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GAMWORK
homework gamified environment

HOW
STUDENTS
WOULD LIKE TO
HAVE FUN
WITH THEIR
HOMEWORK

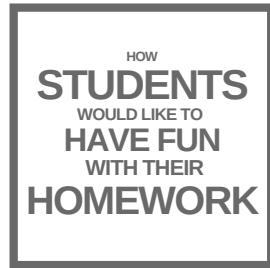
Needs analysis from each country



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Needs analysis from each country

How students would like to have fun with their homework 2022

ERASMUS+ Project
GameWork
KA220-SCH - Cooperation partnerships in school education

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HOW STUDENTS WOULD LIKE TO HAVE FUN WITH THEIR HOMEWORK

Needs analysis from each country

Introduction

GameWork is an Erasmus+ Project financed by the European Union, that aims to motivate students to work on their homework and alleviate their reluctance to do it. Towards this goal, GameWork Team will develop a gamified homework environment that will use gamification techniques to motivate students to do their homework. So, GameWork have three precise objectives:

1 Homework organisation

Learners can access the environment with their smartphone or tablet and see the daily list of activities that they must perform to prepare for the next day, ticking the completed ones.

2 Student engagement

Engage students from the early stages of development, allowing GameWork Team to investigate their views and ideas about gamified homework, possible features and gamified mechanisms.

3 Progress monitoring (for students and teachers)

A verification process will be designed for a student not to skip the assignments and declare them untruthfully complete. The environment will ask for answers to one or more questions essential for each task.



How students would like to have fun with their homework?

The present report will present the analysis made by GameWork Team in order to assess student's needs about their homework assignments. To do so, this report will firstly present information regarding Portuguese students, following by Greek and Lithuanian students. Moreover, through this report you'll find several data about homework, such as frequency, subjects students find more interesting or boring regarding homework, students' motives to do it, students' feelings about their homework and information about the features and gamified mechanisms that students would like to interact with at GameWork environment.

Theoretical framework

What is gamification?

There is a growing interest in using game elements in non-game contexts in different domains and settings for various purposes (Saucedo-Araujo et al., 2020; Seixas et al., 2016). This phenomenon has been known as gamification. Kapp (2012) defined gamification as using game-based mechanics, aesthetics and game thinking to engage people, motivate action, promote learning, and solve problems.

Gamification has been a trending topic in educational context (Dichev & Dicheva, 2017; Saucedo-Araujo et al., 2020). Its importance has been recognised among researchers and educational stakeholders in general (Metwally, 2021). In addition, gamification in education helps integrating game dynamics and mechanisms. This serves two purposes: a) to create a learning experience in order to improve teaching and learning and b) to increase students' motivation and engagement (Lampropoulos et al., 2022; Luo, 2021; Saucedo-Araujo et al., 2020). Moreover, research studies highlight the importance of incorporating game elements, such as missions, narrative, continuous feedback, and decision-making. These tools are proved to be as powerful mechanics for enhancing students' involvement (e.g., Saucedo-Araujo et al., 2020). Nevertheless, gamification can take many forms, and the game elements can be combined in many ways (Luo, 2021).

Gamification components have the potential to encourage students to engage in more goal-orientated learning by exercising their patience, providing repetitive learning, teamwork, and friendly competition with others (Ding, 2019). Wichadee and Pattanapichet (2018) highlight that gamification can make a shift from a teacher-oriented class to a student-oriented one. Through gamification, students are encouraged to participate actively in decision-making, explore, take risks and try different solutions (Butler & Bodnar, 2017; Saleem et al., 2021). Therefore, gamification in education has been recognised as a meaningful approach to creating attractive learning environments and keeping learning entertaining, interactive and useful. This approach may enable students' involvement and participation in learning (Saleem et al., 2021).

What is homework gamification?

Homework has been used worldwide as a complementary educational tool and it is assigned to students of different cultures, grade levels and subjects (Chang et al., 2014). Cooper (2001) defines homework as tasks assigned to students by their teachers to be completed outside the class time in order to review, practice, consolidate and monitor learning.

Research data has provided solid evidence about the positive impact of homework on engagement and academic performance; such as higher levels

Theoretical framework

of self-efficacy, self-regulatory skills, engagement in school and conscientiousness (Buijs & Admiraal, 2013; Galloway et al., 2013; Gollner et al., 2017; Rosário et al., 2009). Nevertheless, homework is also associated with negative effects, including negative emotions and procrastination behaviours, especially when several characteristics are not considered (e.g., amount, frequency, purpose, degree of difficulty, feedback) (Dettmers et al., 2011; Fulano et al., 2018; Galloway et al., 2013; Trautwein et al., 2009). Despite this, homework in total is considered as a valuable tool for facilitating academic success. It is an additional learning opportunity that enables students to be active and participative in their learning process (Iflazglu & Hong, 2012).

The increased use of technology in today's classrooms may be an opportunity to change homework format by adding game elements, not only in the classroom but in homework assignments as well. Homework gamification is an "interactive approach to inspire students learn through the use of web-based game design and gaming elements in learning environments" (Metwally, 2021, p. 15).

Based on a systematic research review on comparing online homework and traditional homework in a sample of college students, Magalhães et al. (2020) underlined some characteristics associated with online homework that may

benefit students' performance and engagement: i) provide exercises adjusted to students' knowledge to respond to individual needs; ii) possibility of randomisation to avoid copying homework from their peers; iii) provide immediate and individualised feedback to teachers and students about homework performance and achievement. Feedback is an opportunity for students to correct their errors and practice exercises for resubmitting new responses to the exercise. However, trial and error submissions had been associated with lazy behaviour reinforcement. Therefore, a restriction on the number of attempts to solve homework should be added to overcome this limitation. An alternative strategy may be to reduce the score obtained in the exercise based on the number of attempts.

Theoretical framework

Gamification' elements/mechanisms

There are several mechanisms and elements of gamification described in the literature. Overall, the purpose of these components is to promote player motivation and involvement. Table 1 presents a brief description of each of the features, as well as some examples.

