places) for every learner

Keep higher education at the top of the international level, but set limits to excessive flexibility.

With regards to the German-Speaking Community, the most proposed, discussed, adopted and implemented reforms can be found in the regional development concept (REK). From 2008 to 2010, the German-speaking Community has edited a regional development concept, which mission statement is "Ostbelgien live 2025".

This regional development concept includes projects in various fields and a strategic plan to improve the quality of education, which will be completed by 2025.



FRANCE

NATIONAL CONTEXT, ISSUES AND CHALLENGES

In 2018, 15-year-old students scored slightly above the OECD average in all three of the study's main domains in PISA. However, five times as many French students from lower socio-economic backgrounds fail to reach the minimum reading level as those from higher socio-economic backgrounds.

Inequalities in student performance in France appear from an early age and then become more pronounced in the progression of skills throughout life.

Most French schools enjoy a climate conducive to learning, but France is among the countries with the highest levels of classroom indiscipline. Head teachers have limited responsibility for the recruitment of teachers and the pedagogical side of their schools. This is even more pronounced at the elementary level, where head teachers are teachers who, while retaining their status, are responsible for administrative and pedagogical functions (most frequently on a part-time basis).

As in many countries, the teaching profession suffers from a lack of attractiveness, particularly in scientific subjects or in certain academies.

The European Semester 2020 Report for France identified a number of important issues for France in the field of education and training:

- Socio-economic and territorial disparities in educational outcomes remain high at all levels of education. This highlights significant investment needs, particularly in some regions. Overall public spending on education amounted to 5.4% of GDP in 2017.
- The results of the 2018 PISA survey show that the French education system combines good overall results with persistent socio-economic and territorial inequalities. The performance of 15-year-olds remained stable and the proportions of low-achievers in the three areas tested (reading: 20.9%, mathematics: 21.3% and science: 20.5%) were just below the EU averages.

France remains one of the EU Member States where the link between socio-economic status and performance in PISA is strongest. There is also a significant gap between the performance of students in rural and urban areas, and between those with and without a migrant background.



→ Participation in early childhood education and care for children aged 4 years to the start of compulsory schooling was 100% in 2017, which was above the EU average of 95.4%. At pre-primary and primary level, reforms have been made to improve basic skills and reduce inequalities, such as lowering the starting age for compulsory education to three years and halving class sizes in disadvantaged schools classified as 'priority education'. However, as about 70% of disadvantaged children are not enrolled in schools classified as 'priority education', they will not benefit from this measure.

RECENT POLICIES AND PRACTICES

An important part of the refoundation of the school (2013) was to increase equity and reduce the gaps in educational achievement, in particular by targeting the least favoured areas (about 20% of the school population) and the first levels of education. The reform aims to reduce the

gap in educational achievement between pupils in priority education and other pupils to less than 10%. The Law for a School of Confidence (2019) and the measures taken since 2017 aim to reinforce the importance of combating inequalities from pre-school and the very beginning of primary schools. Since the start of the 2017 school year, measures have also been taken at lower secondary school level (CITE 2) to offer pupils in their school a period of accompanied study to complete their homework ("Homework done" program). It takes place at appropriate times, not necessarily at the end of the day, for a volume of time set by the school. This accompanied study is free. This offer is designed according to the needs of pupils, so as to help reduce the inequalities that may exist depending on the level of help that families are able to provide for their children at home. Finally, the National Action Plan for the Reception and Support of Migrants was revised in 2017. It strengthens the educational framework for recently immigrated pupils, with the main target being minors and the most vulnerable.



GREECE

NATIONAL CONTEXT, ISSUES AND CHALLENGES

Greece is still at the bottom 20% of countries for most of the indicators related to the development of relevant skills.

Results from the OECD Programme for International Students Assessment (PISA), show that the performance of 15-year-old students in reading, mathematics and science has not improved over time and remains below the OECD average.

The 2020 European semester report states that:

- underachievement in basic skills remains high and heavily affected by the socio-economic background of students;
- underachievement is highly affected by the socio-economic background of students;
- among students with a migrant background, 48.3% are low achievers compared to 27.4% among those without a migrant background;
- these considerable inequities point to the need for a comprehensive long-term strategy that will take into account the growing diversity among learners and the changing labour market needs.

