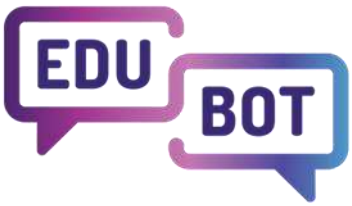

EDUBOT

Developing Key Competencies Through Blended-Learning Methodology Based On AI-Supported Chatbot Technology

EDUBOT - DEVELOPING KEY COMPETENCIES THROUGH BLENDED-LEARNING METHODOLOGY BASED ON AI-SUPPORTED CHATBOT TECHNOLOGY

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Table of Contents

INTRODUCTION

The METHODOLOGY is the main tool for summarising and adapting all the results and lessons learned from the project. It summarises the Edubot adaptive methodology, the blended learning methodology, the presentation of the functioning of the digital support system and the lessons learned from the pilot training and helps to use the project results. The Methodology is available as an e-book in 5 languages on the project website.

It functions as a methodological and technical guide, describing the processes of designing, developing and delivering blended learning courses, showing how they can be delivered in an adaptive way, ensuring that all learners are presented with challenging but not frustrating tasks and receive personalised support and assistance in the learning process.

Structure of the Methodology

- **Areas of use of EDUBOT**

  The first chapter functions as a methodological introduction, presenting the innovative methodology that allows progression along individual learning pathways, the LMS and the CAT system; the Edubot blended methodology; the typical educational situations in which the EDUBOT methodology can be most useful (e.g. exam preparation, support for differentiated instruction, etc.) and its comparative advantages over other methodologies.
  The subsection Adaptive learning supported by AI solutions shows how the Edubot AI assistant can facilitate adaptive learning and differentiation, such as designing AI-driven personalised learning paths; creating clusters, etc.
- **Basic definitions and structure of the content**

  Basic methodological concepts such as learning units, blocks, modules, learning pathways are clarified.
- **First steps or how to get started**

  This sub-chapter describes how the e-learning support system works, its main functions such as registration, user and group management, etc.
- The main topic of the **Digital Content** unit, which consists of several subsections, is how

to create valuable interactive content that can serve personalised learning paths, how to structure content modules into interlocking levels and interconnected blocks. The structure of adaptive content will be demonstrated through a practical example using an IT topic.

- **Tasks and**

  In this chapter, we will introduce the task engines; the different types of content and how they are used; the main features of linear and adaptive content (**Linear vs. adaptive paths**).

- **What content can be created and how can EDUBOT content be used**

  This part of the document describes how to use the application in a way that allows the user to quickly produce the content they want to use by following the steps indicated. Typical use cases are described, how to choose the type of content appropriate to the educational purpose; the whole workflow with the learning group is described/ the steps to use the content: registration/ creating a learning group/ inviting users/ creating new units/ creating new modules/ creating learning paths/ setting up learning paths/ playing a learning path/ viewing and evaluating results.

- **The following types of content are available to the user, according to the educational purpose:**
  - use test route
  - learning with linear content, e.g. to teach a new subject
  - using adaptive learning pathways to identify and fill competence gaps (e.g. in preparation for exams)
  - adaptive teaching supported by individual tutoring for blended learning: using clustering to support differentiation

- **How to use content created in the EDUBOT project**

  This part of the document illustrates the main ways of using the content to make use of the results, using the test path as an example: using the existing learning path in the system; using the learning paths created by using/copying public content ; using the self-created paths and content.

- **Learning outcomes - Reports**

It deals with tools for monitoring student performance, which are also the basis for the creation of clusters.

- **Establishment of Edubot performance clusters**

  As part of the methodology of personalised digital learning pathways and face-to-face tutoring, it will be presented which cases where the use of clusters is recommended, how the AI assistant supports the creation of performance-based clusters based on the tracking of learners' digital performance, how the blended learning methodology works and how it combines digital learning and face-to-face tutoring. The AI assistant also plays a role in increased learner motivation by keeping learners in the "flow channel", supported by the Edubot framework game.

- **How to motivate**

  In this chapter, the motivational impact of gamification tools (frame game, points and rewards collection) is presented.

- **FAQ**

  We answer the most frequently asked questions

- **The result of content development**

  In the final chapter, the 4 digital content sets created are presented in a separate sub-chapter for each country, including the availability of the digital learning materials, links to the individual pathways; and methodological suggestions for the learning materials.the practical application of

Interactive elements of the Methodology

The methodological core of the Methodology is complemented by other informative and interactive elements, such as:

- **Tips**: this form provides methodological suggestions and advice for users
- **Video tutorials**: short video **tutorials** with links are included to help you use the system, showing the technical implementation of the different workflows
- **Technical links:** pointing to the **User Guide** provides the necessary technical and professional background knowledge, such as the definition of basic concepts; the system of

learning units, blocks, modules; how to manage and create groups, routes; how to create a superunit; how to set up the framework game, etc.

- **Elements of the User Guide**
  - **Teacher's User Manual:** to help you manage the teacher interface for content development (tasks, paths, creating groups, etc.)
  - **Student User Manual:** a guide to help you use the student app, showing how the task-solving process works

- **Links to digital content repositories**

  Links to digital learning materials and English demo content for Hungary, Slovakia, Poland and Romania are also available

AREAS OF USE OF EDUBOT

How does the EDUBOT methodology work?

The pandemic due to COVID-19 has forced the world to switch from offline to online. Education was no exception. But the forced situation highlighted the disadvantages, but also the advantages, of online forms of education.

During these times, the number of superiors who promoted online education and accountability increased.

Some interfaces made it possible for teachers to present the course material online, while others allowed it to be assessed online, in a test-like manner, and to test the acquired knowledge.

The ***EDUBOT*** interface and the methodology behind it are specific compared to these interfaces, it tries to combine their advantages through adaptive learning.

EDUBOT is an open LMS/CAT system.

What does LMS and CAT system mean?

Acronym LMS is for Learning Management System and CAT is for Common Authentication Technology. It is a system for creating interactive personalized learning materials for students based on adaptive learning.

This interface cannot be used for all subjects, as there are subjects and study materials for which the online interface supported by artificial intelligence is not suitable for teaching and testing the acquired knowledge, e.g. in the case of essay writing and poem analysis, since in such cases the answers are subjective, there is not only one good solution.

EDUBOT methodology is based mainly on an adaptive learning method, and this is what makes the EDUBOT interface unique.

What does the blended learning methodology mean?

Blended learning is nothing less than a mixed learning model, which combines online and personal forms of learning.

This method is based on the recognition that each person learns differently, can acquire knowledge at a different pace, different subjects and areas cause problems for them, and that some need more and some need less practice.

Benefits of blended learning and studying

- **Flexibility:**

  The online elements allow students to progress at their own pace and manage their schedules flexibly.
- **Personalized learning:**

  Online platforms often allow learners to work at their own pace and tailor the learning experience to their own needs. In addition, students can easily return to the material and repeat if necessary.
- **Increased accessibility:**

  Online elements allow students to access educational materials at any time, so even those who are physically away from educational institutions can participate in learning.
- **Interactive learning:**

  Online tools such as videos, pdf files, and other creative form of learning materials wich supports studing can make learning more interactive, allowing students to acquire new knowledge in different ways.
- **Enhanced teacher-student interaction:**

  Online platforms often provide an opportunity for teachers to more easily track student progress and provide feedback. During face-to-face meetings, live discourses and direct feedback provide opportunities for deeper understanding.
- **Differentiation between students according to their needs:**

The teacher can distinguish between students based on performance and learning needs, and classify them into clusters based on this, in response to the actual need that individual students need to master the curriculum.

- **Efficient use of time:**

  The teaching time can be used more efficiently, as the acquisition of theoretical knowledge can be done in advance with the help of online materials, so that during personal lessons they can concentrate more on practical application and problem solving.

- **Increasing motivation and engagement:**

  Online forms of learning can often be more motivating for students because they offer varied and interactive materials, and students can often progress at their own pace, which can increase the learning experience and than the engagement as well.

- **Cost effectiveness:**

  Blended learning can reduce costs associated with on-site courses. Access to online materials allows students to spend less time in the classroom or spending money for tutoring.

The blended learning method provides excellent opportunities for both teachers and students.

It allows teachers to assess the students' knowledge and compile a set of tasks that best matches the goal they want to achieve.

The teacher can also monitor the progress of the students and easily determine what causes the student to get stuck. So, during the online part, those deficiencies can be identified, which can be eliminated during the face-to-face part.

The EDUBOT interface based on the blended learning methodology is helpful for students, because they can progress with the learning of the curriculum according to their individual needs and rhythm of development. Those students who understand a task sooner are not bored while the others practice the curriculum, but can progress at their own pace. Those students who need more time to master the course material can practice through supporting tasks, and supporting materials.

During the face-to-face Blended learning is practically a combination of classical educational methodology and online methodology.

What are the typical educational situations when EDUBOT can be the most useful?

The EDUBOT interface can be useful for teachers in many cases, but we recommend its use mostly in cases where students have to learn a large amount of course material, when they are preparing for an entrance exam or a major exam.

The interface can also be used usefully if there is a big difference between the students' knowledge, or if one or more students are about to fail. In addition, the interface can also be useful for teachers because they can complete the same test with students even in cooperation within a school, the results are immediately visible and can be analyzed, and learning routes can be designed according to the needs of the students (more on the importance and technical implementation of these later we write).

It can be also very useful in cases that the students have to learn more complicated and complex curriculum, where it is strongly noticeable that one student progresses faster, while others progress more slowly with a particular curriculum section.

What are the comparative advantages of the EDUBOT interface vs. other platforms?

Compared to other interfaces or platforms methodologies, the use of **EDUBOT interface** has many advantages:

- **application of AI**

  the AI helps the student 24/7

- **ideal structure for blended learning methodology**

  EDUBOT interface has a structure which make it ideal for practicing blended learning methodology (by creating adaptive learning routes and clusters).

- **individualization**

  This methodology enables the students to progress with the learning and practice of the curriculum in accordance with their individual abilities and knowledge level.

- **efficient**

  The EDUBOT interface can be used to prevent a student from getting bored during class or losing interest, as students individually follow different routes while learning and practicing the course material, according to the pace at which they understand and practice the given course material. In the same way, by using the interface, it is possible to prevent a student from falling behind his peers if he understands a part of the curriculum more difficult or slower, since thanks to adaptive learning, he can progress at his own pace, practice the problematic part of the curriculum, and possibly use materials that help understanding.

- **creating adaptive routes**

  The interface is suitable for creating adaptive routes, so learning routes suitable for all students can be created. On most online learning platforms, all students follow the same route. They do the same tasks, the same number of tasks from a certain part of the curriculum, but the EDUBOT interface is meant to promote individualization meanwhile it is also suitable for creating linear learning routes.

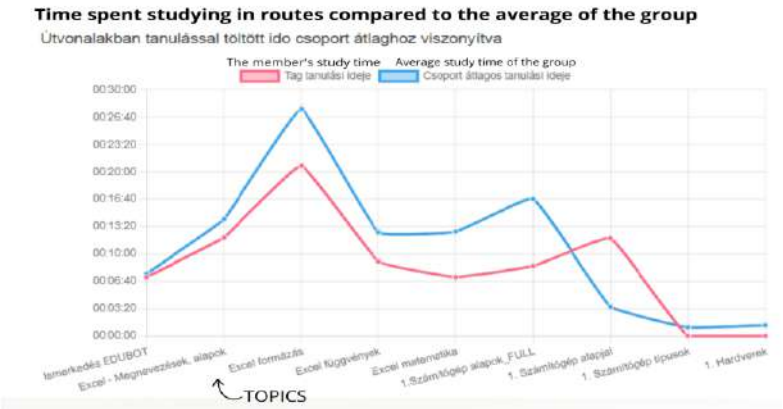
- **continuous feedback for the student**

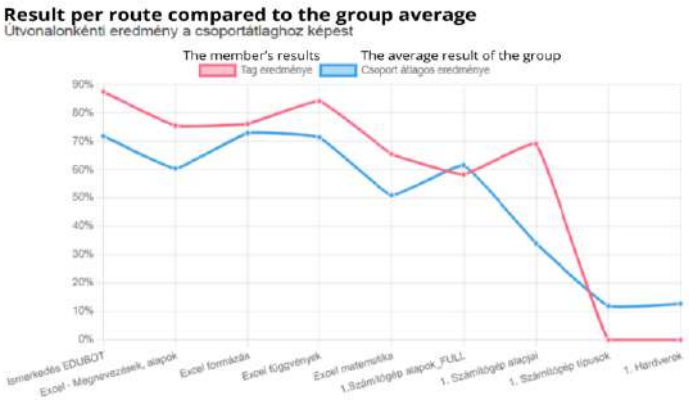
  The interface is suitable for the routes to be designed in such a way that if a student solves a task incorrectly, another practice task has to be solved, and if in this case he or she encounters difficulties, various forms of support materials - pdf file, video, etc. - will help the student to get an explanation for understanding and mastering the course material. In this way, the student also receives immediate feedback if a typical task or if a part of the course material has not been mastered or has not been mastered properly, and even receives immediate help at the same time.