Table 1. Elements and mechanisms of gamification

Element/ mechanism	Description	References
Points (XP)	Score that is given to the student for performing a certain task. It can function as a positive reinforcement mechanism and be integrated into a system of levels.	Butler & Bodnar, 2017 Goehle, 2013 Goehle & Wagaman, 2016 Metwally et al., 2021
Levels	Hierarchical system that allows the student to evolve in the game. As a rule, the student levels up when he earns a certain number of XP. Different levels can be associated with different skills, powers or perks (these can be considered rewards). In addition, the system for awarding points to reach a level must become more complex to increase player engagement.	Goehle, 2013 Goehle & Wagaman, 2016 Metwally et al., 2020 Metwally et al., 2021
Progress	It can be part of the leveling mechanism and is defined as a graphical representation of the player's evolution. It can be a percentage bar relative to how much XP the player has already acquired to pass a level. It can also be a percentage bar that indicates how many activities the student has completed to finish the homework.	Goehle, 2013 Goehle & Wagaman, 2016 Metwally et al., 2019 Metwally et al., 2021

Element/ mechanism	Description	References
Rewards	These are elements that the player gains once he reaches a new level. In an educational context, it can have many forms giving another chance in the next homework, being able to extend the deadline of the next homework without penalty, being able to take a note in the next test, receiving help in your next homework.	Goehle, 2013 Goehle & Wagaman, 2016 Metwally et al., 2019
Achievements	These prizes are not part of the main game system. Instead, they are secondary and optional objectives that the player can fulfill if they want. Examples: completing 20 homework tasks, participating in 7 challenges, logging 15 times.	Goehle, 2013 Goehle & Wagaman, 2016
Badge	A visual feedback to symbolize rewards if students get a specific number of points or respond to the exercise under a set of conditions	Metwally et al., 2020
Leaderboard	A table that includes the names of students with the most points. It can be part of a competitive approach.	Metwally et al., 2020 Metwally et al., 2021
Challenges	More complex tasks that involve more attention and more skills from student to be able to complete them successfully.	Metwally et al., 2019 Metwally et al., 2020 Metwally et al., 2021
Blocked items	Items that require the player to complete an activity or reach a certain level in order to be unlocked.	Metwally et al., 2020 Metwally et al., 2021
Feedback	A space where students receive feedback on their performance in activities. Studies indicate that feedback from teachers and even family members can promote student engagement and motivation.	Metwally et al., 2019

Theoretical framework

Element/ mechanism	Description	References
Tasks/missions/ objectives	Set of actions that the player must perform to fulfill/achieve a certain objective.	Metwally et al., 2019 Metwally et al., 2021
Quizzes	It could be a task that involves answering a set of questions. There are some online platforms that allow you to create quizzes in a gamified way, such as Kahoot.	Metwally, et al., 2019 Panahandeh & Chalak, 2020
Time constraints	The amount of time the student must complete an activity. It may appear on the gaming platform as a countdown. This mechanism encourages players to respond quickly. You can use it as a reward for giving students more seconds/minutes to complete a task.	Metwally et al., 2019 Metwally et al., 2021
Chances	Opportunity to re-respond to a task. It could be a reward.	Metwally et al., 2021
Win state	A graphic message that shows the player has earned a reward. It could be a reward.	Metwally et al., 2021
Notifications	Messages that remind students to complete a task, alert for the insertion of new challenges, remind them of the deadline to play.	Metwally et al., 2021
Tutorials	They can be made available in the first contact of students with the game platform, so that they learn to interact with it. They can also be used in the game's logo, showing instructions or illustrative images to help students complete tasks.	Metwally et al., 2021
Increasing difficulty	Associated with the levels' mechanism. That is, the complexity of each level must be gradually higher.	Metwally et al., 2021

Impact of homework gamification

Motivation

Recently, there has been a growing interest in understanding how gamification can impact student motivation. Several studies are now focusing on investigating the relationship between student motivation and gamification at educational and learning contexts (e.g., Dicheva et al., 2022). Additionally, some researchers studied the relationship between homework gamification and student motivation (i.e., Butler & Bodnar, 2017; Metwally et al., 2019).

According to Dicheva et al. (2022), use of gamification in learning contexts seems to enhance students' intrinsic motivation, and specifically their willingness to perform tasks that involve practice and skills training. However, the authors underline that intrinsic motivation may not be related to increased interest in learning.

Regarding the relationship between gamification of homework and student motivation, Butler (2017) used the MUSIC Model of Academic Motivation Survey performing a quantitative analysis. The MUSIC Model (Jones & Skaggs, 2016) presupposes that the academic motivation of students, in a given task/activity, must be evaluated taking into account five constructs: (1) eMpowerment – referring to the freedom of

Theoretical framework

choice that students have to perform the task, as well as the incentives and rewards they receive after completing it; (2) Utility – referring to the relevance of the task and the way it is related to the subjects taught; (3) Success – alluding to the level of difficulty of the activity and how confident the students feel to perform it; (4) Interest – which assesses whether the task is fun and whether it is well structured; and (5) Care – referring to the feedback that students receive from their teachers, after finishing an activity (positive, negative or insufficient).

Butler and Bodnar (2017) concluded that the gamification of homework enhances student motivation, and empowerment and care found to be the two variables with the strongest impact on student motivation. Concluding, the authors (Butler & Bodnar, 2017) emphasize that students like to have freedom of choice in gamified platforms and appreciate receiving feedback from their teachers and be informed if they meet both teachers' and personal expectations. Therefore, it seems relevant that the GameWork environment includes different strategies and games for a given subject, in order to allow students to have options to choose from. In addition, it is essential to include a space where students can obtain their teachers' feedback on the activity they performed. In this way, it will be possible to promote not only the motivation of the former but also the dyad of teacher-students.

Another similar study, which sought to understand the relationship between homework gamification and student

motivation, was conducted by Metwally et al. (2019). One of the main conclusions of this study is that the use of gamification in homework seems to promote students' satisfaction in carrying out this activity, which consequently promotes their intrinsic motivation.

Engagement

In educational contexts, the concept of "involvement" is defined as the interaction of students with the tasks proposed to them (Saeed & Zyngier, 2012). Therefore, there are three types of involvement: (1) behavioral – related to students' participation in their educational contexts; (2) emotional – referring to the emotional reactions that students experience when performing an activity; and (3) cognitive – related to the student's effort/investment in the learning process (Fredicks et al., 2004).

Pankiewicz's (2016) study sought to compare the number of interactions that occurred between two groups; students who used a gamified platform and students who used conventional teaching methodologies. The results showed that students who used a gamified platform interacted more with activities proposed by the teachers, revealing a greater involvement. Additionally, statistically significant differences were found in the number of homework uploads and in the search for additional information about the subjects taught. This means that gamification promoted homework, as well as an interest in knowing more about different subjects and educational content.

Theoretical framework

Seixas and colleagues (2016) also concluded that the use of gamification in educational context has a positive impact on student engagement. However, the authors underline the necessity of gamification mechanisms used to be aligned with the educational objectives. Therefore, it is essential for GameWork environment clear learning goals to be set a priori in order to enhance students' engagement.

Although there are already some investigations that focus on the study of the impact of gamification on the academic engagement of students (i.e., Bouchrika et al., 2019; Dicheva et al., 2022; Seixas et al., 2016), the truth is that there are few investigations that study this phenomenon when carrying out homework (Magalhães et al., 2020).