RECENT POLICIES AND PRACTICES

Greece is recovering from an unprecedented economic depression and is currently implementing a number of policy reforms to boost economic recovery, expand employment opportunities, reduce poverty, create more and better jobs and improve skills, based on the National Growth Strategy. Although encouraging steps have been taken to improve Greece's education system, with initiatives such as a renewed "all-day schools" programme, the new database of school indicators, and the introduction of school self-evaluation mechanisms, many challenges persist.

According to the findings, it could be suggested to reconsider evaluation system in secondary education and to create motivated learning.

The teacher-centred teaching practises that are widely used in Greece is ineffective and discourages students' participation. We should see what motivates young people to learn and explore how they can improve their attitude and engagement.

Students whose teachers often present and explain scientific ideas and adapt their teaching to meet the needs of the class,



seem to perform better. It is important for teachers to generate dialogue and exploratory methods in their teaching practise and have the ability to adapt to teaching needs accordingly.

Suggestions to support teaching basic skills:
(For translations:
https://www.canva.com/design/DAEjzOfdBs/share/preview?token=Mz-LUjjZ1OWnKBatry4Msw&role=EDITOR&utm_content=DAEjzOfdBs&utm_campaign=designshare&utm_medium=link&utm_source=sharebutton)

ITALY

NATIONAL CONTEXT, ISSUES AND CHALLENGES

As mentioned above, the latest 2018 OECD results did not show very satisfying results for Italy, with performance below the OECD average in reading and science, and around the OECD average in mathematics.

The 2021 Invalsi (National Institute for the Evaluation of Education Systems) standard tests' results, unfortunately, confirmed this trend.

In reading, primary schools' performance slightly improved in comparison with 2019 results, while lower and upper level of secondary schools decreased. 39% of students from grade 8 and 44% from grade 13 did not achieve the minimum level. These students come especially from disadvantage background. The same trend can be applied to mathematics, with primary school's performance stable or

improved, and lower and upper secondary schools performance' worsening.

The 2020 European Semester stated also that:

- School education in Italy produces mixed outcomes in terms of basic skills attainment.
- Regional differences in learning achievements are marked and increase with education levels, with northern regions consistently and significantly outperforming southern ones in Italian, maths and English. This adds up to the higher rates of early school leaving in southern regions. Differences in students' socioeconomic background and different returns to education between regions contribute to these results.

The OECD Skills Strategy Diagnostic Report Italy 2017 highlighted another relevant data, i.e. over 13 million adults



have low basic skills. Low-skilled adults in Italy are more likely to be older individuals and immigrants, and are concentrated in smaller firms and less economically advanced regions and sectors.

RECENT POLICIES AND PRACTICES

In the recent years, Italy has tried to introduce a series of ambitious reforms to improve the capacity of the education system to develop and recognise students' skills (e.g. the Good School Act in 2015), but many challenges remain open.

For example, the introduction of standardized tests by the National Agency for School

Evaluation (INVALSI) to assess reading, mathematics and English competencies among Italian students is largely criticized by teachers and students.

The first attempt to introduce standardized national tests was done in 2005-2006, but the current format has been developed in 2018-2019.

INVALSI tests do not refer only to knowledge but competencies.

Invalsi 2021 test involved 1.100.000 students from 2nd and 5th grade, approximately 530.000 students from 8th grade and around 475.000 students from the 13th grade.

More generally, over the years the Education Ministry tried to drive teachers to shift from a pedagogy based on subjects towards one based on competencies and skills at any level.

With this regard, it is worth mentioning that a part of the European Regional Funds, especially the European Social Fund for education managed by the Ministry of Education (the so-called PON Scuola), are always dedicated to projects on basic skills.

The Ministry of Education launches a public tender open to all schools in Italy, which are invited to propose projects with innovative students-centred approaches to reinforce basic skills in reading, mathematics and science, and reduce the early school leaving.



ROMANIA

NATIONAL CONTEXT, ISSUES AND CHALLENGES

Results from the OECD Programme for International Students Assessment (PISA), show that the performance of 15-year-old students in reading, mathematics and science in Romania has not improved during last years and remains below the OECD average. As these data show, education in Romania is facing challenging issues that need to address in order to ensure a good quality start in life for all students.

The 2020 European semester report dedicated to Romania highlighted the following critical areas:

- Low participation in early childhood education and care widens inequality of opportunities between pupils. Only 15.7% of children below the age of three are in formal childcare. For children aged between four and the compulsory school age participation increased to 89.6% in 2017, but remains below the EU average (95.4%).
- Despite recent improvements, early school leaving remains very high, deepening existing socio-economic disparities.