- **continuous feedback for the teacher**

  With a few clicks, the teacher can see how much time a given student spent on a specific part of the curriculum, how quickly he completed which task, how much time a student spent viewing materials explaining the curriculum. On the interface, the user (teacher) can also see whether the course material caused difficulties for the students because they did not spend enough time reviewing or processing the material or because they did not looked at the supporting materials, or they would need more practice or other explanations.

  The teacher can also see how much time a particular member of the group spent on the given route in relation to the group. The diagram below shows such a statement. The blue color shows the average learning time of the group, while the red shows the time spent by the group member on each route.





- **immediate help with problematic parts of the curriculum**

One of the advantages of adaptive teaching is that students follow their own, independent learning route, which means that the parts of the curriculum that are easier for the students can be completed sooner, while the parts of the curriculum that prove to be more difficult for students, video and other explanations and additional help are available. which means that if a student has a problem with one type of task, it can be given a similar practice task, or if they cannot solve that, helpful materials, pdfs or explanatory videos can be included in the route.

From the statistics the teacher can see how much time the given student spends on each part of the curriculum, as well as which part of the curriculum causes problems for the given student compared to the group.

The teacher can also view the student's performance in relation to the individual routes, in relation to the group average. From this, the teacher can also see what the performance of the given student is made up of, which routes cause difficulties, and in which ones the student performs better compared to the group average.

These statements and reports can also be of great help to teachers when classifying students into clusters for the face to face lessons, as they can classify students into a specific cluster based on which parts of the curriculum cause them difficulty.

AI solutions supporting adaptive learning

How can Edubot AI assistant facilitate adaptive learning and differentiation?

The special feature of the EDUBOT solution is the use of the AI assistant to facilitate adaptive learning and differentiated blended learning.

But let's see how AI can help teachers and students?

For teachers:

- Teachers can rely on the AI Assistant to lead the students in the learning contents through personalized learning paths adapting to each student's knowledge level and challenges. Teachers can instruct the AI on the general difficulty level they want to give to a learning

router in a group, and let the Assistant shape the personalized path for each student. The Assistant will take into consideration the teacher's instruction, the student's knowledge level and the student's actual performance when refining the personalized paths after each completed (or failed) task.

- Teachers can supervise the learning process and combine the digital learning with personal tutoring sessions. However, personal tutoring sessions are more effective if they are organized in smaller groups. The AI Assistant can help creating performance clusters from the students of one or several groups, the clusters will be formed by students facing similar challenges, so the personal tutoring sessions with these clusters can be more effective.

For students

- **AI Assistant is available 24/7**
  While the students generally can only ask for help from the teacher during a specific period of the day, typically in the class, AI is available to students 24/7. If the student gets stuck in a certain task, the AI assistant will help, offering knowledge elements, helping questions and explanations that might support problem solving.
- **AI-Powered Adaptive Learning Routes**
  The AI Assistant will lead the student through the learning material on a personalized learning path, adapting to the student's knowledge level and current performance in each task. The goal of the Assistant is to keep each student in a "flow channel", where the student does not meet boring or too easy task, but does not get frustrated by tasks exceeding her actual knowledge level.
- **Increased motivation**
  The AI Assistant is also playing a motivational role by keeping the students in the "flow channel". This work is facilitated by EDUBOT's framework game. The game, set up in an enchanted castle, rewards fast-advancing students by offering gold coins they can use to play simple games, but also rewards hard-working students (even if they do not advance that fast in the material) by awarding them different gifts. The gifts are created by the teachers, so they can be linked to real-life rewards (for example: 5 EDUBOT stars are worth a highest grade in the class).

BASIC DEFINITIONS AND THE STRUCTURE OF THE CONTENT MATERIAL

During the discussion of structure and methodology, it is essential to clarify a number of recurring technical and methodological terms and definitions.

As a result, in this chapter we will introduce a few basic definitions and the structure of the content material.

Learning units

Learning units are the components of modules.

- Learning units are grouped into several lists:
    - my desktop - contains the units that are not added to a module, new units can only be created in desktops.
    - shared desktop – contains shared units that are not added to a module, shared desktops are desktops of groups. The users with edit content permission in the group can access the group's desktop and view, edit, copy learning units within the group. Shared desktops are lists of shared learning units that are not added to a module. New units can only be created in desktops.

  Depending on their type, learning units can be loaded with content and questions. At this level of content you can edit, copy and share learning units.
    - my learning units in modules - contains shared learning units in modules,
    - shared learning units in moduls - other users public learning units.

  Module is a learning material consisting of several learning units. Modules can be added to learning routes which can be played by students. A module is divided into blocks and difficulty levels. Learning units are added to difficulty levels within the module.

Modules

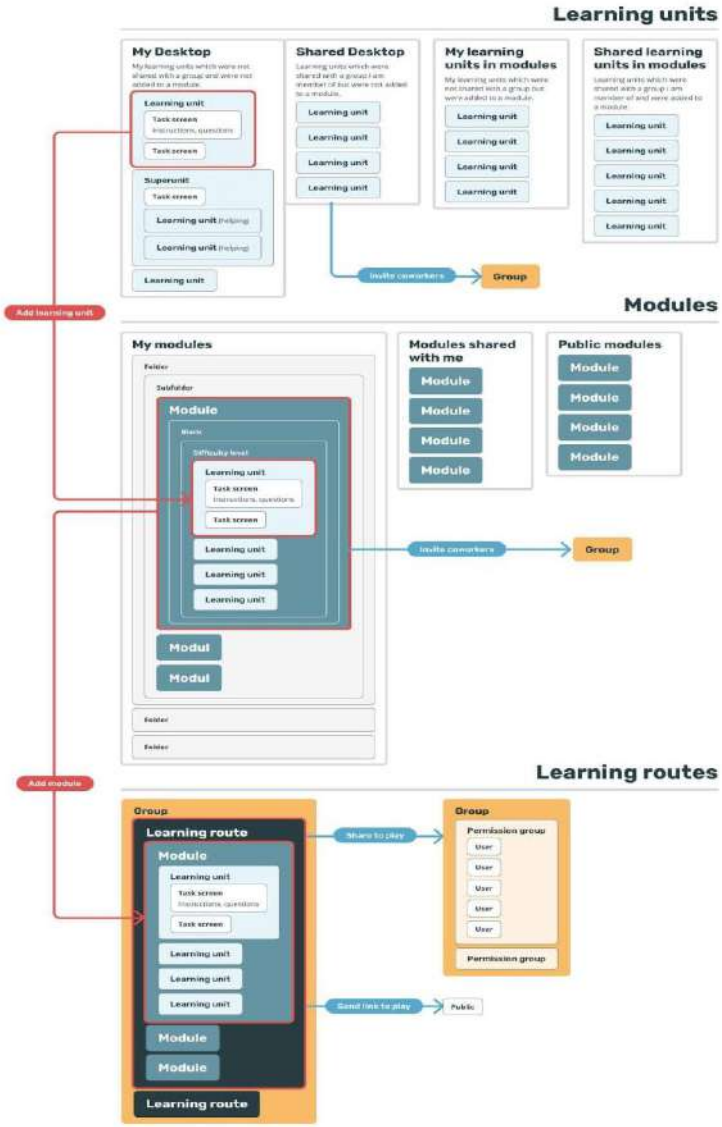
Modules are learning materials consisting of several learning units. Modules can be added to learning routes which can be played by students. A module is divided into blocks and difficulty levels. Learning units are added to difficulty levels within the module.

- Modules are grouped into several lists:
    - my modules,
    - modules shared with me,
    - public modules.

My modules can be catalogued in folders and subfolders. Within a module, blocks and difficulty levels can be created. At this level of content, it is possible to assemble the learning material into a more complex form: the learning units already created can be dragged into each level of difficulty of the module and their order can be set. At this level of content you can edit, copy and share modules.

Learning routes

Learning routes are the playable parts of the system for students. Routes are displayed associated with groups, each route is associated with at least one group, it is created by linking to a group. One or more modules can be placed in the routes. In the advanced settings of the route, you can set the parameters for the route playback (e.g. timing, story frame, homework assignment). At this level of content you can edit, share and copy learning routes.



For more definitions see: https://www.edubot.hu/classy-user-manual-teachers/definition-terms

FIRST STEPS OR HOW TO START

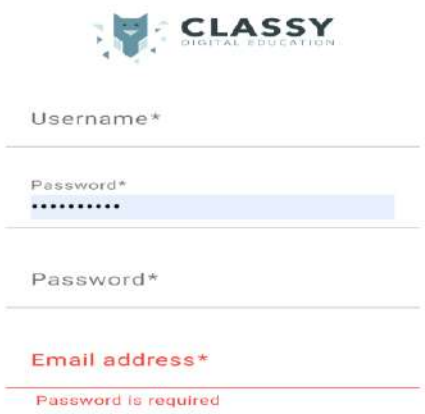
Registration

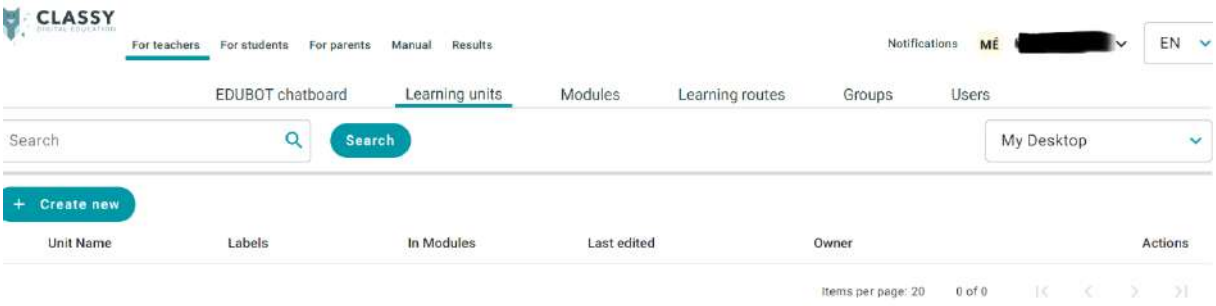
Registration on the interface:

- The EDUBOT interface can be used after registration.
- For that you have to visit and register on: https://tanlet.classyedu.eu/register
- To complete the registration, you must choose a username and password and enter an e-mail address.
- Do not forget that you have to register as a teacher on the EDUBOT interface.
- The next option to save your password and username is when, after registration, the browser offers to note the entered password and username. If we use the EDUBOT interface from a specific device, it is worth having this data memorized by the browser on this device.
- Another common error is that the e-mail address provided is linked to an account that is not functional for some reason, e.g. out of storage. Make sure you have entered a working email address. *Please make sure that you have entered a valid email address and that the email address you entered is working.*

There is a special way when you can use the interface without registration, it is promotional use of the interface. About that option we are writing below.

After registration and entering the interface you will get into this platform:



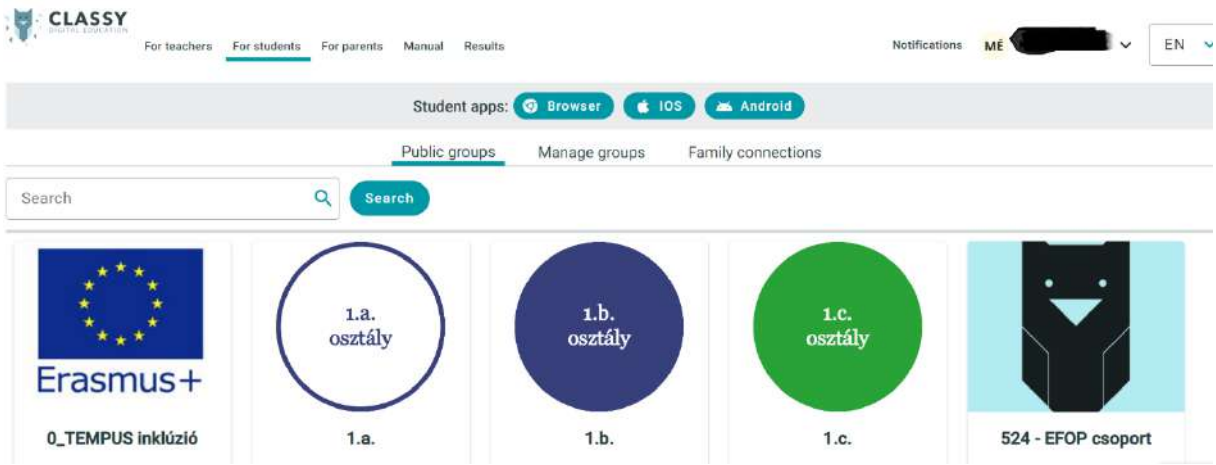


In order to be able to manage the interface as a teacher, it is important to click on the 'FOR TEACHERS' option in the upper left corner.