Academic Performance

Academic performance can be influenced by several factors, internal and external to the classroom. For example, it can be influenced by the curricular schedule or the layout of the room, but also by family dynamics and participation in extracurricular activities (Mushtaq & Khan, 2012). In addition, there seem to be three main factors that positively impact students' academic performance and one factor that impacts this variable negatively. Students' communication skills, good school facilities

and close monitoring by parents and teachers are the three main factors that positively influence academic performance. In contrast, stressful family dynamics can negatively affect academic performance (Mushtaq & Khan, 2012).

Within the scope of the GameWork project, it is relevant to understand how gamification, more specifically the gamification of homework, can impact students' academic performance. A recent study by Pechenkina and colleagues (2017) found that the use of a gamified mobile app had a positive impact on decreasing the percentage of retained students, as well as the academic performance of students who used it (an increase of 7.03% on average).

Regarding the gamification of homework, this approach seems to promote students' academic performance. However, Villamor and Lapinid (2022) warn that academic performance is greatly influenced by the degree of difficulty of the tasks. Consequently, in more complex tasks, students achieved lower results. Additionally, the researchers noticed a delay in the delivery of homework or an increase in non-delivery over time. Thus, in the first week the students were quite motivated, but they progressively lost motivation and commitment, which in turn can affect academic performance.

The abovementioned research data are of great importance for the GameWork team, as we need to be aware of possible challenges that may arise when implementing the gamified environment.

Theoretical framework

In addition, we can also define a strategy that promotes the involvement and motivation of students over time and, as a result, manages to enhance their academic performance. Students' monitoring by parents and teachers is also a factor that significantly impacts academic performance. Last but not least, it may be necessary to include digital mechanisms/channels that allow students to receive different types of feedback from these figures.



Students' general characteristics

To assess students' needs and perceptions about homework, GameWork Team developed an online questionnaire that was completed by a group of students of each country. In total, we have collected **173 responses**, wherein **76 were from Lithuania** students, **49 were from Greek** students and **48 were from Portuguese** students.

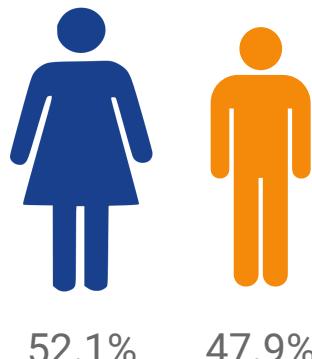
Regarding students' gender, 90 participants were females, 80 were male, and 3 preferred to not specify. About students age, each country collected data from different age-ranges. In this sense, Lithuanian students were the youngest, with 9 or 10 years old. Most of the Portuguese students were 13 or 14 years old, but the range goes from 12 to 17 years old. Greek students were the oldest, with ages between 14 and 17.

Lithuanian students appear to have better academic performance, and do more frequently their homework assignments.

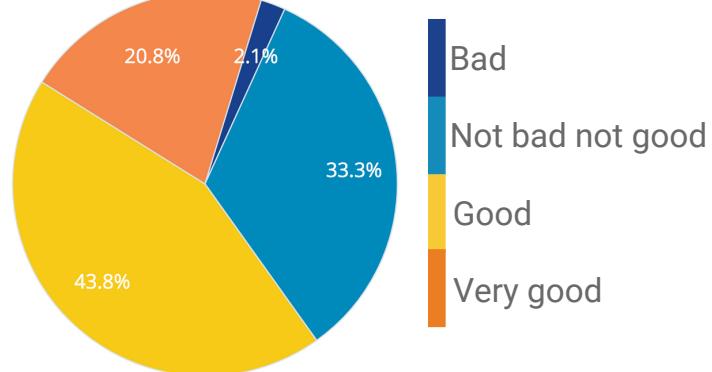
Exploring students' caregivers levels of education, Lithuanian and Greek caregivers have similar percentages of mothers and fathers that completed higher education courses. In the contrary, the percentage of Portuguese mothers and fathers that have completed higher education courses is considerably lower.

Portuguese students' sociodemographic information

Gender



Academic performance

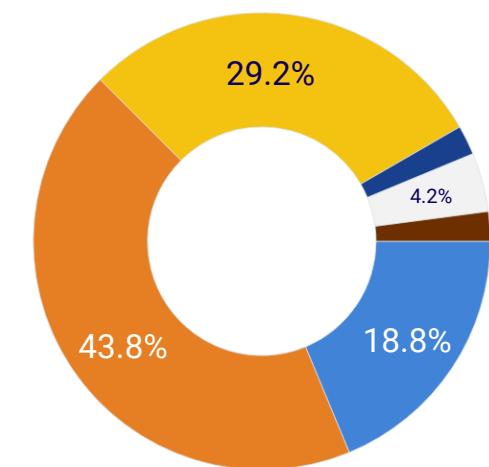


Caregivers age

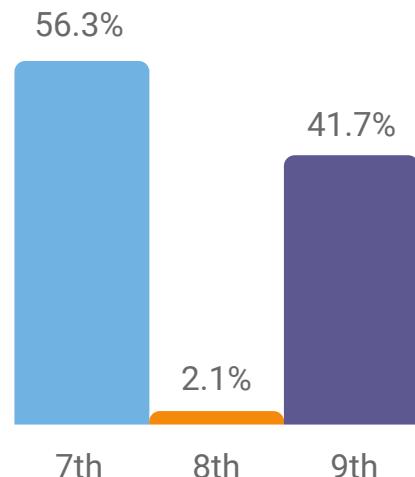
Half of **mothers** are 40 to 49 years old. 27.1% are between 30 to 39 years-old and 16.7% are between 50 to 59.

Students' **fathers age** are similar to mothers' age. So, 47.9% are between 40-49, 12.5% are between 30-39, 31.3% are between 50-59 and 2.1% have more than 60 years old.