- The education system continues to face significant challenges in terms of quality and inclusiveness. Persistent lower attainment levels are reported in rural and economically deprived areas, including those with a high Roma population.

RECENT POLICIES AND PRACTICES

National strategies to improve education in Romania can be found under *The National Strategic Framework for Educational Policies 2021-2027*, established on the elements of the ongoing *Educated Romania* project of the Presidential Administration.

The project goal is to optimise and raise the quality of services provided by the public administration in the field of education through the creation of a predictable and stable regulatory framework and the development of a public policy based on strategic guidelines in school education and higher education with the 2030 horizon.

The Strategic Framework for education and professional training in Romania includes five sectorial strategies:

- Strategy for the reduction of early school leaving.



- National strategy for tertiary education 2015-2020.
- Lifelong learning strategy 2015-2020.
- The education and vocational training strategy in Romania during 2016-2020.
- Strategy for educational infrastructure 2018-2023 - currently submitted to the inter-ministerial advice procedure.

THE NATIONAL STRATEGY TO IMPROVE ROMANIAN EDUCATIONAL SYSTEM IS BASED ON:

1. Personalization and quality assurance of the educational process for all student:

- Increasing access to quality and inclusive education and training;
- Designing and providing of support services to prevent and combat school dropout (monitoring, counseling and career guidance, adequate adaptation for students from vulnerable groups, etc.).
- Increasing access to education (at all levels) and quality training for people with disabilities.

2. The flexibility of the education system to understand and respond appropriately to changes:

- Updating and adapting the education and professional training offer to the requirements of the labor market;
- Correlation between the needs of pupils and students, counseling services, support, accompaniment and trends in the labor market.

3. Adaptability to external changes and future trends:

- Improving teacher training to increase the quality and effectiveness of the educational process;
- Strengthening population participation in lifelong learning and retraining to facilitate transitions and labor market mobility.



The Romanian Ministry of Education initiated *social programs* to support students from disadvantaged groups. Through these programs, conditions are created to ensure equal opportunities in education for students from groups with particular risks (students from rural areas, Roma children, students with SEN etc.).

The social support and services offered through those projects are: school supplies, high school money, scholarships, vocational scholarship, transport settlement, supplies for pre-schoolers and students with SEN, hot meals for students.

Implementation of the *Home School program* - acquisition of 250,000 electronic devices with Internet connection for students and teachers and payment of

Internet subscriptions for 2 years (through GD 370/2020).