Also, there is a platform for students.

It may happen that when entering the interface, the system students will be transferred to the section for teachers, if at this time we want to work on the interface, it is important to remember that they should click on the interface to the section for students.

This option is located in the upper left corner as shown in the image below:



And platform for parents as well:

Since this is a methodological manual, we will examine the use of the interface from the point of view of entry as a teacher.

GROUPS and PERMISSION

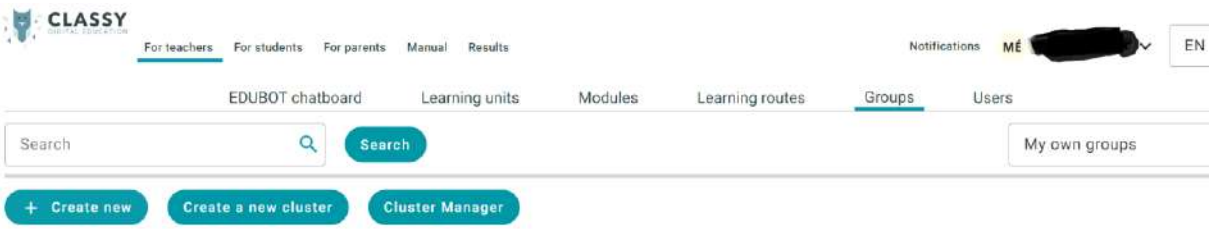
After successful registration, you can be invited to the group or you can subscribe to public (open) groups.

Let's see the important information concerning creating and joining groups.

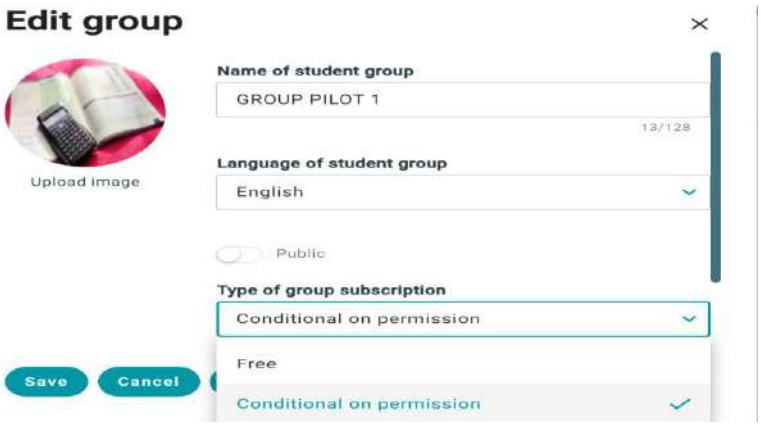
- You can read more about the nature of groups and how to create a group and join a group here: https://www.edubot.hu/classy-user-manual-teachers/groups/overview
- About how to creating a new group or how to edit a group you can learn more here:

  https://www.edubot.hu/classy-user-manual-teachers/groups/creating-groups-and-group-settings

First of all you have to create a GROUP, by clicking the button + Create new, as you can see in this picture:



How to edit group?

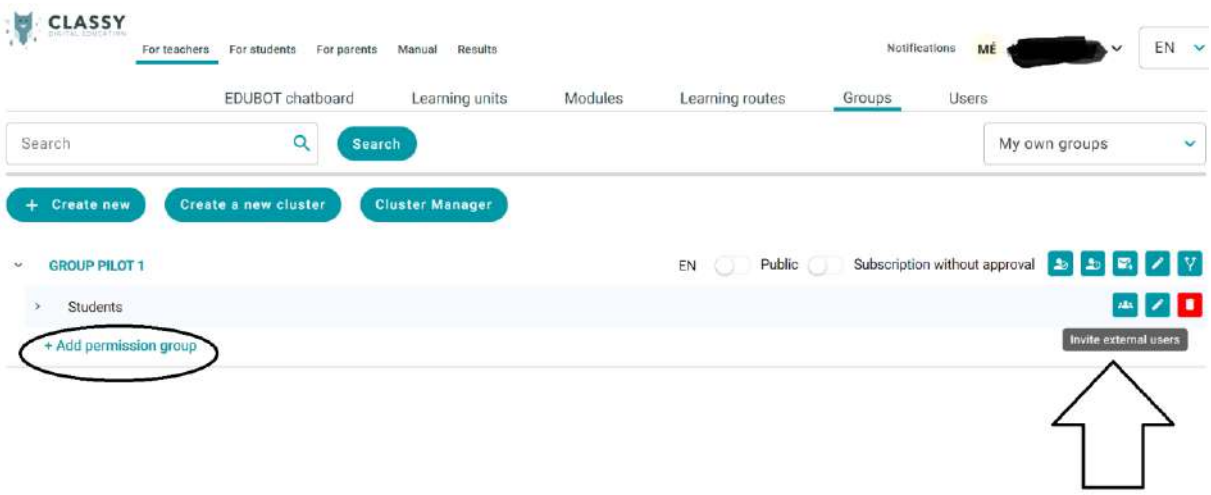


When you create a group, you must choose a name for the group. Here, it is worth paying attention not to choose a general group name, but one that we can easily identify even if we have already created several groups or have been invited to several groups.

It is advisable to avoid generic group names such as Mathematics or Informatics.

It is worth indicating the name of the school or its acronym, as well as the class and subject, if we teach more than one subject.

After that you should invite students or other people to the group. Groups contain members and the members are classified into so-called **permission groups**.



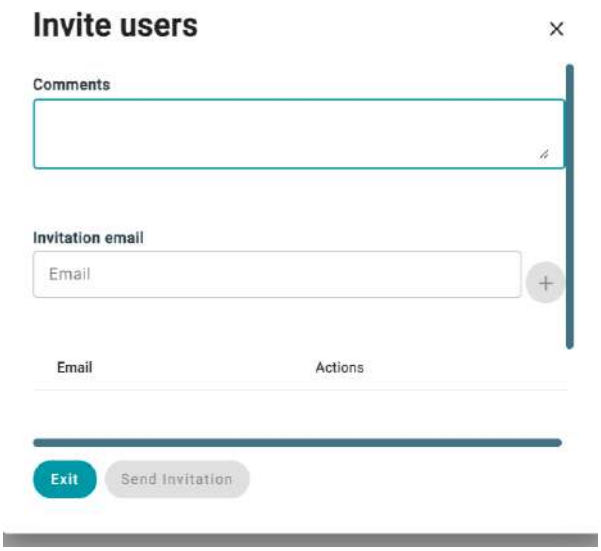
How can a student be added to the group?

There are 3 ways how to nvite users to the group:

- by inviting external users to the group,
- by adding users to the group,
- by subscribing to a public group.

By inviting external users to the group

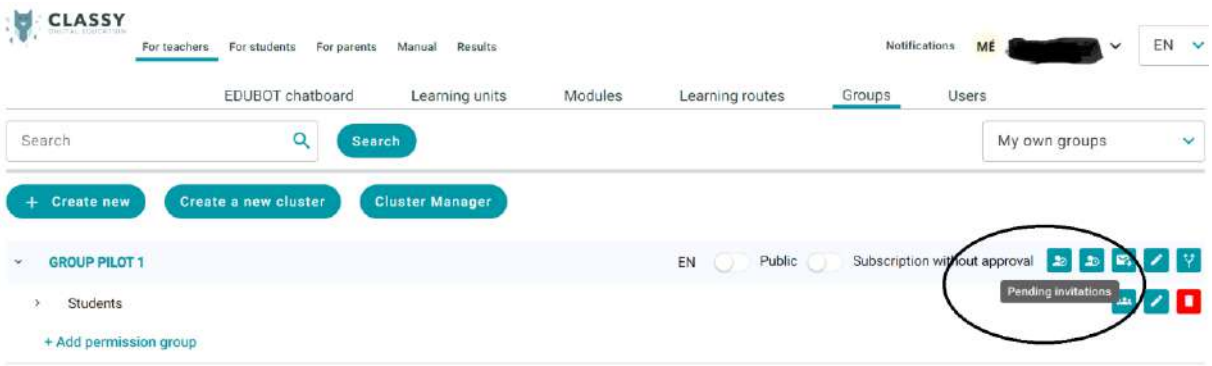
In order for a student to be included in a group, an invitation must be sent to him, and the student must accept this invitation.



In this case, the students' e-mail addresses are required. It is worth noting and emphasizing to the students that they should remember which email address they use the EDUBOT interface with.

Tip:

The system can display the invitation that has been sent but is still pending, so you can check which student did not accept the invitation.



By adding users to the group

Another option is to adding to the group an already existing user. One user, one student or co-worker can be added to more groups.

By subscribing to a public group

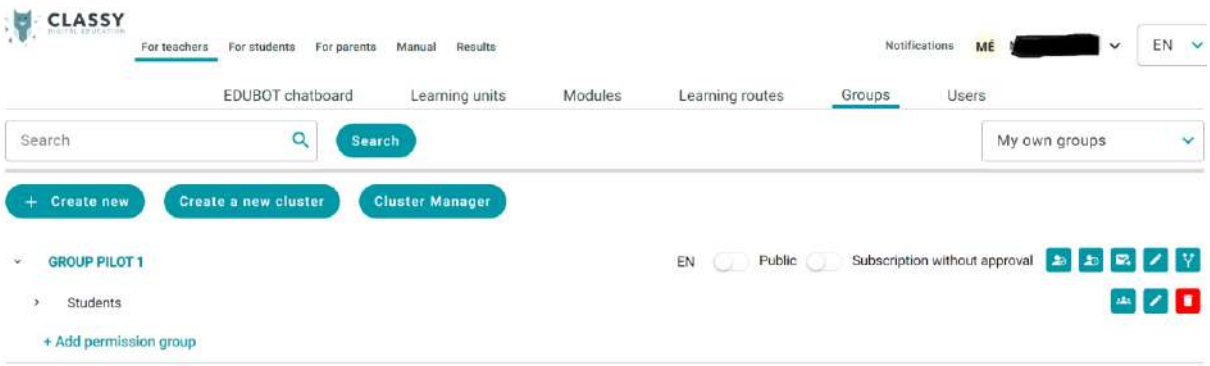
Keep in mind that in this case of a public group with unconditional group subscription, any user can subscribe to the group and become a member of the groups' default permission group.

Another option to enroll students in the group is by creating a **technical user**, to do so, please contact us at the following e-mail address: interregioforum@gmail.com

To learn more about how to invite an user see: https://www.edubot.hu/classy-user-manual-teachers/groups/add-and-manage-users-group

Permission groups

Permission groups must be created within the groups, so that the members can manage the contents of the group. Firstly you have to invite people or students to the group and after they accept the invitation you can add them to the permission group or create a permission group firstly and invite students directly into the group.



The below mentioned permissions can be set to permission groups. Within a permission group, not only one permission can be set, but any combination of them. Any number of permission groups can also be created and one person, one student can be included in several permission groups, but it must be kept in mind that in this case the student will have the authorizations belonging to all permission groups.

Based on the classification in the permission group, the members will have different rights regarding the content belonging to the group.

TIP:

A common mistake is that one or more students are admitted to a permission group where they have teacher-level permissions. Always make sure students are enrolled in the correct permission group.

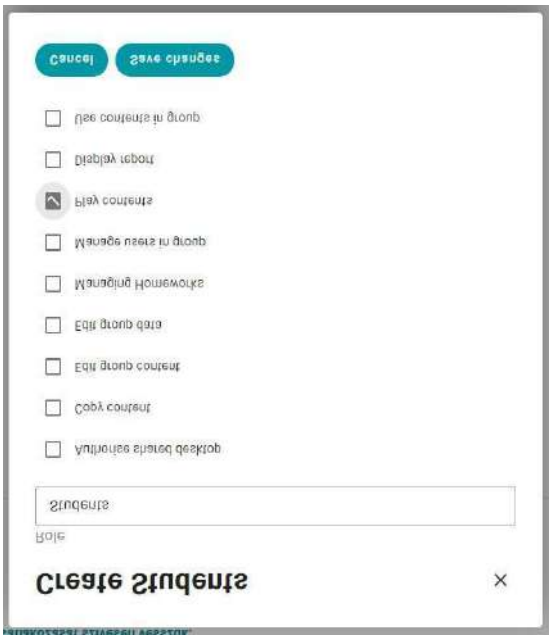
Permission overview - the following permissions can be set:

- *Authorize shared desktop*
- *Copy content*
- *Edit group content*
- *Edit group data*
- *Managing Homeworks*
- *Manage users in the group*
- *Play contents*
- *Display report*

- *Use contents in the group*

You have to name the role of the permission group, for example ‘Students’.