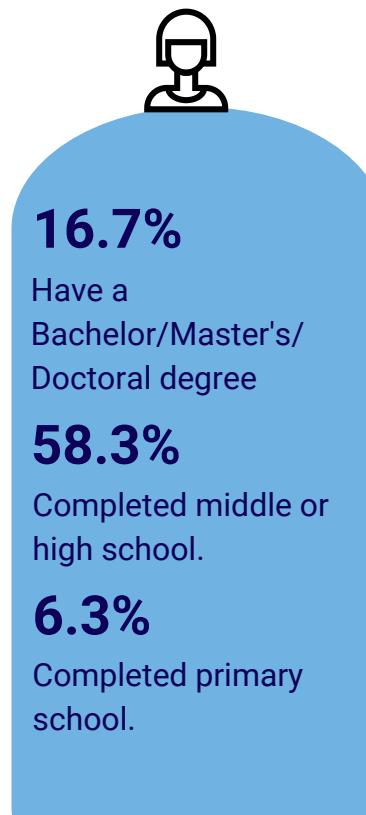
Age



Grade



Caregivers level of education



Portuguese students' homework

Homework frequency

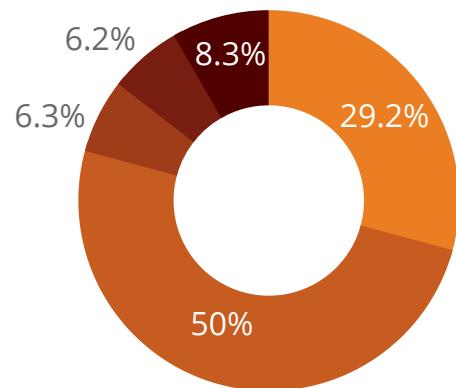
35.4% of the students do their homework daily

43.8% of the students do their homework more than once a week

10.4% of the students do their homework once a week

10.4% never do homework

% of homework assignments completed



- All the homework assignments
- Most of the homework assignments
- Half of the homework assignments
- Less than half of the homework assignments
- None of the homework assignments

Motives

It seems important to understand what motivates students to complete their homework assignments. Below, you can find the **5 more common motives** that stimulates Portuguese students to do their homework.

Homework is a way for me to raise my grades.

That's what I'm supposed to do.

I want to understand the subject(s).

It allows me to learn more.

I will feel bad about myself if I don't do it.

Portuguese students' homework

Attitudes and emotions

Another piece of information that the GameWork Team sought to collect was the attitudes and emotions that students may have when they are doing their homework. Although students claim that they are dedicated, that they try to do their best and stay focused, the truth is that the **most rated statement** was:

"I feel bored"

This statement is congruent with literature that declare that despite the apparent benefits of assigning homework to students (learning, consolidation, and application of learning content, better time management in the classroom), it appears to be a tremendous discomfort to students and can lead to high levels of stress (Galloway et al., 2013; Better Sleep Council, 2018).

Homework preferences



"I prefer to do my homework with a friend"



"I prefer to do my homework when the assignments encompass practicing skills already covered in class"

Homework assignments that students like less



When the assignments encompass acquiring knowledge of a subject prior to covering the topic in class



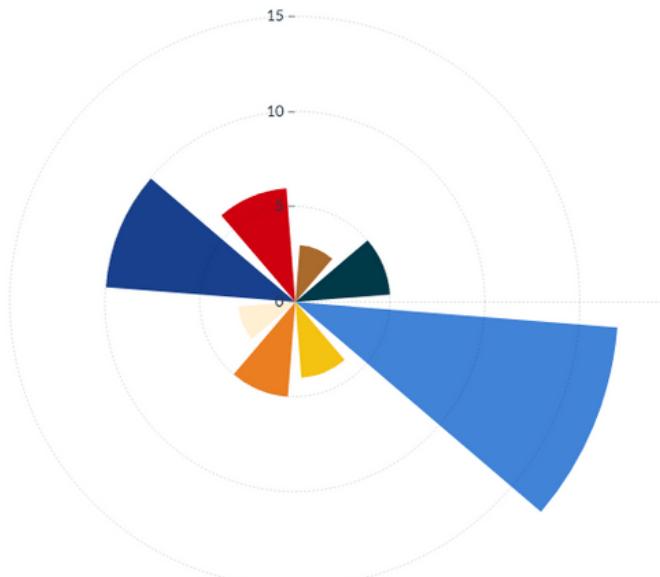
Organize my homework assignments according to the order of the subjects on my schedule*

*Students prefer to organize their homework according to the difficulty of the task (from easier to harder)

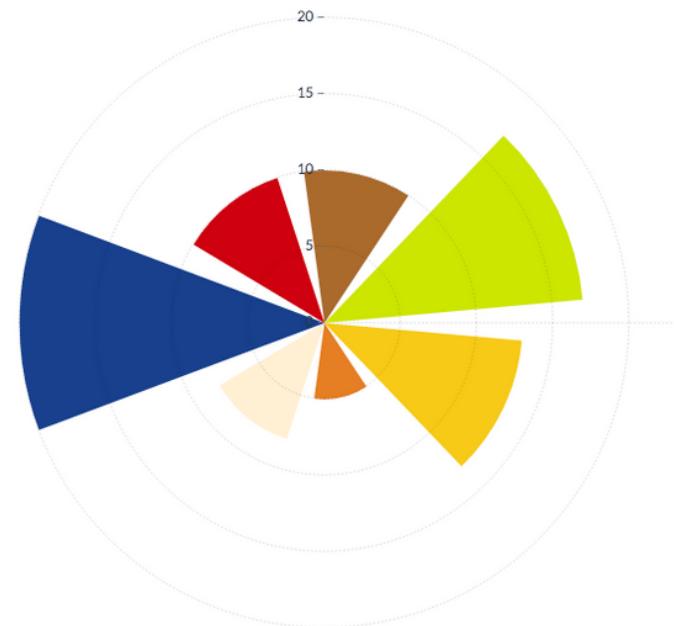
Portuguese students' homework



Subjects with more interesting homework



Subjects with more boring homework



Sciences
Math

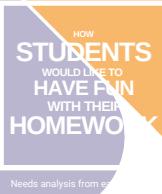
Geography
History

Physics and Chemistry
English

Geography
History

Physics and Chemistry
English

Maths
Portuguese



Portuguese students' gamification experience



Gamified mechanisms that students would like to see

Chances

Attempts to answer the questions if the answer is wrong, up to three attempts

Levels

Gradual achievement stages to reach the milestone in which answering the exercises advances students' status and could represent their achievement

Achievements/Mission/Goal

Refers to the goal of doing the homework. It requires performing a set of actions and following the player's journey to accomplish the mission, for instance, finding the treasure

Additional suggestions

"Create a personal and private record"

"Create a daily streak"

"Possibility to share with chosen friends"

63.4%

of the students has never done their homework assignments in a gamified environment

Portuguese students' gamification experience

Subjects in which students would like to test GameWork

Maths

Physics and chemistry

*Portuguese / Sciences**

71%

of the Portuguese students play games every day or almost every day.