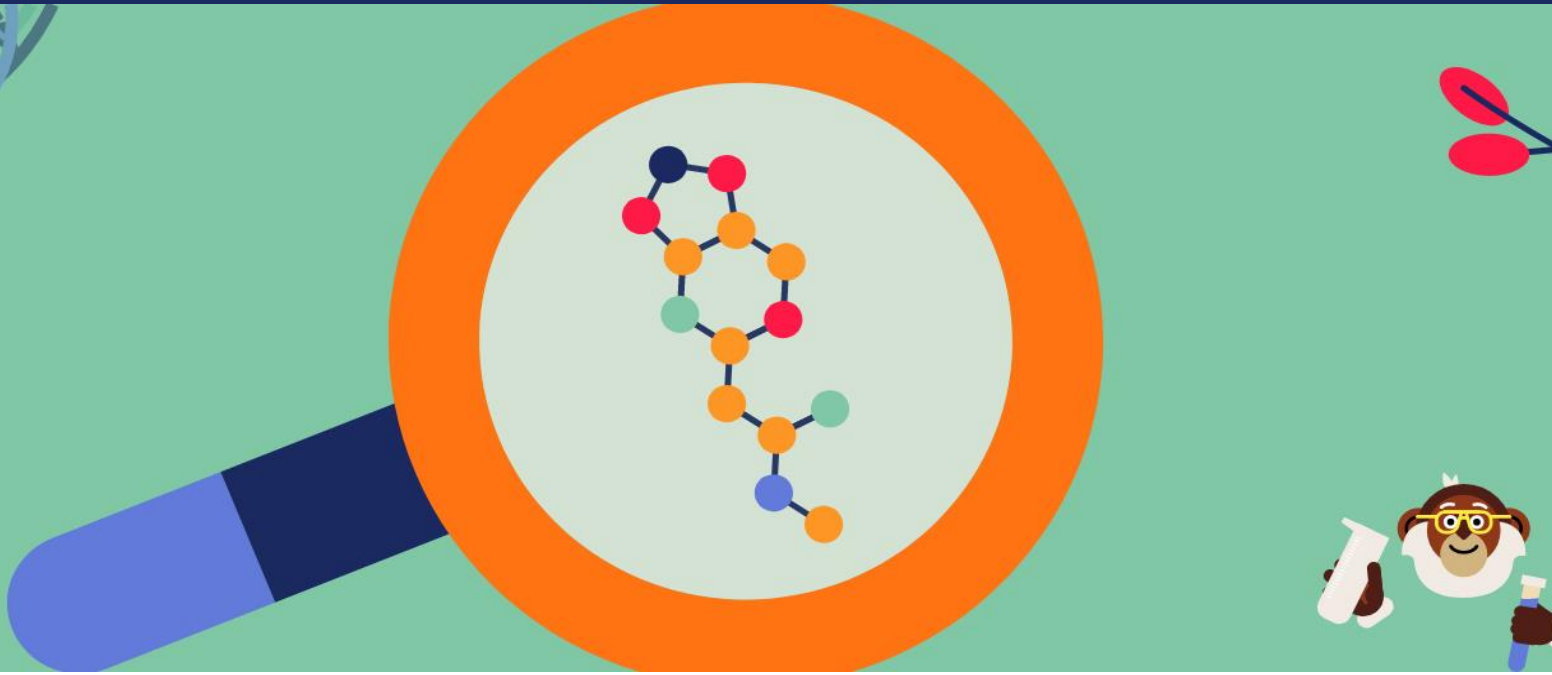
The *ROSE project for secondary education*, financed by a loan from World Bank, is being implemented in the period 2015-2022, support low-performing high schools, through a grant scheme, to reduce the dropout rate, increase the high school graduation rate and improve performance on the baccalaureate exam. The main actions that can be funded from grants are: remedial, counselling, vocational guidance and guidance activities and personal development activities; extracurricular and information activities, such as documentation visits / excursions, training courses, participation in competitions and the formation of interscholastic networks, etc.



PART 2



IN THIS SECOND PART, WE WILL FOCUS ON THE SPECIFICITIES OF THE FLASH MIND PROJECT AND DISCOVER HOW IT CAN BE USED BY TEACHERS, STUDENTS, SPECIALISTS ETC. FOR ENHANCING INCLUSIVE PEDAGOGY AND PROVIDE TOOLS TO DEVELOP BASIC SKILLS WITH VISUAL AND ENGAGING APPROACHES. YOU WILL DISCOVER THAT FLASH MIND PROPOSES COMPLEMENTARY WAYS TO LEARN SUBJECTS IN THE READING, SCIENCE AND MATH FIELDS.



INCLUSIVE PEDAGOGY, INCLUDING SUPPORT OF LEARNERS WITH SPECIFIC LEARNING DIFFICULTIES

Flash Mind has a clear focus on integrating students of different learning abilities and needs in the school curriculum, by offering innovative ways to support their learning and skills development on the school subjects of reading, science and maths.

INCLUSION

Inclusion in this project refers to accessibility of content, and respect to student-users diversity in background, abilities and needs. Accordingly, the project's target groups of learners involve disadvantaged learners facing economic shortages and who have less opportunities in learning, as well as learners with learning

difficulties or cognitive and behavioural disabilities. In the second category, the project in particular focuses on pupils with Specific Learning Disorders (SLD) who are dealing with "DYS" disorders that typically include dyslexia, dysgraphia, dyscalculia, dysphasia and dyspraxia.



“DYS” DISORDERS

“DYS” disorders in Europe are believed to affect around 10% (for the French Federation of Dys - FFDYS) or 12% (according to the European Dyslexia Association - EDA) of people to a lesser or greater extent. According to substantiated scientific estimates, between 5 to 12 percent of the European population have dyslexia and specific learning differences, and struggle with following a non ‘dys-friendly’ approach in life and school learning environment. If these pupils who could potentially have trouble following reading

materials which are not properly adapted to their needs, they can be discouraged or even fail achieving their academic goals. Thus, Flash Mind aims to enable teachers to create learning paths adapted to the profile of their students with interactive contents, combining communication channels and technology, for a truly inclusive pedagogy.