TIP:
Wen creating the permission group for students, we recommend that you only grant the following permissions:
play contents



Pay attention!

A frequent error is that students forget the email address they used to join the group, and another frequent error, which sometimes causes them to be unable to enter the system, is that the student who previously used the interface did not log out, so the newly arriving student will already find himself on the specified interface, but under the name of another registered student, possibly in another group. Thus, the student may not be able to find certain content.

You can create a permission group for co-workers.

You can create a permission group not only for students but for your co-workers or optionally for parents as well. While creating a permission group for co-workers you should decided to allow the following permissions:

Authorize shared desktop: about the shared desktop you can learn more here:

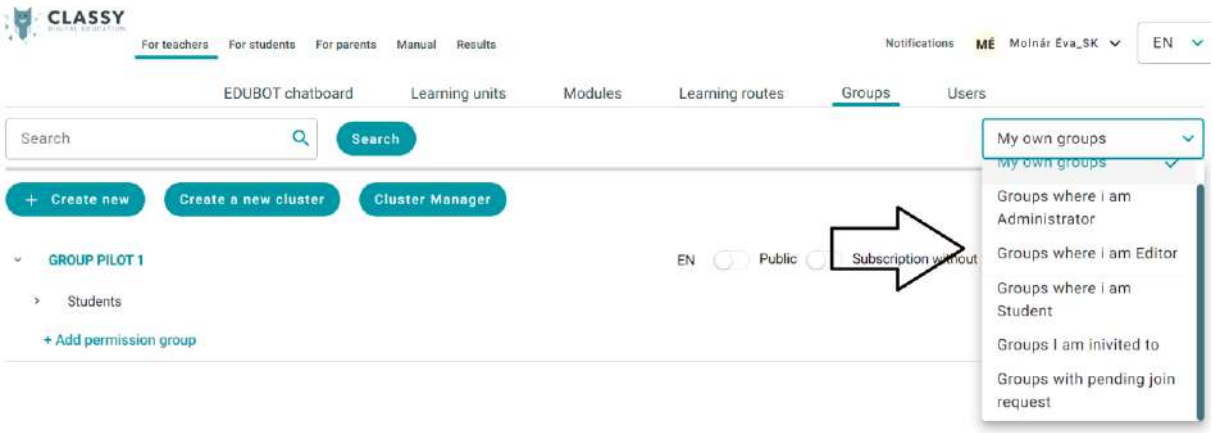
- *Copy content*: if you want to allow the co-worker to copy your already created content or in case if you join the group and you wanted to copy a content you should have this permission
- *Edit group content: within this permission you can edit the whole group content.*
- *Edit group data:*
- *Managing Homeworks*
- *Manage users in the group*
- *Play contents*
- *Display report*
- *Use contents in the group*

About how to manage group settings you can learn more here: https://www.edubot.hu/classy-user-manual-teachers/groups/creating-groups-and-group-settings

Now we are registered, and we created a group an a permission group. Let's see how to browse groups.

Browsing groups

If we are looking for a group in the system of which we are a member, it is worth paying attention to search in a suitable range:



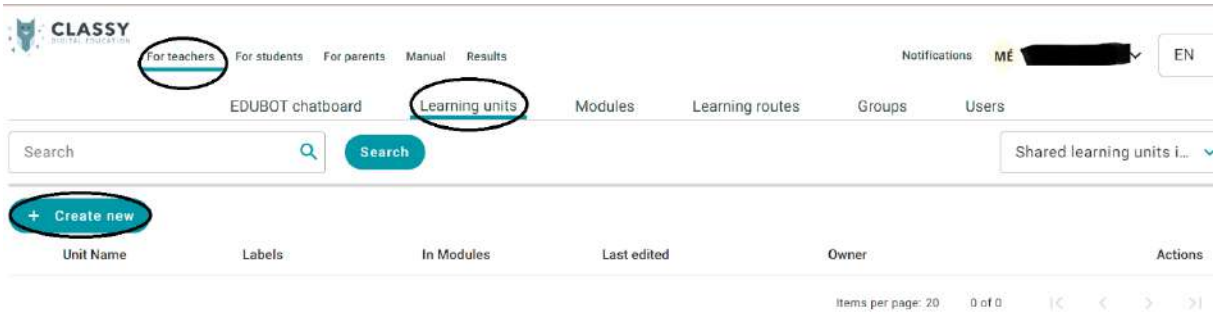
Do not forget!

To share routes and manage users, it is essential to create groups!

TASKS, LEARNING UNITS

How to create a tasks, how to create learning units?

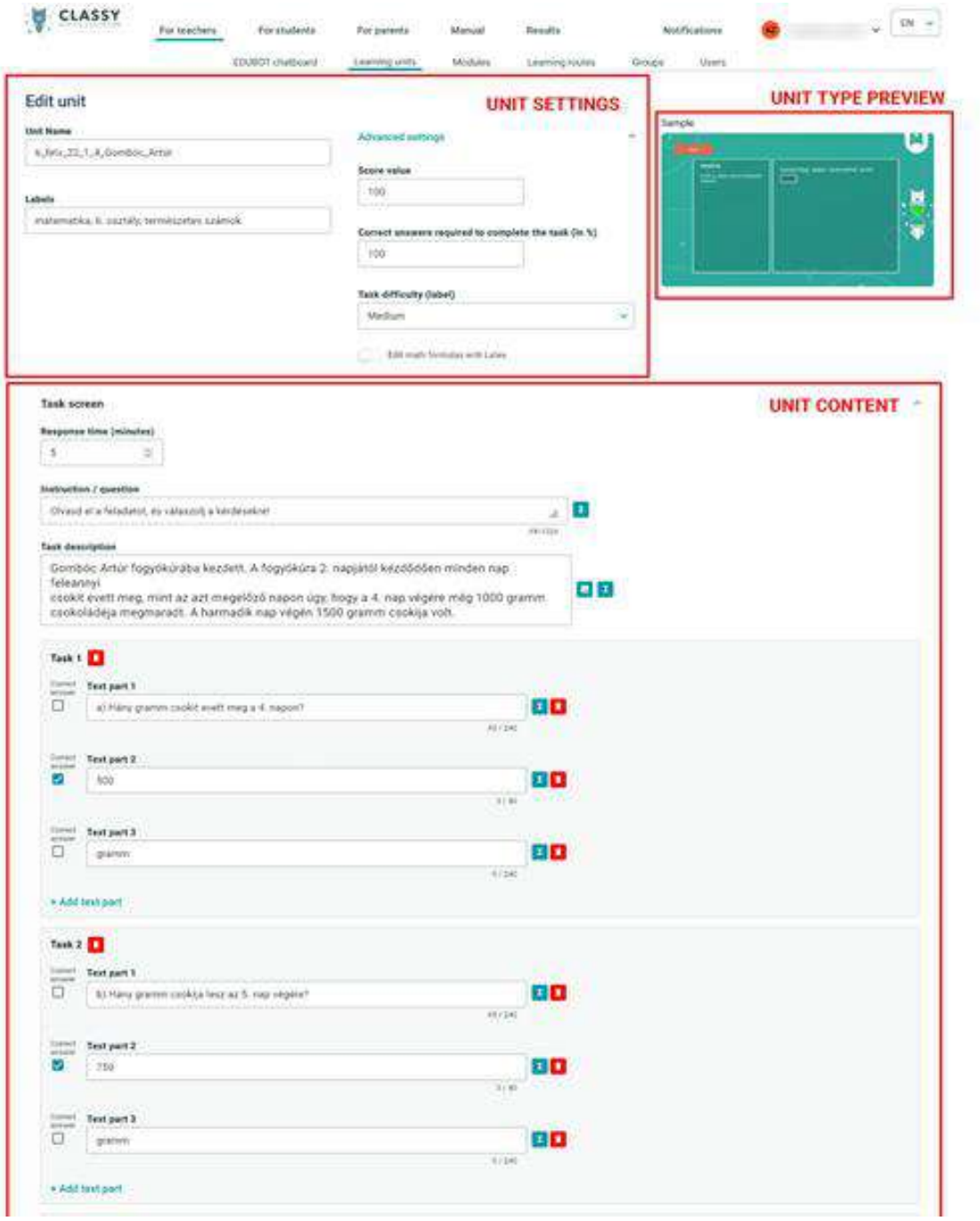
You can create your own learning unit on the For teachers/Learning Units platform by pressing the Create new button, as shown below:

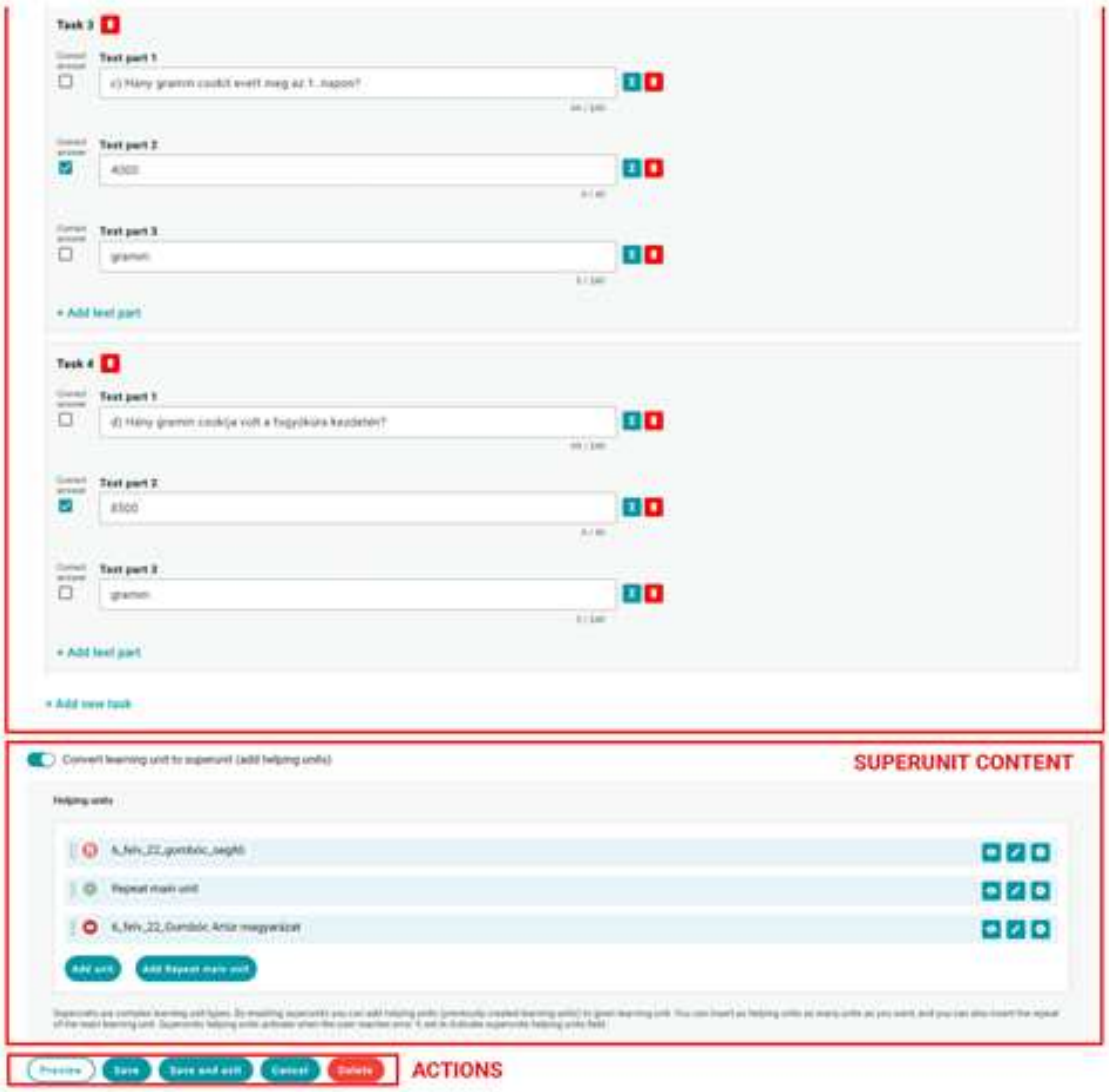


By pressing the 'Create new' button, you can choose from the following options:

About the learning unit types we are going to write below.