The most frequent games are related to football (i.e., FIFA), strategy (i.e., Clash Royale, Minecraft) and guns (i.e., Fortnite, CS Go). However, one student listed several educational games like:

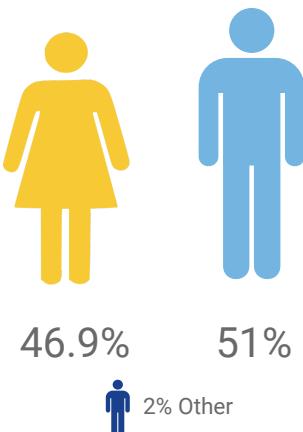


1. Globe
2. Worldle
3. Seterra
4. Sporcle
5. Heardle
6. Wordle

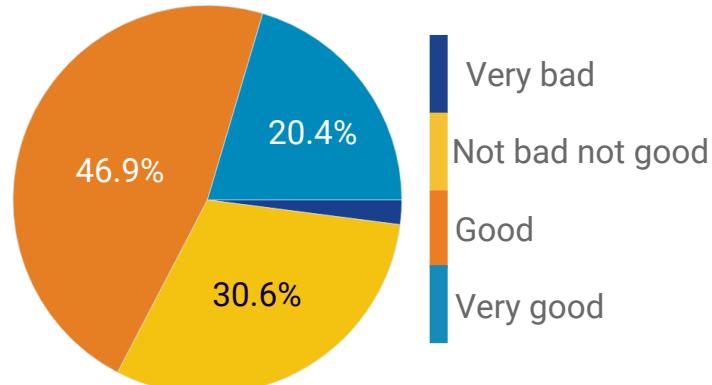
*Both subjects had the same frequency

Greek students' sociodemographic information

Gender



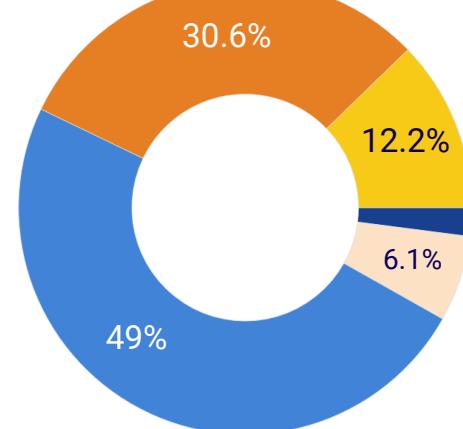
Academic performance



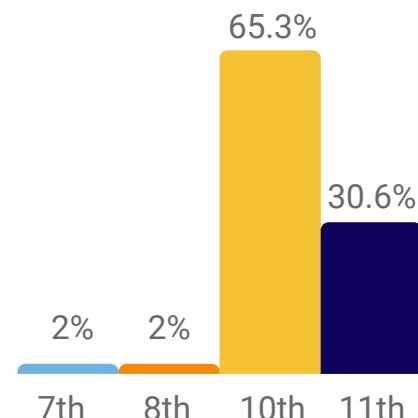
Caregivers age

More than half of **mothers** are 40 to 49 years old (59.2). 4.1% are between 30 to 39 years-old and 34.7.7% are between 50 to 59, and 2% have 60 or more years old.
Half of **fathers** have 50 to 59 years old. 38.8% are between 40-49, and 8.2% have 60 or more years old.

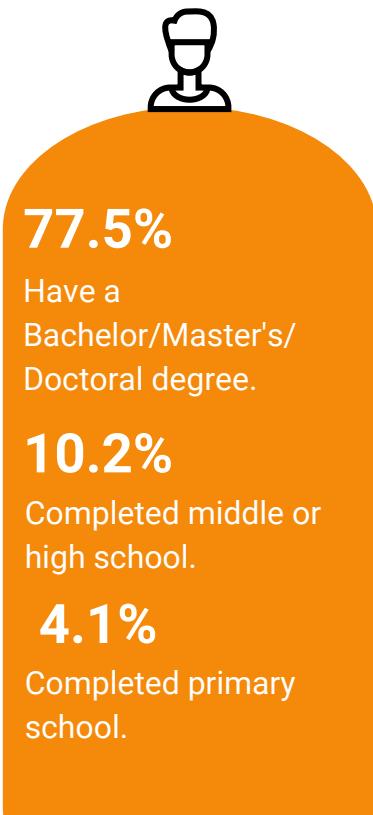
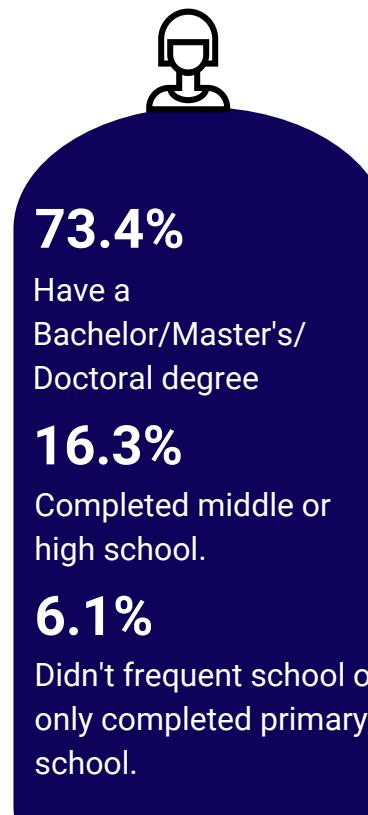
Age



Grade



Caregivers level of education



Greek students' homework

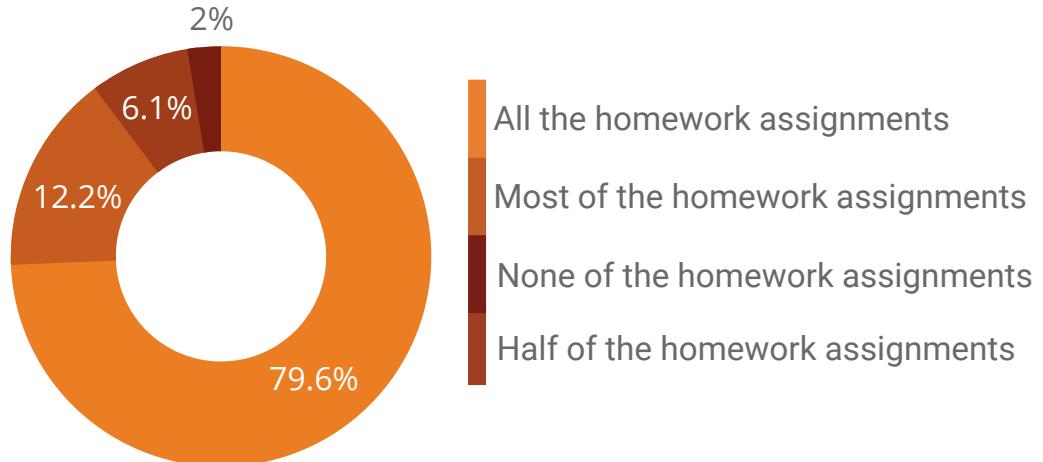
Homework frequency

77.6% of the students do their homework daily

16.3% of the students do their homework more than once a week

6.1% of the students do their homework once a week or never

% of homework assignments completed



Motives

It seems important to understand what motivates students to complete their homework's assignments. Below, you can find the **5 more common motives** that stimulates Greek students to do their homework.