VISUAL PEDAGOGY

The key aspect to support this inclusive approach is the use of the visual and interactive content. A great part of our brain is devoted to handling visual input and

therefore, the use of visual support strategies and interactive learning material, can be very effective and helpful for all learners. Especially for those who with learning difficulties such as SLDs who are often visual learners. The **power of the image** and other communication channels such as the **audio**, or the combination of these, is proved to be significant in learning, understanding and memorization, making use of different forms of material to present the content of the lesson. It also ensures that the learning needs of every learner are sufficiently met.



FLASH MIND COMMITS TO OFFER AND PROMOTE ADAPTIVE LEARNING AND MEMORY ANCHORING USING THE NEW TECHNOLOGIES AND DIFFERENTIATED PEDAGOGY. IN EACH STEP OF THE CONTENT CREATION, PARTNERS-MEMBERS OF THE CONSORTIUM VERIFY THE ACCESSIBILITY OF THE CONTENT BY:

1) Making adaptations in digital interactive material. This includes adaptations on the presentation and layout of the content on the screen, as well as adaptations on the usage of the content, for example preferring typing words or and 'click' on items than 'drag and drop' items. For pupils with DYS disorders, there is the ability to choose a suitable layout for the platform, flash cards and lesson plans, that integrates an adapted font, larger font size and line spacing.

2) Using high-quality visuals to support visual learners and facilitate the learning process.

3) Foster memory anchoring using flash cards. Learning using Flash cards is by default based on the visual elements to illustrate the concepts and highlight the important information. This helps increase students' focus and memory skills and supports visual learners.

4) Providing 20 practice sheets to support teachers with recommendations for adapting lessons in a visual and interactive way or good practices for adapting content for students with learning disabilities.

5) Testing all outputs and getting experts' opinion: All outputs have been tested at the five different partners countries with the direct and indirect as well as all interested parties, of learners and educational experts. These target groups have evaluated the resources produced during the project, and through their feedback partners are able to provide a suitable and as inclusive as possible content for the target groups.

6) Dematerialized and open access to the resources of the project, as well as translation to 4 languages (IT, FR, GR, RO) and help also promoting its accessibility.



PERSONALIZED LEARNING AND CREATION OF LEARNING PATHS

Personalized learning is an educational approach aiming to create an optimal learning experience in accordance with each learner's strengths, challenges, needs, skills, and interests. Personalized learning becomes a personal pathway of the learner to his own learning.

A PERSONALIZED LEARNING EXPERIENCE

In order for teachers to provide such a personalized learning experience, it is important:

- to get to know the student very well,
- to know what they already know and where is his learning zone

→ to know how they learn best (Vygotsky, 1978).

A good personalized learning programme will customize for each student a learning path that responds or adapts on his/her progress, motivations, and goals. A personalized learning path will allow a student to work on different skills at different paces. And in case is needed, extra support will be given to the students.



Throughout the Flash Mind project, personalized learning was ensured by offering the tool to redesign some learning content (organized in lessons) in chunks and learning activities that can be implemented in accordance to the students learning pace. Each lesson is constructed by the teacher using flash cards that can enhance the retaining the basic information, and can help organize from simple to complex, in a visual way.

The learning experience should be quite active, that is why the platform is designed to actively engage students in their learning and develop their independent learning by inviting them to use the flash cards, to do the lesson exercises, or to create their own flash cards. Optimal learning is achieved when it is active and when each learner is aware of their strengths and difficulties to identify skills gaps and be able to choose the appropriate learning pathways accordingly.

ACCESSIBILITY

The main advantage of an online learning pathway is its accessibility (anytime, anywhere and for as many times needed for each particular students), which is quite important, mostly for students with specific learning disorders, that might have to repeat the content of the lesson, or redo the same learning activities several times without feeling the pressure of their peers.

5 KEY POINTS

Flash Mind experience in building personalized learning experiences has identified some key points:

1) The need to provides teachers with some lesson pathway that can help organize for their students self-guided learning activities, where students have the opportunity to choose the types of

learning activities that work best for them.

2) The importance of students to be able to set his own learning goals and know how to monitor their progress.