After selecting the appropriate learning unit type, the interface below appears:

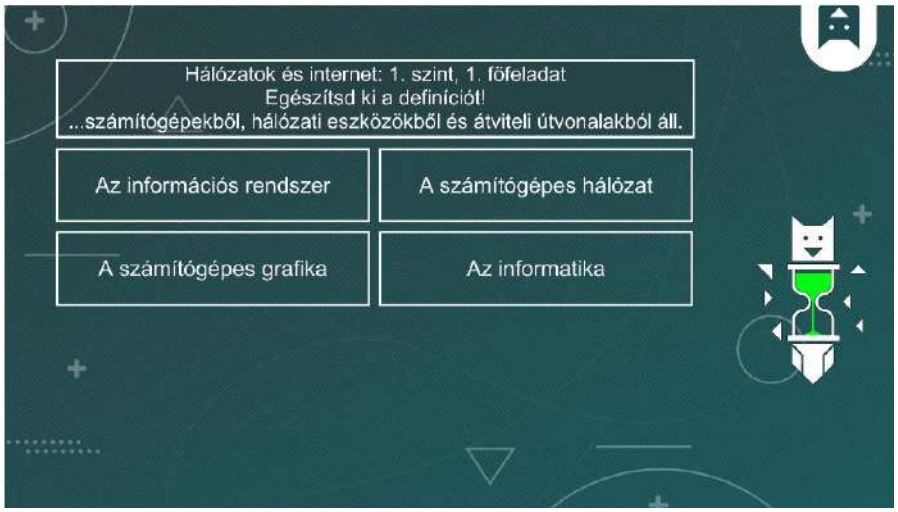

CLASSY
For teachers
For students
For parents
Manual
Results
Notifications
EDUBOT chatboard
Learning units
Modules
Learning routes
Groups
Users
Edit unit
UNIT SETTINGS
Unit Name
Labels
matematika, 6. osztály, természetes számok
Advanced settings
Score value
100
Correct answers required to complete the task (in %)
100
Task difficulty (label)
Medium
UNIT TYPE PREVIEW
Sample
UNIT CONTENT
Task screen
Response time (minutes)
5
Instruction / question
Olvasd el a feladatot, és válaszolj a kérdésekre!
Task description
Gombóc Artúr fogyókúrába kezdett. A fogyókúra 2. napjától kezdődően minden nap feleannyi
csokit evett meg, mint az azt megelőző napon úgy, hogy a 4. nap végére még 1000 gramm csokoládéja megmaradt. A harmadik nap végén 1500 grammi csokija volt.
Task 1
Text part 1
a) Hány gramm csokit evett meg a 4. napon?
Text part 2
500
Text part 3
gramm
+ Add text part
Task 2
Text part 1
b) Hány grammi csokija lesz az 5. nap végére?
Text part 2
250
Text part 3
gramm
+ Add text part



By pressing the preview button, you can check how the task you created looks like.

We recommend viewing this in any case, as this way possible setting errors can be filtered out.

By pressing the preview button, the task appears in this form:



Naming units/tasks

When creating a new unit, a number of settings must be made: the name of the task, its description, etc. must be entered.

You can read more about this here: https://www.edubot.hu/classy-user-manual-teachers/learning-units/create-learning-unit-overview-learning-unit-types

The tasks can be related to different topics and different levels of difficulty.

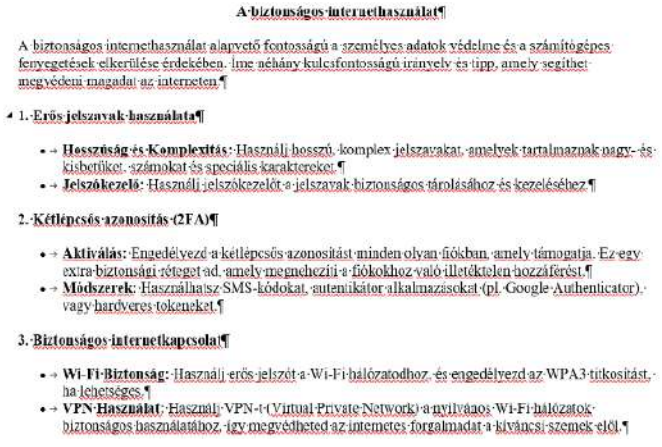
We also distinguish between main tasks and supporting/helping tasks.

Here is an example how the structure of the learning route looks like:

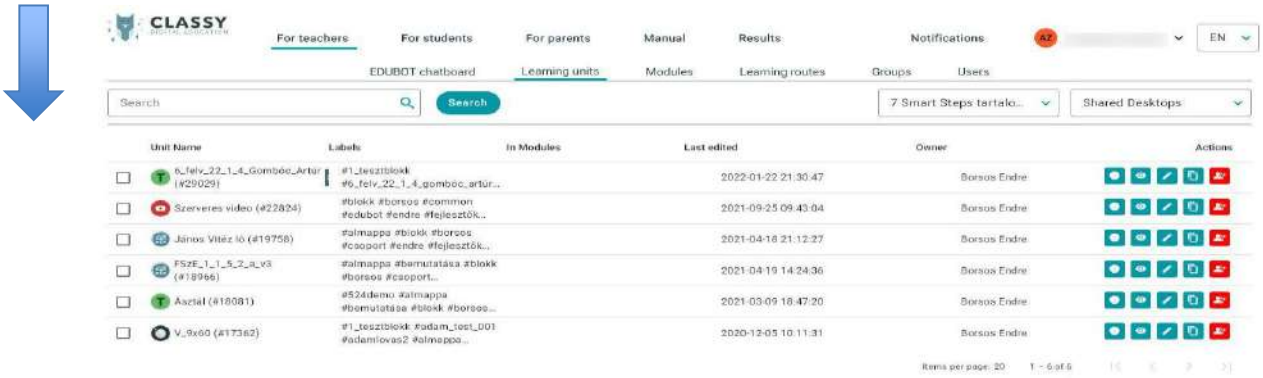
There is a topic and within the topic are different difficulty levels. Esch difficulty level contains different number of tasks, and different type of tasks (main, supporting/ helping, supporting learning material.)

TOPIC: 3. Biztonság és adatvédelem (Security and privacy)		
nehézségi szint - difficulty level		
The name of the task:	It's content	Chosen type or form of the task

TOPIC: 3. Biztonság és adatvédelem (Security and privacy)		
Safety 8.1.1.0 Online Security and Privacy	**Sets:** Online security	
Safety 8.1.2.0 Safe internet	**Millionaire:**	
1. difficulty level		
Safety 8.2.1.0 Common forms of cyberbullying (online abuse)	Affix: Common forms of cyberbullying (online abuse)	
Safety 8.2.1.1 Common forms of cyberbullying (online bullying) - supporting task	Millionaire: Cyberbullying	

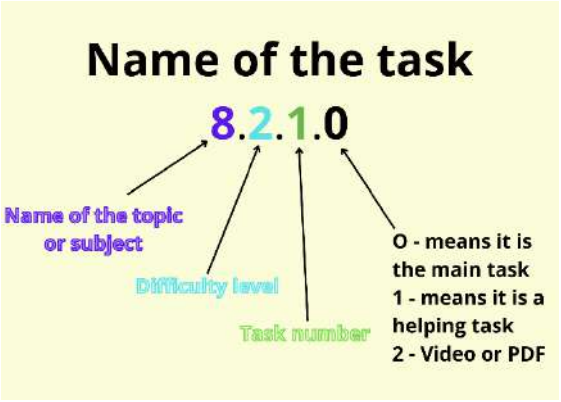
Safety 8.2.1.2 Common perpetrators of cyberbullying (online bullying) - assignment PDF	PDF	
2. nehézségi szint		
Safety 8.3.1.0 Safe use of the internet and netiquette	Sets: Recognising safe internet use and netiquette.	
Safety 8.3.1.2 Safe use of the internet and netiquette - PDF	PDF: Recognising safe internet use and netiquette.	

The given unit can be named in any way, as shown in the figure below.There are no formal restrictions on this. In order to be able to easily identify the task later, that:



- which topic does it belong to,
- what level of difficulty
- how many tasks there are within the given topic and difficulty level, as well as how
- whether it is a basic or main task, possibly a supporting task or supporting material, i.e. video or pdf,

We recommend the following naming format:



- The first number belongs to the topic of the curriculum.
- The second one means the difficulty level of the unit.
- The third number is the task number.
- And the forth one means whether it is the main task, helping task or supporting material.

What kind of tasks, units can we create?

- Unit creator wizards - presentation of different engines
  - PDF
  - Video

- Multiple answers - Millionaire
- Pairing
- Filling the gap - Fish in the water, Comprehension
- Type the answer - Texty
- Select the right ones from a row of answers - Boom!
- Kill the wrong answers - Bubble game
- Find out an expression - Hangman
- Group words, numbers, expressions or images

Learning unit types

Text task

- is used when we want to insert one or more answer fields in a medium text or math problem, which students have to fill in with their own text answers. In this unit type there are no answer options to choose from.
- To learn more about text task: https://www.edubot.hu/classy-user-manual-teachers/learning-units/edit-learning-unit-types/text-task

Comprehension

- is used for text comprehension tasks. Longer texts can be placed on the first task screen, and then questions related to the text can be asked on the next screen. The original text can be placed under the Info button, so it can be recalled at any time by the students. In this unit type, there are answer options to choose from in the answer field.
- To learn more about comprehension task: https://www.edubot.hu/classy-user-manual-teachers/learning-units/edit-learning-unit-types/comprehension

Open question

- this unit type is used for essay question tasks. No good or bad answer options are given, the system does not evaluate if the unit was completed successfully or not. It is up to the teacher to assess the performance of the unit.
- To learn more about open question task: https://www.edubot.hu/classy-user-manual-teachers/learning-units/edit-learning-unit-types/open-question

Millionaire

- is used for short questions or math problems. The students have to choose the right answer from the displayed answer options.
- To learn more about millionaire task: https://www.edubot.hu/classy-user-manual-teachers/learning-units/edit-learning-unit-types/millionaire

Sets

- are used to create two or more sets which students have to place the given elements into.
- To learn more about sets: https://www.edubot.hu/classy-user-manual-teachers/learning-units/edit-learning-unit-types/sets

Affix

- is used to create pairs of short mathematical problems or short text tasks, where students have to find the other half of the pair from the floating answer options.
- To learn more about affix: https://www.edubot.hu/classy-user-manual-teachers/learning-units/edit-learning-unit-types/affix

True or false

- is used to create one or more task screens, where students have to decide whether the given statement is true or false.
- To learn more about it, see:
- https://www.edubot.hu/classy-user-manual-teachers/learning-units/edit-learning-unit-types/true-or-false

Fish in the water

- is used when we want to insert one or more answer fields in a medium long text or math problem, which students have to fill in with the correct answer by choosing from the floating answer options.
- To learn more about it, see: https://www.edubot.hu/classy-user-manual-teachers/learning-units/edit-learning-unit-types/fish-water

Hangman

- is used to create a classical hangman game, where the students have to guess the answer based on what letters it contains.
- To learn more about it, see: https://www.edubot.hu/classy-user-manual-teachers/learning-units/edit-learning-unit-types/hangman

Boom!

- is used to create units that display short answer options one after the other, and the students have to click on the correct answers.
- Learn more about it: https://www.edubot.hu/classy-user-manual-teachers/learning-units/edit-learning-unit-types/boom

Bubble monster

- is used to display very short (it suits well for maths) answer options in bubbles, and the students have to pop out the wrong answers.
- To learn more, see: https://www.edubot.hu/classy-user-manual-teachers/learning-units/edit-learning-unit-types/bubble-monster

Math monster

- is used when we want to insert one or more short answer fields in a medium long text or math problem, which students have to fill in with the correct answer by choosing from the floating answer options. The short answer options make this unit type suitable for maths.
- To learn more, see: https://www.edubot.hu/classy-user-manual-teachers/learning-units/edit-learning-unit-types/math-monster

PDF

- this unit type is used to create tasks where the students have to study a displayed PDF file. This unit type does not contain questions or solvable tasks.
- To learn more about it check: https://www.edubot.hu/classy-user-manual-teachers/learning-units/edit-learning-unit-types/pdf

Video

- this unit type is used to create tasks where the students have to watch a video content (Youtube link or own video can be inserted). This unit type does not contain questions or solvable tasks.