I want to be proud of myself.

I want the teacher(s) to think I'm a good student.

Homework is a way for me to raise my grades.

I will feel bad if my classmates have done their homework and I haven't.

I want to understand the subject(s).

Greek students' homework

Attitudes and emotions

According to their answers, most of the Greek students really like to "**do the best work they can**" while doing their homework. Moreover, Greek students have positive attitudes and emotions towards homework assignments, since they:

"feel smart and dedicated"

Plus, Greek students don't feel sad or annoyed while doing their homework tasks and, most of them don't considerate homework as

"a waste of time"

So, considering students responses, it is possible to affirm that Greek students perceive their homework as meaningful and useful.

Homework preferences



"I prefer to work alone when I do my homework."



"I prefer to deal with assignments that require writing first, and the ones that require learning by heart last."

Homework assignments that students like less



Tasks that involve work with their colleagues.

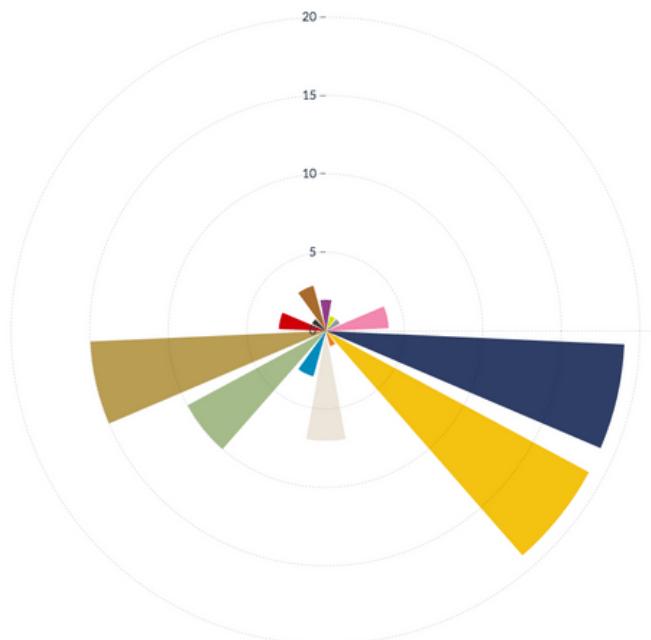


Do their homework with the support of an adult.

Greek students' homework



Subjects with more interesting homework



Maths

Physics

Latin

History

Algebra

Biology

Chemistry

Literature

Politics

English

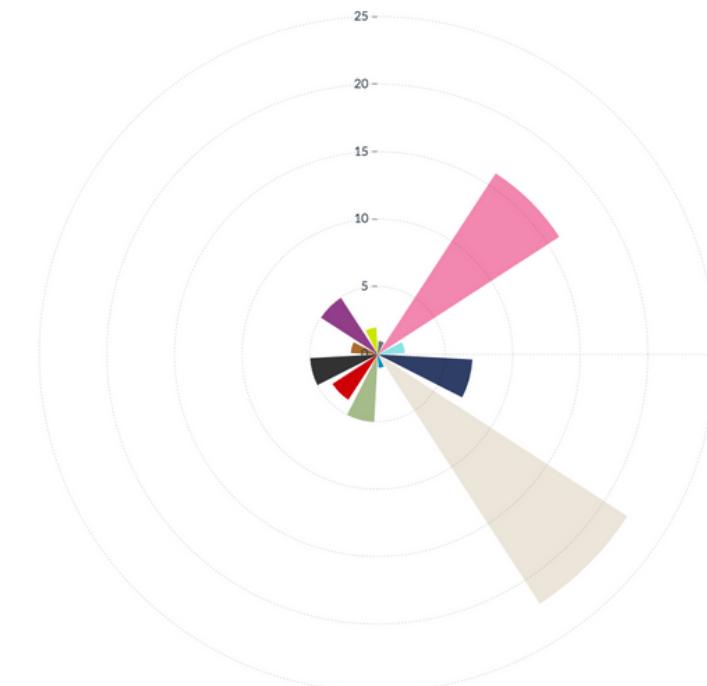
Modern Greek Language

Computer Science

Geometry

Ancient Greek Language

Subjects with more boring homework



Maths

History

Algebra

Biology

Literature

Politics

English

Modern Greek Language

Computer Science

Geometry

Ancient Greek Language

Philosophy



Greek students' gamification experience



Gamified mechanisms that students would like to see

Progression

The visual representation to identify students' position towards completing the homework

Points

An obtained score to reward students after answering questions

Achievements/Mission/Goal

Refers to the goal of doing the homework. It requires performing a set of actions and following the player's journey to accomplish the mission, for instance, finding the treasure

Additional suggestions

"Simulation of real experiments/events"

Rewards

Hints

Teachers' feedback about students' skills and how to improve them

40.8%

of the students never done their homework assignments in a gamified environment

Greek students' gamification experience



Subjects in which students would like to test GameWork

Maths

History

Biology

51.1%

of Greek students never play video game or play less than once a week

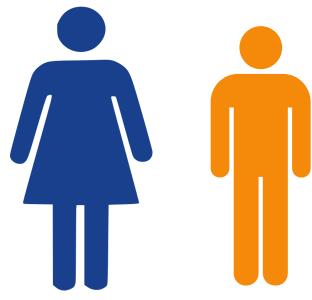
Most frequent games played by students

The most videogames played by Greek students are: FIFA, NBA, League of Legends, and Fortnite. However, since half of the students don't play videogames weekly, most of them didn't reply to this question with games' names. They wrote their preferences about games, such as:

1. Strategic games
2. Games on digital platforms
3. Puzzles

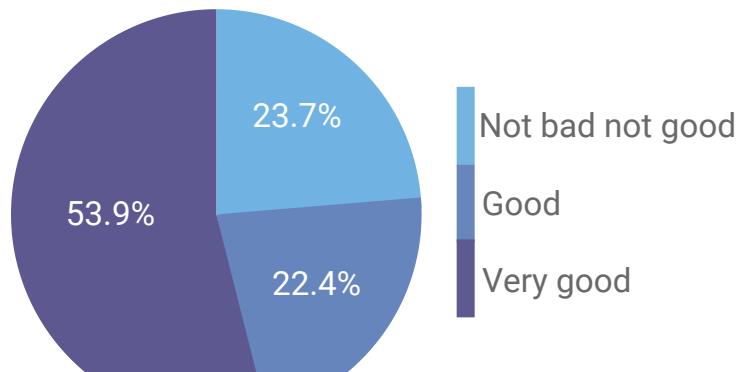
Lithuanian students' sociodemographic information