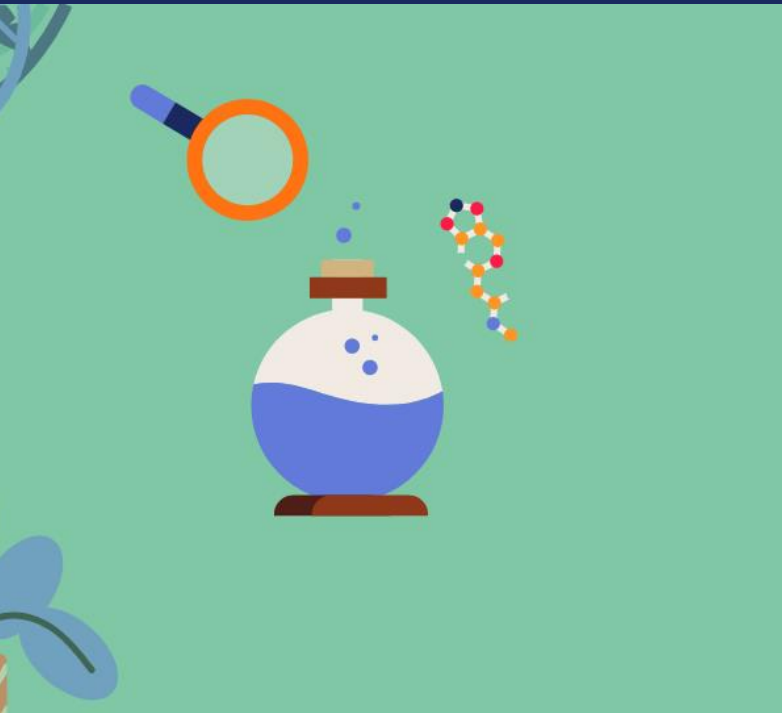
3) The need to give students the freedom to choose any type of learning activity that works best for them. Students can learn by viewing presentations, videos, participate in discussion and listening to podcasts. The choice of activity may depend entirely on the student, but they need to try different types of lessons and with the help of the teachers to be able to self-evaluate and self-monitor his way of learning and become more aware of how they learn.

4) Having the learning content available and being given the opportunity to try

and work on the learning activities as many times as needed, students are allowed to do so in their own way and at their own pace.

5) Assessment is extremely important as well as constant constructive feedback. Students need some form of direction and feedback and the learning becomes efficient if the feedback is immediate and there is a form of interaction of the students with the teachers and with other learners, especially if the learning is organized in an online format.





GREATER VALUE OF ADAPTED LEARNING TOOLS AND MEMORY ANCHORING

Following the wave of personalized learning, we can recognize the role of adaptive learning tools.

ADAPTIVE LEARNING TOOLS

A teacher/trainer can deliver the same contents in different ways: power point presentations, long texts,

short texts, mind maps and more. Adaptive learning tools convey information and contents in a way to match the needs of the learners, instead of providing a one-size-fits-all learning experience.

This is particularly relevant for students with specific learning disorders, which usually may struggle with the

traditional teaching methods and materials.

Of course, for a single teacher may be difficult to adapt the learning experiences of each student.

In this context, technology can play a role, as it may reduce the effort of the teacher in producing and adapting all the teaching materials. Software or digital tools can facilitate



and sometime automatize this process.

Flash Mind can be seen as a technological adapted learning tool.

MEMORY ANCHORING

The main scope is related to memory anchoring and flash cards, as will be better explained in the following chapter.

Many students, especially those with learning disorders, may experience difficulties with memory, both working memory and long-term memory.

Working memory regards our skill to store information in our brain when doing other activities. A student with difficulties in working memory have troubles in organizing and integrating new skills or knowledge.

Long-term memory is the ability to recall information after a certain time, or to remember them according to a sequence or a logical order.

In both cases, there are some strategies to follow which can help the student, among others:

- Using mnemonic aids and strategies for retention.

- Providing immediate feedback.
- Practicing frequently. A little at a time, more often is better than one long session.

Flash cards can be an ally as a didactic strategy to enhance retention, providing an immediate feedback on the “retro” of the card, with students using them as much as they wish and teachers having the opportunities to produce more series thanks to Flash Mind.

Let’s discover the functioning and pedagogical role of flash cards in the next chapter.



USE OF THE FLASH CARDS

WHAT IS A FLASH CARD?

A flash card is a card with one piece of information on the front and another piece of information on the back.

For example:

- A word and its definition in a foreign language

- A question and its answer
- A picture and a word for it
- A concept and its literal explanation
- and so on.