Learning unit types with an examples

- **Text task** (Playground, Monster high, Neutral) - all three skins are the same

- **Comprehension** (Playground, Monster high, Neutral)

- **Open question** (Playground, Monster high, Neutral) - all three skins look the same

- **Millionaire** (Playground, Monster high, Neutral)

- **Sets** (Playground, Monster high, Neutral)

- **Affix** (Playground, Monster high, Neutral)

- **True or false** (Playground, Monster high, Neutral)

- **Fish in the water** (Playground, Monster high, Neutral)

- **Hangman** (Playground, Monster high, Neutral)

- **Boom!** (Playground, Monster high, Neutral)

- **Bubble monster** (Playground, Monster high, Neutral)

- **Math monster** (Playground, Monster high, Neutral)


- **PDF** - there are no skins in this engine, it displays the uploaded PDF
- **Video** - there are no skins in this engine, it displays the added video

How to edit Units in Learning Routes?

Settings

Playable: The route must be made playable for students to work with it.

Task Playback Mode:

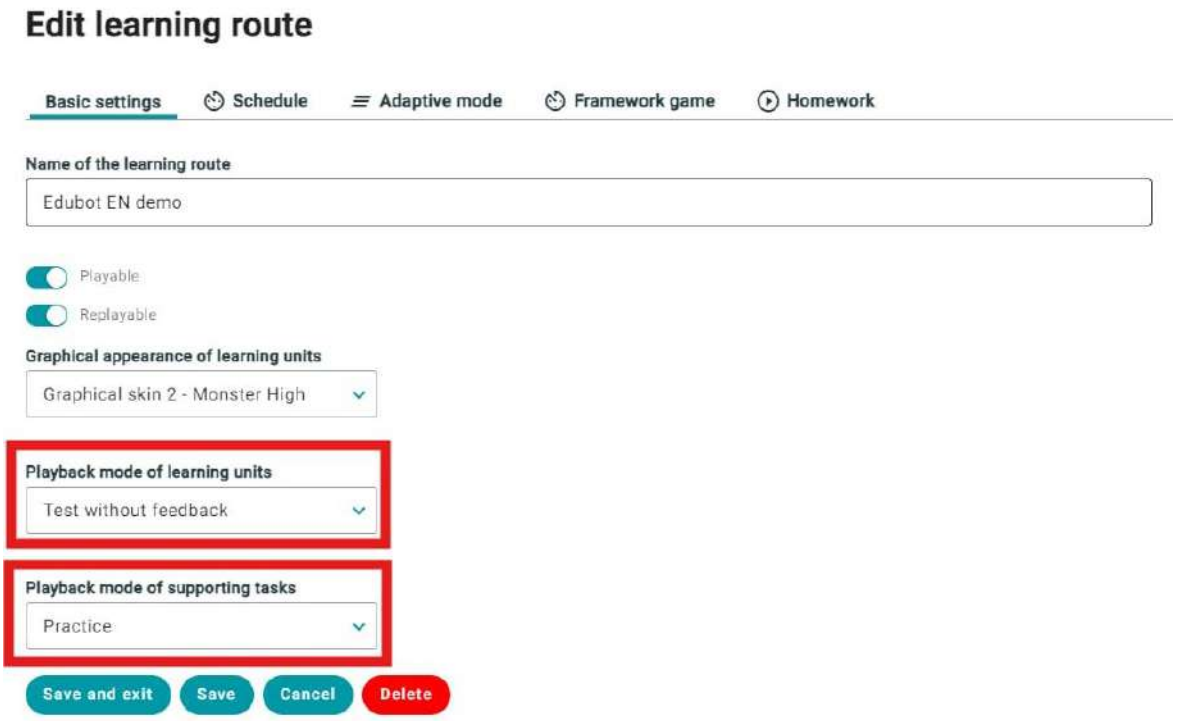
Test mode:

For adaptive routes, this should be set to test mode. In this mode, students do not receive feedback after each step; they only find out if their overall solution is correct or incorrect by clicking the "Next" button.

Practice: In practice mode, students receive feedback for each item pulled in, and the item flashes red or green.

Learning Route Playback Mode:

For content with level-jumping, use adaptive/level-jumping; for linear content, use linear.



To learn more about the learning unit types visit: https://www.edubot.hu/classy-user-manual-teachers/learning-units/edit-learning-unit-types/video

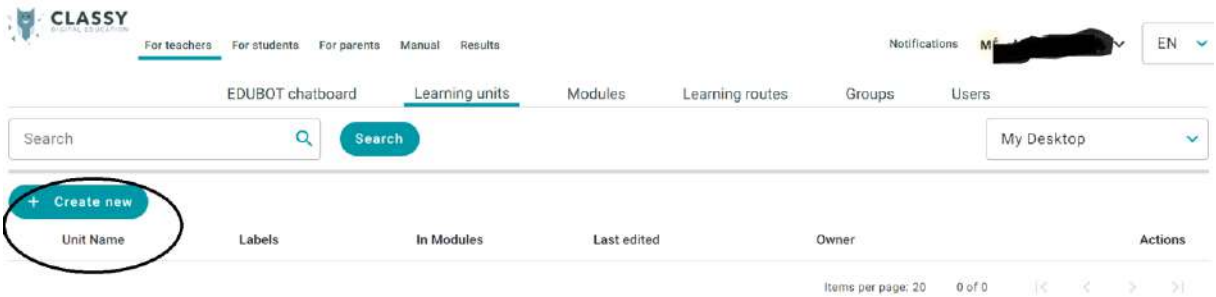
PREPARATION OF TASK OR LEARNING UNIT

To create a test or a learning unit, it is essential to perform the steps that are also part of creating other content.

These are:

1. Teacher registration in the system - you may have read about this earlier. To learn more about this, please click this link: https://www.edubot.hu/classyedu-user-manual-teachers/users
2. Create a group
3. Creating at least one permission group
4. Inviting external users or already existing users
5. Opening: For teachers/Learning units page
6. Creating tasks, learning units
7. Creating learning routes
8. Set up details
9. Share it with the group

We were writing about these steps previously.



First, we prepare the tasks for the test or for the learning unit.

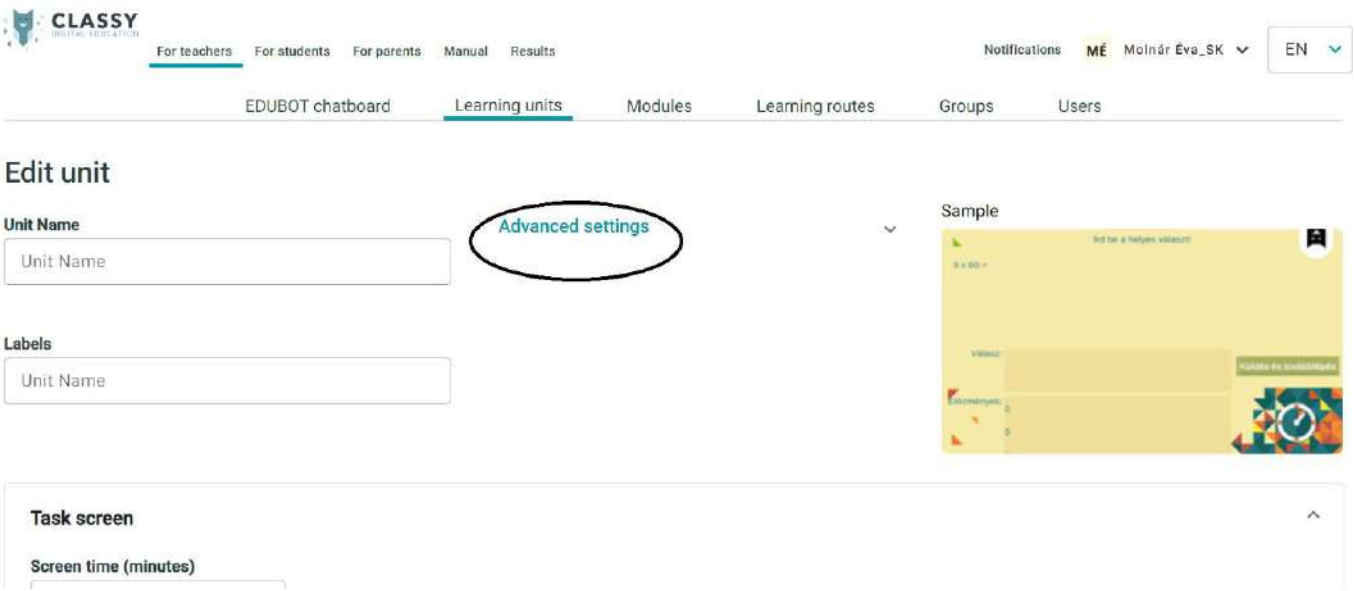
We can prepare them in any order, we will decide the order of the tasks later, after all our tasks are ready.

It is important to choose a task engine suitable for the goal to be achieved or measured with the task.

Unfortunately, due to their nature, some task engines are not suitable for measuring and mastering all the skills and abilities or at least the skills and abilities we wanted to measure or to be learned and practised. In this case, we should look for another task engine or look for another task.

Pay attention!

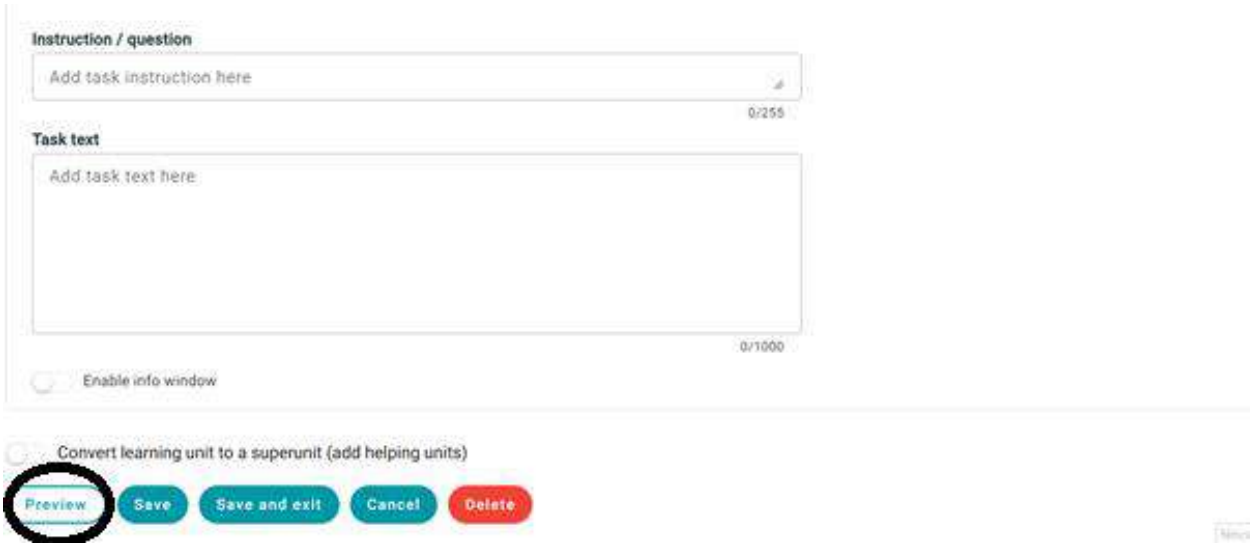
When preparing a task (test) give each task a suitable time frame. The original default time frame in the interface is 3 minutes.



What makes the task good?

- The task instructions should always be clear, so that the student understands exactly what he has to do, since he cannot always ask the teacher when using the interface.
- When creating a new task or modifying one, it is worth looking at it with the "preview" button to see if the task really looks as we planned.

When using the "preview" button, we see the task as students would when using the interface.



Once we have created a task, we can categorize them into modules on our Desktop. We can even include a task in several modules.

So, we form the tasks into modules, and then the modules into routes.

You can create blocks within modules, and a module consists of as many blocks as you want.

We can also set the difficulty levels within these blocks.

This is especially necessary in the case of adaptive routes, since there the students follow unique routes. In the case of a linear route, there is no need to set the levels, since all students will go through the same route there.

What does this look like in practice?

We create a module in the appropriate folder, we create a block inside the module and we can drag the tasks here.

The tasks will appear in the order you put them in the block, but you can freely change the order.

Creating a route from a module

Plan how many modules you want to create. Prepare them as described above. Then assign a learning route to the group you want to work with.

Tip:

Make sure that all students who are targeted with the test are already members of the group. If this is not the case, make sure that everyone is in the group before starting the test.

The route created within the given group should be named in a clearly identifiable way. If the goal is not to practice or to present a knowledge material, in order for the route to function as as test, we have to do the correct mode.