Gender



1.3% Other
 1.3% Prefer not to say

Academic performance



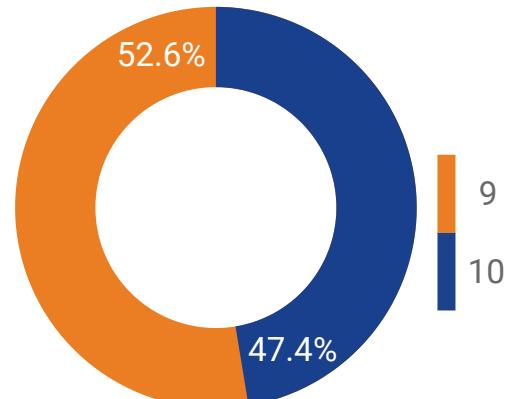
Very good
Good
Not bad not good

Caregivers age

50% of **mothers** are from 30 to 39 years old. 47.4% are between 40 to 49 years-old, and only 1.3% are between 50-59 years old.

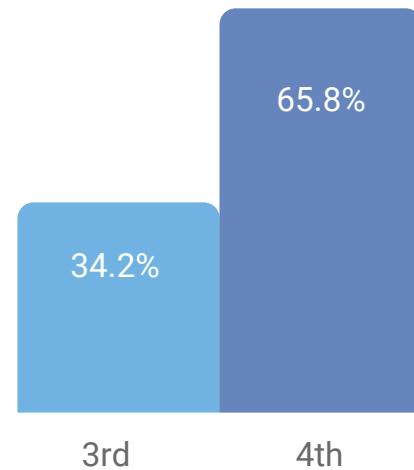
50% of **fathers** are from 40 to 49 years old. 32.9% are between 30-39, 10.5% are between 50-59, and only 3.9% have more than 60 years old.

Age



9
10

Grade



Caregivers level of education



71.1%

Have a
Bachelor/Master's
degree.

21.1%

Completed high school.

7.9%

Completed middle or
primary school.



59.5%

Have a
Bachelor/Master's/
Doctoral degree.

26.3%

Completed high
school.

13.1%

Completed middle or
primary school.

Lithuanian students' homework

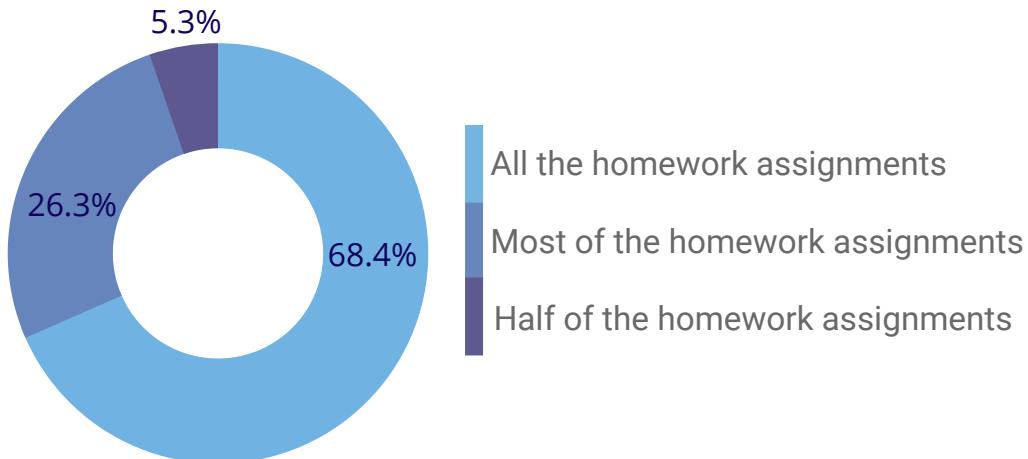
Homework frequency

80.3% of the students do their homework daily

18.4% of the students do their homework more than once a week

1.3% of the students do their homework once a week

% of homework assignments completed



Motives

It seems important to understand what motivates students to complete their homework assignments. Below, you can find the **5 more common motives** that stimulates Portuguese students to do their homework.

Homework is a way for me to raise my grades.

It allows me to learn more.

I want that my parents will be proud of me.

That's what I'm supposed to do.

I want to understand the subject(s).

Lithuanian students' homework

Attitudes and emotions

Lithuanian students seem to have positive attitudes and emotions towards homework assignments. According to their answers about this question, when they are working their homework, they:



"feel focused"



"like to do the best work they can"



"feel confident"

Homework preferences



"I prefer to do my homework when the assignments improve my imagination and creativity."



"I prefer to work alone when I do my homework."

Homework assignments that students like less



Tasks that involve work with their colleagues.

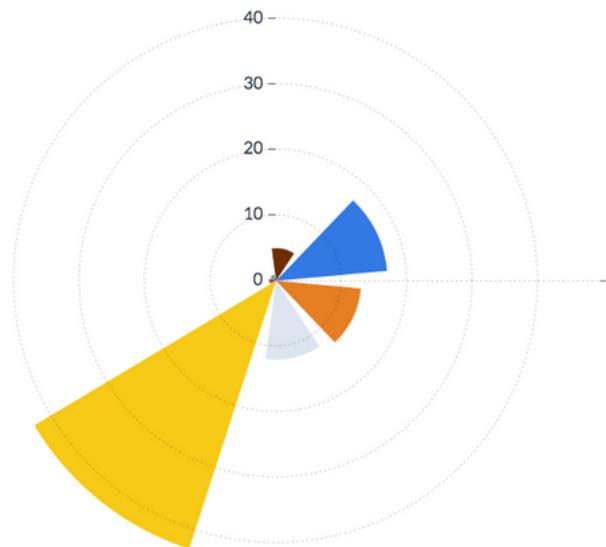


Lithuanian students don't like to do homework assignments that require the support of an adult.