They can be paper or digital. It is possible to use ready-made flash cards or to create your own series.

WHAT ARE FLASH CARDS FOR?

Flash cards are used in the same way as revision sheets. As memory functions most often by association, flash cards allow the

associative link between two pieces of information to be reinforced by successive reactivations. They are therefore a very effective way of encouraging memory anchoring.

THE EDUCATIONAL AND INCLUSIVE ADDED VALUE OF FLASH CARDS

Flash cards are a very practical and useful resource for teachers, pupils and parents. They are particularly effective for learners with visual memories and students with specific learning disabilities. This is because the key



information on a card can be represented by a picture or photo alone, or alongside the textual response.

Visual representation has a real positive impact on learners with SLD, which makes flash cards particularly useful.

In addition, using flash cards can help learners feel more independent in their learning and revision until they feel competent.

USING FLASH CARDS IN THE CLASSROOM

Flash cards can be used for different educational purposes.

In the classroom, flash cards can help to memorise and learn dates, vocabulary, facts, historical events, scientific terms, processes and equations quickly.

However, they are not recommended for in-depth analysis of a topic as they only provide key information and not the details of a subject.

Flash cards can be used by the teacher as an additional aid to provide an overview at the beginning or end of the lesson.

They can also be used as a revision tool to help students prepare for an exam. They summarise key information that has been learned in class and can be tested later by the individual learner or as part of a formal classroom assessment (e.g. a test).

When teachers choose to use flash cards in the classroom, it is advisable to be systematic and make it a habit for the learners. It would not be useful to use flash cards only once in a while. Repetition is essential when trying to learn new information. Therefore, it is more effective to

introduce flash cards throughout the year and use them regularly for revision in class. This can be a good method of revision because at the end of the semester or year, students will have a full set of flash cards to study for a particular exam which may be more important.

USE FLASH CARDS AT HOME

Learners can practice with flash cards not only as a classroom activity, but also for studying on their own, at home or even as a game with family and/or friends.

Some basic tips for learners who want to practice and revise their lessons with flash cards:

- Organise each pack of flash cards around a specific theme, key idea or objective and practice by theme (e.g. World War II).



- Try to have a maximum of 20-30 cards in each set that deal with the same topic.
- For more complex topics, use more flash cards and break the topic down into smaller units to make it easier for the learner to remember.
- Read the flash cards aloud. Reciting the terms and definitions helps with memorization and increases the chances of remembering them during an exam.

CREATE YOUR OWN FLASH CARDS

Making up your own flash cards is the best

way to revise effectively. It encourages students' autonomy and develops their ability to self-assess. Here are some recommendations for creating suitable flash cards to facilitate learning.

- Mix images and text and make sure the images match the information on the card.
- Keep the cards simple and the message clear: for example, summarise the key points and keep the content short, so that learners can absorb the information at a glance.
- For the paper version, use thick, white or coloured paper, cut to avoid

seeing the other side of the card (as the information, text or images, should be clearly visible on both sides).

- For digital flash cards, visit the Flash Mind website and follow our tutorials.
- Focus on creativity and illustration and allow for experimentation. This will make learning more fun and the card more interesting and personalised.
- Don't forget to present the information to be retained in different combinations. Learning is best done by using more than one sense.



TESTIMONIALS FROM TEACHERS, PARENTS AND STUDENTS

We have shown the platform to three potential users and asked for their thoughts as parent, as teacher and a student. We hope this insight will be useful both for the evaluation of our project but also for other users, who can compare experiences.

SECONDARY EDUCATION TEACHER

Stratos is teaching Physics as a support teacher in Special Education. He works one to one with students who gave learning difficulties. We went through various lessons of the platform and chatted about it.

1. "Strato, thanks for helping us with this. What are you teaching and is the usual age of your students?"

"I am teaching Science (mostly Physics) and the usual age of my students are between 12 and 15 years old."

2. "Do you often deal with cases of students with dyslexia and what are the most common issues you face when teaching?"

"I deal quite often with cases of students with dyslexia and the most common issue I have is involving them in the learning process."

3. "Have you used flashcards in your lessons before? I have used flashcards

as part of a learning board game we created with some colleagues."