Tip:

The tests can be set to "test" or "practice" mode. In the former case, the student does not receive feedback on the correctness of the answer, in the latter case, he is given feedback, and he has to repeat the answer until he gets the correct result. In both cases, as a teacher, we receive adequate feedback on the results of the test, however, the function of the "classic" knowledge assessment is provided by the "test" mode.

WHAT KIND OF CONTENT CAN BE CREATED AND HOW CAN THE EDUBOT CONTENTS BE USED?

Basically, the interface can be used for 5 areas:

1.) **Promotional use of the interface**

2.) creating or using a **test**

3.) creating using a **linear learning route**

4.) creating or using an **adaptive learning route**

5.) creating or using an **adaptive learning route and clusters** created along the results of the adaptive routes for purpose of tutoring **(blended learning)**

Now that we have familiarized ourselves with how the interface can be used and what kind of content it is suitable for creating let's see what each content means.

In the following, we will deal with the concept and advantages of the test, the linear route and the adaptive route.

Let's discuss these contents in detail.

Promotional use of the interface

We can say, that the promotional use of the interface is so called the 0th way of using the EDUBOT interface. Promotinal, because we can use/ view the interface without registering.

However, many applications of the interface cannot be used at this time.

As an unregistered user, it is possible to use the interface only if an already registered user sends a link pointing to a route to the unregistered user. This form of use of the interface is really only suitable for a superficial assessment of the structure of the EDUBOT interface and, saving unnecessary registration, we can test the interface without investing much time and energy. In this case, the performance on the route and other data are not stored by the interface.

Test

If we want to create a test, we have to practically and technically create a linear learning route, since all students must complete all tasks.

To create test, it is essential to perform the steps that are also part of creating other content.

These are:

1. Teacher registration in the system
2. Create a group
3. Creating at least one permission group
4. Inviting external users or already existing users
5. Creating tasks by opening For teachers/Learning units page
6. Creating tasks
7. Creating learning routes
8. Set up details
9. Share it with the group

When should you create a test on the interface?

We write a test with the students primarily when the transfer of knowledge has already taken place and we want to assess how deeply the students have mastered the given knowledge.

There is no point in writing a test with the students in the case of completely unknown, new subject matter, since in this case there is no knowledge material that student has already mastered.

About the test in general - when to use the test?

We should create a test for students:

- at the end of a larger part of the curriculum,
- after a more complicated or complex curriculum section,

- at the beginning of the year (to assess what the students remember),
- at the end of the year (to assess how well they have mastered the annual curriculum),
- in case of preparation for a bigger exam: as an input test,
- in case of preparation for a bigger exam: as an output test,
- and during the preparation process (monitor progress)

How to construct the test?

- First of all, let's define what we want to measure with the given test?
- What tasks are best suited for this.
- How much time will be available to the students?
- Based on this, how many tasks do we want to create?
- What kind of difficulty do we want to create tasks?
- How much time do we allocate for each task for the students?
- The next step is to edit the specific tasks and run them in preview mode in order to check them.

Why is it good to create a test on the EDUBOT interface?

The EDUBOT interface is ideal for creating this kind of content, as you can access and analyze the results with just a few clicks.

Another advantage of the interface is that you can even copy the created test, so you can use it in other groups as well.

Linear learning routes

Linear learning routes are made up of learning units and models.

The creation of the linear or practice route is no different from the process of creating the test, so please read the relevant sections. But to mentione, you have to do the following steps:

1. Teacher registration in the system - you may have read about this earlier. To learn more about this, please click this link: https://www.edubot.hu/classyedu-user-manual-teachers/users

2. Create a group

3. Creating at least one permission group

4. Inviting external users or already existing users

5. Opening: For teachers/Learning units page

6. Creating tasks, learning units

7. Creating learning routes

8. Set up details

9. Share it with the group

The series of tasks must be planned in the same way as in the case of the test. Care must be taken to construct the route correctly: from easier tasks to more difficult ones.

Let's remember what our goal is when planning a linear route:

- introducing a new knowledge material to the students and mastering it through tasks of different types and levels of difficulty.
- all students go through the same set of tasks.

The linear learning route is most similar to the process of school education.

What is the advantage of the linear learning route?

Its advantage over adaptive is precisely what is often its disadvantage: the teacher foresees and can precisely control what tasks the students will encounter. All students meet all tasks, there is no possibility for them to skip certain tasks.

Adaptive learning routes

About the adaptive route in general - when to use it?

When applying the adaptive learning route, students follow an individual route. The beginning is the same for all students, but depending on whether they successfully solve a task, they move up and receive a harder one and, if they fail to solve the task, they get an easier one. Thus, the route they take is adapted to the needs of the students.

Several difficulty levels can be created within an adaptive route, typically we work with 1-5 difficulty levels. The number of the difficulty levels depends on the curriculum and the knowledge to be transferred and mainly on the teachers will. Of course, there will be adaptive routes where only 1, 2, or 3 difficulty levels are listed, but there may also be some with 5 difficulty levels.

When using adaptive routes, we do not introduce new curriculum to the students, rather, the structure of the route itself presupposes that it is given students have already met with the curriculum, the necessary knowledge, already at some level mastered, only its deepening and practice may be repeated need to be explained and clarified.

In practice, this means that in the case of an adaptive route, the slide basically only needs to be solved if you get tasks. If you fail to solve a task, you will be given a help task, if he encounters difficulties here too, only then will we help him with theoretical background material and helpful questions, with video etc. We will write about these later.

The student progresses from the easier tasks to the more difficult ones, while in practice the individual one depending on the success of solving the task, it moves up or down between levels.

If the student cannot solve a task, the teacher explains the correct solution.

After that, the student always gets an easier task. However, if the student solves without help and a task, then you get a more difficult task.

When do we use the adaptive learning route?

From a methodological point of view, it is worth creating an adaptive learning route for already mastered and known learning materials. The application of the adaptive route is methodologically inappropriate tool in order to learn a new curriculum.

If the goal is to learn new subject matter, in this case it is definitely a linear route.

We recommend its use.

The purpose of using a linear route is precisely that a given slide is everything to the route in some parts, on each task included in the route, in the knowledge transfer material part go through The creation of linear routes and their methodological importance is given we write in more detail in chapter.

During the creation of linear routes, we were introduced to the concept of UNIT. It is adaptive when negotiating routes, it is essential to clarify the concept of SUPERUNIT.

Superunits are special, complex units in which additional assistants, supporting tasks and explanations can be placed.

These helper support tasks are explained to each unit in advance and must be placed, however, they only become active if the student is in difficulty during the solution of the basic task.

If the student can successfully complete the task at a higher difficulty level can step. These difficulty levels can be traversed on the adaptive route depending on which task causes problems for the student. This is where the power of the adaptive methodology lies students are individually provided with a unique route based on their knowledge and needs for students.

Therefore, during the application of the adaptive route, all students are assigned to the same task starts the route by solving So at the beginning of the route they perform the same tasks, this depending on how successful they are in completing the given tasks, your individual routes diverge. Some students have higher difficulty tasks p., some students continue with the adaptive through helpful tasks and explanations.

Using an adaptive route for the teacher is also a good option because the given class is a group from the results of the adaptive route completed by, you can see the average performance of the group, or the the average performance of the group, but also sees the individual performances.

It helps the teacher in creating the so-called CLUSTERS, which will be discussed in the next chapter we will talk more.

Personalization, differentiation

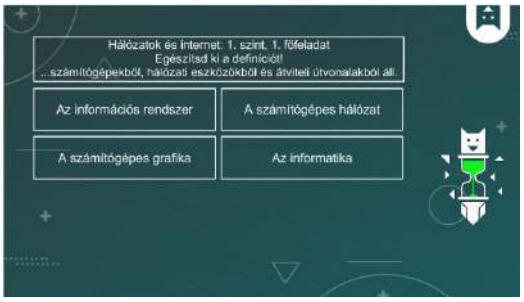
The biggest advantage of the adaptive route is personalization. That means it is within the curriculum, you will receive tasks appropriate for a given level of knowledge. That's it we can avoid that a student spends a lot of time on a subject he already knows perfectly mastered and sufficiently practiced, and to the best of his knowledge, you can move to a higher level of difficulty and encounter and solve more complicated tasks, with this, we also help ensure that the curriculum is sufficiently deepened. Lastly, in turn, we avoid the student getting bored in class. On the other hand, those students who may encounter difficulties with a task of some level of difficulty, immediate help they can get, help tasks, because of explanations. This way we can avoid the slide fall behind, as he was unable to cope with the type of task or part of the curriculum that caused difficulty for him practice. It can also be seen from the above that when applying an adaptive route, the students' own they can progress through the curriculum in accordance with their knowledge and skills and in an individualized manner by practicing it.

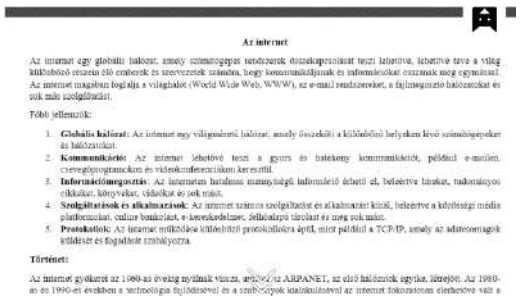
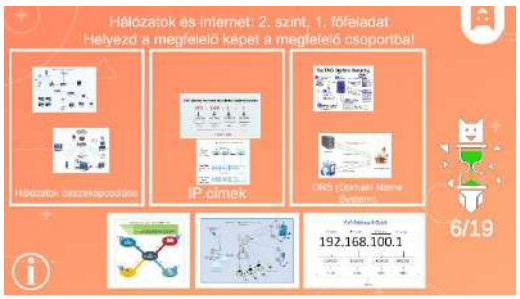
Difficulty level

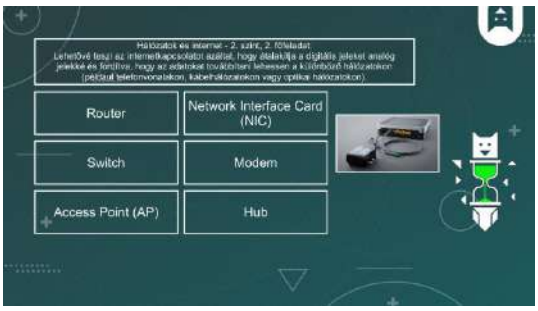
When creating an adaptive route, not only the difficulty levels, but the route we must also pay serious attention to its assembly. As mentioned in the introduction, the adaptive route is built from superunits, which means that in addition to the basic or main task, it may contain helper tasks and various explanatory tasks. As a result due to its nature, it is also more complicated to assemble than the linear route.

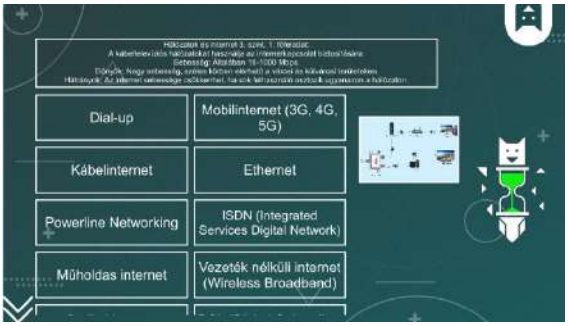
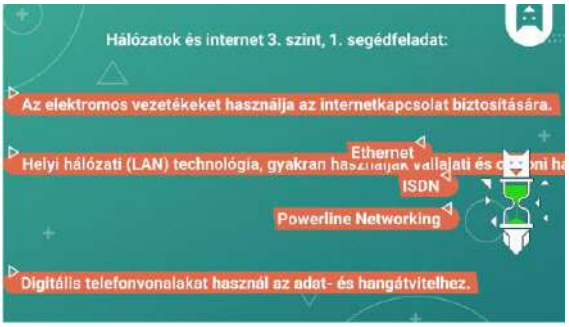
As already mentioned in the introduction, the EDUBOT interface is based on the blended learning methodology, thanks to this and the applicability of adaptive routes, it is ideal, for processing larger study materials, preparing for a bigger exam or final exam.