Lithuanian students' homework



Subjects with more interesting homework



English

Technology

Lithuanian

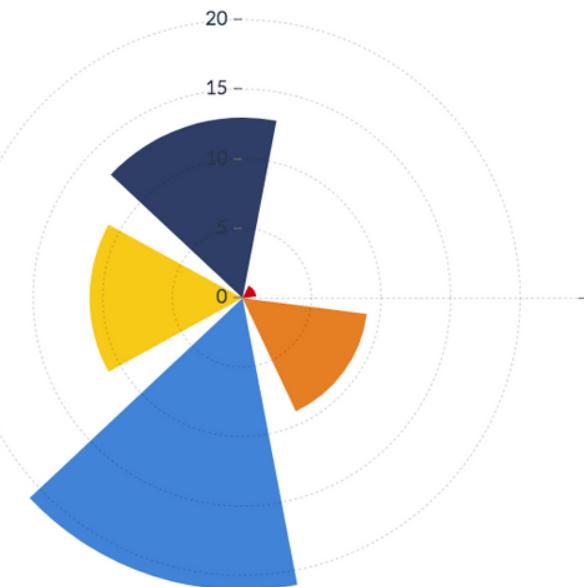
Arts

Maths

Knowledge of the world

Music

Subjects with more boring homework



English

Lithuanian

Maths

Knowledge of the world

Arts



Lithuanian students' gamification experience



Gamified mechanisms that students would like to see

Achievements/Mission/Goal

Refers to the goal of doing the homework. It requires performing a set of actions and following the player's journey to accomplish the mission, for instance, finding the treasure

Increasing difficulty

The feature of raising the difficulty level of questions gradually

Points

An obtained score to reward students after answering questions

Students experience with gamified homework

39.5%

of students remember that they already had the experience with gamified homework

34.2%

of students never done gamified homework

Lithuanian students' gamification experience

Subjects in which students would like to test GameWork

Maths

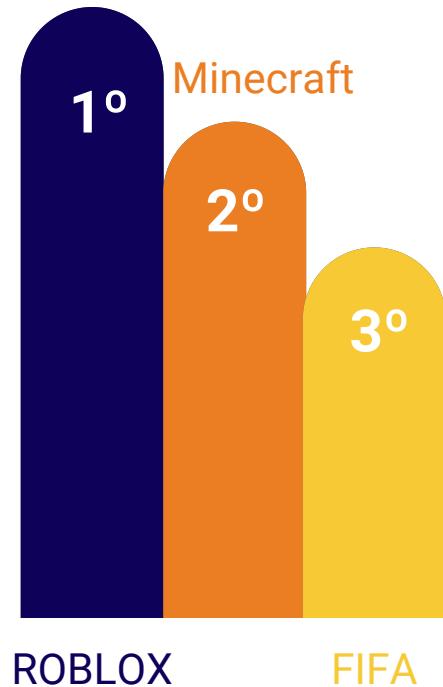
Lithuanian

Knowledge of the world

76.4%

of Lithuanian students play games every day or almost every day.

Most frequent games played by students



General findings

In this section we will explore the main findings about students' homework and experience with gamification. On table 2. is possible to find the main similarities and differences between Portuguese, Greek and Lithuanian students about homework preferences.

Table 2. Synthesis of students homework preferences

Homework assignments	PT	GR	LT
Work alone when they are doing their homework.		✓	✓
Work with a colleague when they are doing their homework.	✓		
Do their homework when the assignments encompass practicing skills already covered in class.	✓		
Deal with assignments that require writing first, and the ones that require learning by heart last.		✓	
Do their homework when the assignments improve their imagination and creativity.			✓

Contrary, table 3. present the similarities and differences between students regarding the homework assignments that they like less.

Table 3. Synthesis of homework assignments that students like less

Homework assignments	PT	GR	LT
Assignments that encompass acquiring knowledge of a subject prior to covering the topic in class.	✓		
Organizing their homework assignments according to the order of the subjects on their schedule	✓		
Tasks that involve work with their colleagues.		✓	✓
Do their homework with the support of an adult.		✓	✓

Analysing both tables (2 and 3) it is possible to understand that Greek and Lithuanian students have similar preferences regarding homework assignments. The same does not seem to happen with Portuguese students.

The same phenomenon occurs when it comes to **attitudes and emotions towards homework**. In general, Greek and Lithuanian students seem to have positive perceptions of homework, as they tend to perceive them as learning opportunities. On the contrary, Portuguese students perceive their homework as boring and the motivation to complete them tends to be extrinsic.

Regarding the **subjects that have the most interesting homework assignments**, we observe a plethora of results.

General findings

Maths and subjects related to sciences (biology, physics and chemistry) are the ones that students chose more frequently. However, maths also appears as the most boring subject to complete homework assignments. It ends up being a discipline that causes some controversial attitudes among students from all countries.

Students also agree that the **subjects with more boring homework assignments** are those related to **languages** (Portuguese, Ancient and Modern Greek Language, Lithuanian), **history and geography** contents.

Finally, still regarding homework preferences, on table 4. is possible to compare students' similarities and differences about the **subjects that they would like to test on GameWork platform**.

Table 4. Subjects that students want to test

Subject	PT	GR	LT
Maths	✓	✓	✓
Physics and chemistry	✓		
Biology	✓	✓	
Native Language	✓		✓
History		✓	
Knowledge of the world			✓

Regarding students experience with online games and their preferences about gamified mechanisms and elements, most of the students have played videogames, computer-games and/or mobile games. However, there is a difference between students considering the **frequency** that they play these games. Greek students are the ones that play less, and Portuguese students are the ones that play more frequently.

On table 5. we present a brief synthesis with gamified elements environment.

Table 5. Most wanted gamified elements/ mechanisms

Gamified elements/ mechanisms	PT	GR	LT
Changes	✓		
Levels	✓		
Achievements/Mission/Goal	✓	✓	✓
Progression		✓	
Points		✓	✓
Increasing difficulty			✓

According to students answers about other game mechanisms that they would like to find, and considering the games they like

General findings

to play, it's possible to understand that they prefer games that includes **strategy**. In this sense, students will like to see a gamified environment with different levels with an increasing difficulty. Also, to students progress in their level, they should complete a certain number of achievements, missions or goals.

Additionally, both students from Portugal and Greece manifest their interest in **including a social component**. Portuguese students would like to have a mechanism that would allow them to **share their results with their classmates**. Greek students would like to have a **channel** where they can **connect with their teachers** and discuss about the skills they must improve, subjects they must study more and exercises to learn more.

Another interesting suggestion that made by some Greek students was to try to include **simulations of real experiments**. Students wanted to try chemistry experiences or explore different parts of the human body on a virtual platform.

Conclusion

"*How students would like to have fun with their homework*" is the first Project Result produced in the scope of the GameWork Project. The main objective of this report was to assess students' needs and perceptions about homework and gamification. To do so, each country collected data from their students through a questionnaire, developed specifically for this purpose.

Moreover, with this report, GameWork Team expected to provide a detailed list of courses/subjects that will be gamified during the GameWork project, and enumerate the gaming features, mechanisms and elements that students would like to find and that will be implemented during the project.

To complement this Project Result, GameWork Team also wrote a report named "*Analysis of the gamification features*". In this report, it's possible to find more in-depth information about gamified mechanisms and elements. The main goal of this second report is to give some blueprints to our software engineering team to facilitate the development of GameWork environment.

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