4. "After having seen the Flashmind lessons and flashcards, do you think you could use them in your lesson?" "Yes, I think they are useful, especially for students with learning difficulties"

5. "What is it you like or dislike about our platform? If you could change something, what would that be?" "I like the platform's layout and the fact that lessons combine theory (text, videos, photos, diagrams) with comprehension questions. I had difficulty in navigating to previous slides or between different lessons."

6. "Is there any other way you could make use of our platform for your practice?" "It could be used as a helping tool either during class or as part of homework for students."

"Thank you for your time, Strato, we really appreciate your input."



PARENT

Afrodite is a 36-year-old mother of two girls. Her eldest daughter, Chrissa, is in primary school and faces difficulties in writing and reading. We went through the lessons together, focusing on the Reading lessons.

1. "Hi Afrodite. Can you tell me a bit about the difficulties your daughter is facing at school?"

"Chrissa is having difficulties reading words, understanding phonemes basically, and figuring out the pronunciation of words. I am not sure if it relates but she also struggles with reading, so again putting making sense out of letters. We are working on it a lot at home, and we are following her progress with her teacher."

2. "Have you seen or used flashcards before?"

"I know that her English teacher is sometimes using flashcards to teach new words."

3. "After having seen the Flashmind lessons and flashcards, do you think you could use them when helping Chrissa study?"

"Yes, I think they could be useful; I see that all children nowadays are very familiar with these platforms and find them much more engaging than books. I do not like it to be honest, but they are

all experts. I think she will particularly enjoy the videos and the interactive exercises."

4. "What is it you like or dislike about our platform? If you could change something, what would that be?" "I am not sure how they progress at school, so I am not sure if the materials are too much or too little. I myself like the colours and the playful pictures. Maybe young children will need some help at first figuring out how things work but I am sure they would be independent after the first few times."

5. "Is there any other way you could make use of our platform?"

"I think it might also be useful when learning vocabulary? I am just thinking of how the English teachers are using them. I do think it is a good idea to quickly associate the concept of something with its theory or different examples, I understand it could help children memorise things more easily."



STUDENT

Panos is a secondary education student, he attends 2nd class.

1. "Hi Pano, thanks for helping us with our work. Now, did you see our platform, did you like it?" "Yes, it was good."

2. "What did you like the most?"

"I liked the colours, the images and the videos. I liked the videos a lot."

3. "Have you used flashcards in your classroom before?" "Yes, we sometimes use them in Greek and English lessons. But in paper, not a platform."

4. "After having seen the Flashmind lessons and flashcards in a platform, do you think it would be nice to use them in the class?" "Yes, sure. It would be nice to do exercises online and see the lesson online."

5. "How do you think you could use it in the class? Any ideas?" "I don't know, maybe do the lesson as it is and then do the exercises like in teams, like a competition. And who finishes first, wins. The same with flashcards, the team that has the most correct ones, wins. I think it would be cool to do the exercises in class, like a game. And maybe guess the correct answer in the flashcards."

6. "Is there anything you did not like or was difficult?" "I was not sure where to find the flashcards and I had to look for them. And sometimes the answer was wrong, but I was sure it was correct. So, I had to write it a different way until I find how I should write it."

"Ok, thanks, Pano, that's very helpful for us."



POTENTIAL OF FURTHER USE OF THE PLATFORM

DEVELOPMENT OF NEW PATHS

AT THE END OF THIS 2 AND HALF-YEAR PROJECT, THE FLASH MIND PLATFORM WILL HOST 45 LESSONS ON READING-MATH-SCIENCE SUBJECTS AND MORE THAN HUNDREDS FLASH CARDS TO ASSESS AND RETRIEVE LESSONS LEARNT.

What is next?

Flash Mind is thought to have a sustainable approach through the further use of its final users:

- teachers will be able to create more lessons and flash cards within the platform, and share them with their students and other users through a simple link. This means that the learning opportunities will be even more, as they will be able to include more subjects too. Moreover, the platforms provide with the opportunity to create and manage classrooms;
- students will have the access to the classes created by their teachers in order to practice and to follow their advancements;
- students will have also the opportunity to enjoy the platform as single users, to use the lessons, their tests and the flash cards as a supportive tool for their personal learning path;
- parents and specialists will be able to enrol and to use all the materials and resources, for example as a supportive tool for homework or as adaptive tools to facilitate the learning experience of DYS students.

Technology evolves fast, and maybe in the future, we will discover even more functionalities to exploit to enrich the Flash Mind world.



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