Let's see how an adaptive learning route looks like in practice via an existing example:

8. Internet		
1. Networks and the internet		
1. difficulty level		
Net 8.1.1.0 Networks and Internet, transmission medium		**Millionaire:** 1. Main task about the network and the internet Unity WebGL Player | Tanlet (EDUBOT.eu)
Net 8.1.1.1a What is the internet?		Fish in the water: The concept of the internet. Unity WebGL Player | Tanlet (EDUBOT.eu)
Net 8.1.1.1b Transfer media		Sets: Classification of the transmission media Unity WebGL Player | Tanlet (EDUBOT.eu)
Net 8.1.1.1c Area Network		Affix: Exploring different geographical networks. Unity WebGL Player | Tanlet (EDUBOT.eu)

Net 8.1.1.1d Basic tools for surfing the internet		Affix: Basic tools for surfing the internet. Unity WebGL Player | Tanlet (EDUBOT.eu)
Net 8.1.1.2 The internet - PDF		PDF: The internet - summary pdf Unity WebGL Player | Tanlet (EDUBOT.eu)
Net 8.1.2.0 Key features of the internet.		Bubble monster: Key features of the internet. Unity WebGL Player | Tanlet (EDUBOT.eu)
Net 8.1.2.2 Key features of the internet. - PDF		PDF: Key features of the internet. Unity WebGL Player | Tanlet (EDUBOT.eu)
difficulty level		
Net 8.2.1.0 Basic elements of the internet		Sets: Recognising the elements needed for the internet. Unity WebGL Player | Tanlet (EDUBOT.eu)

Net 8.2.1.1 Basic elements of the internet - help task		Hangman: It covers the basic elements of the internet. Unity WebGL Player | Tanlet (EDUBOT.eu)
Net 8.2.1.2 Basic elements of the internet - PDF		PDF: Information on the basics of the internet. Unity WebGL Player | Tanlet (EDUBOT.eu)
Net 8.2.2.0 Physical devices		Millionaire: Recognising physical Internet devices by definition. Unity WebGL Player | Tanlet (EDUBOT.eu)
Net 8.2.2.1 Physical devices – helping task		Hangman: Recognising physical Internet devices by definition - help task Unity WebGL Player | Tanlet (EDUBOT.eu)
Net 8.2.2.2 Basic physical tools for the internet - PDF		PDF: Information on the basic physical tools of the internet. Unity WebGL Player | Tanlet (EDUBOT.eu)

difficulty level		
Net 8.3.1.0 Types of internet connection		Millionaire: Types of internet connections Unity WebGL Player | Tanlet (EDUBOT.eu)
Net 8.3.1.1 Types of internet connection – helping task		Affix: Questions about 2D graphics. Unity WebGL Player | Tanlet (EDUBOT.eu)
Net 8.3.1.2 Types of internet connection - PDF		PDF: Information on the types of internet connection Unity WebGL Player | Tanlet (EDUBOT.eu)
Net 8.3.2.0 Internet speed.		Millionaire: Internet speed. Unity WebGL Player | Tanlet (EDUBOT.eu)
Net 8.3.2.1 Internet speed – helping task		Affix: It provides information on the measurement and use of internet speed. Unity WebGL Player | Tanlet (EDUBOT.eu)

Net 8.3.2.2 Internet speed - PDF	 **Feltöltési sebesség (Upload Speed)** • **Definíció**: Az a sebesség, amellyel az adatokat a felhasználó eszközéről az internetre lebet feltölteni. • **Jelentőség**: Fontos a fájlok feltöltéséhez, videók streameléséhez, videóhívásokhoz, és a felhőalapú szolgáltatások használatához. • **Példa**: Ha egy 100 MB-os fájlt töltesz fel egy 5 Mbps sebességű kapcsolaton, körülbelül 160 másodpercig tart. **Ping és késleltetés (Latency)** • **Definíció**: A késleltetés az az idő, amely alatt egy adatcsomag eljut az egyik pontból a másikba az interneten. Ezt milliszekundumokban (ms) mérik. • **Jelentőség**: Alacsony késleltetés (alacsony ping) fontos az online játékokhoz, videóhívásokhoz és egyéb valós idejű alkalmazásokhoz. • **Példa**: Egy 20 ms késleltetés gyors válaszidőt jelent, míg egy 100	PDF: Internet speed – PDF Unity WebGL Player | Tanlet (EDUBOT.eu)

PAY ATTENTION!

When creating the difficulty levels, pay attention to the fact that the first (and sometimes the second as well) difficulty level should contain easier tasks that all students can solve, avoiding that the student suffers from failure at the very beginning of the adaptive route.

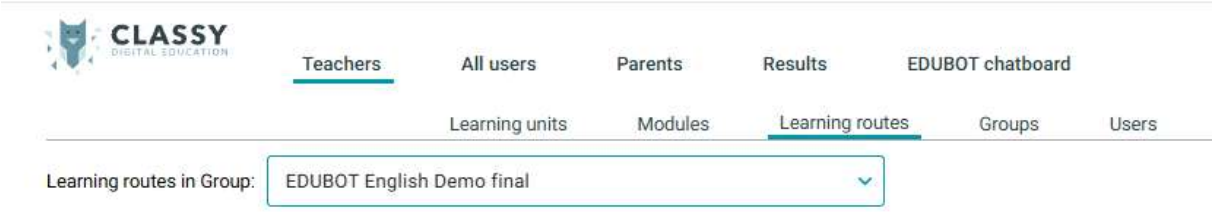
AI Adaptive route settings

The objective of the adaptive mode AI recommender engine is to dynamically suggest the next learning unit for students to engage with, based on their performance. By adapting the learning route to the individual capabilities and needs of students, this system aims to enhance learning outcomes and maintain engagement throughout the examination process.

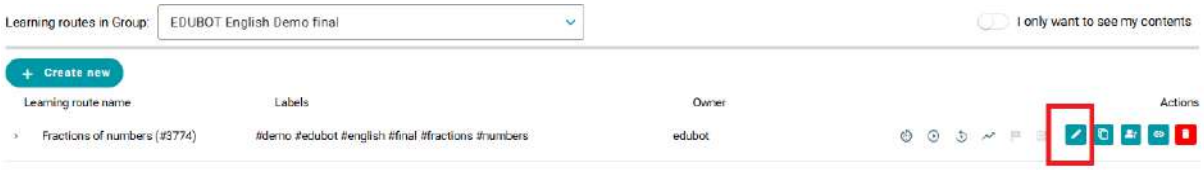
Selecting adaptive route settings

Prepare to set up the learning route.

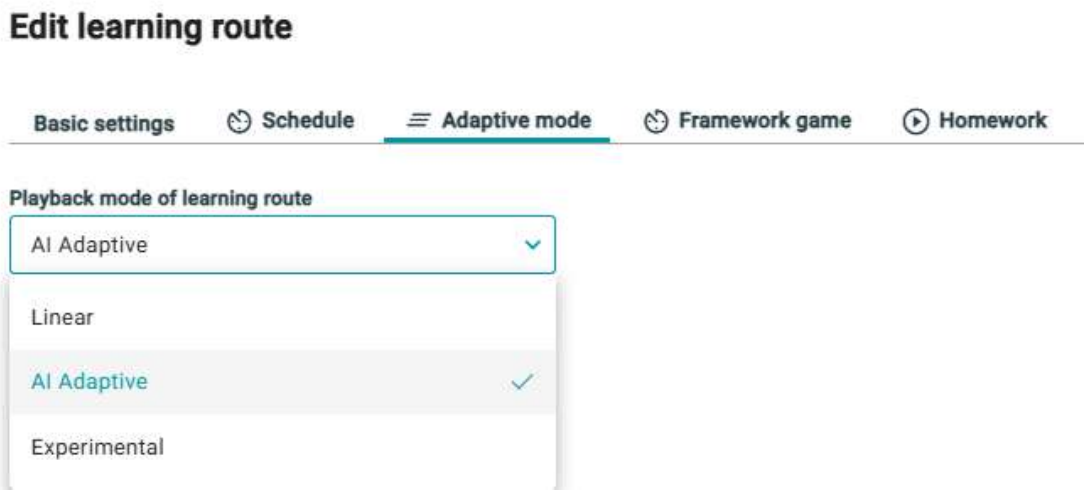
Go to Teachers/Learning routes menu, and select the desired group in the “Learning routes in Group” dropdown box:



Open the setting panel of the desired learning route.



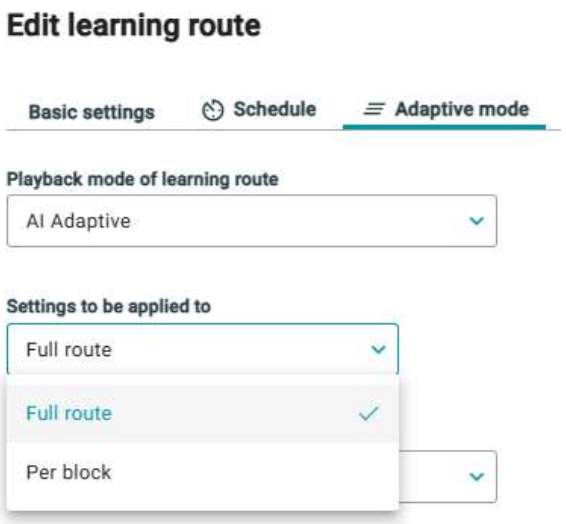
Go to “Adaptive mode”.



Open the "Playback mode of learning route" dropdown box and select "AI adaptive".

In this mode, you can instruct the recommender engine on the difficulty level of the intended adaptive route by choosing between the "AI adaptive mode" settings.

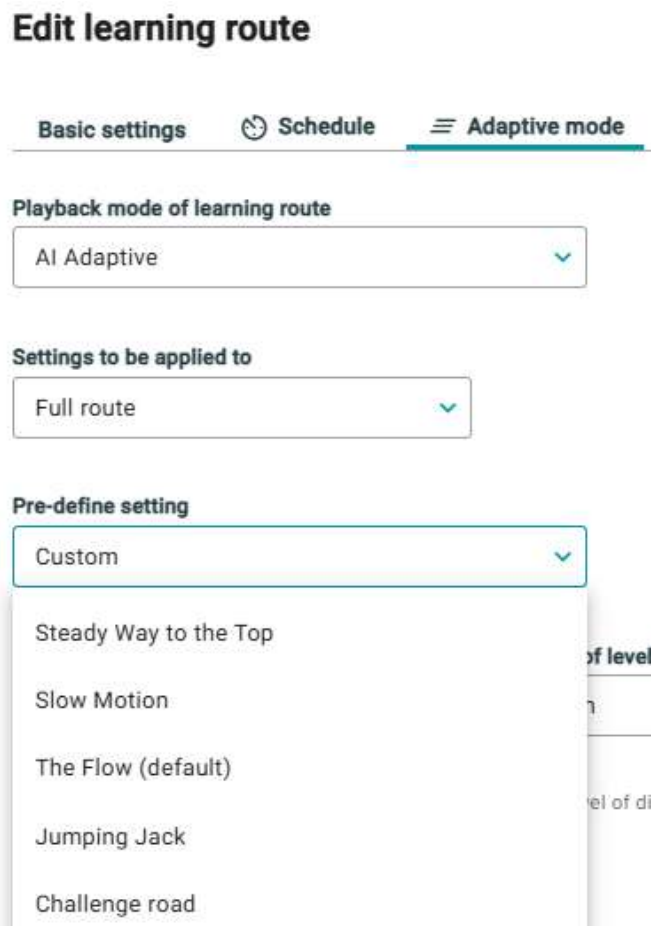
First, decide if you want to apply the settings for the whole route, or you want different settings for each block in the route. If you are not an experienced user, we recommend selecting "Full route". If you select "Per block", you will have to define an adaptive mode separately for each block.



Now, it is time to select the way the Assistant will guide your students in the adaptive route.

There are 5 such settings, each of them represents an easier/more difficult climb for the students.

- The Flow (Default)
- Steady Way to the Top
- Slow Motion
- Jumping Jack
- Challenge Road



If you are a beginner, we suggest you select "The Flow".

Below you find the characteristics of each setting:

- **Steady Way to the Top**

  The students will jump easily, and they will rarely fall. - Use it if you want your students to climb fast.

- **Slow Motion**

  The students will have to solve 2 units on a level to jump a level up, but they will rarely fall - Use it if you want your students to practice more on each level, without falling often.

- **The Flow (Default)**

  This is a well predictable mode. The students will climb relatively fast, if they complete a task at the first attempt, they will stay on level if they fail to solve the main task, but can solve the repetition of the main task, and they will fall a level down, if they fail to solve the repetition too. - Use this if you want to reward your students by continuing on the same level if they solve a task on the second attempt.

- **Jumping Jack**

  This is a route where user can fall easily, but she can get back after a correct answer, so climbing is also relatively easy. - Use this if you want your students to frequently jump and fall.

- **Challenge Road**

  This is a setting for routes hard to climb. Users have to work their way to get one level up, while they can fall relatively easily. Use this for motivating fierce fighters.

Additional options

If you don't want the Assistant to set the routes for you, you can also choose "Custom" setting and set the conditions for jumping/falling levels manually.

If you choose "**Linear" setting, the route will behave like a linear route.** No jump, no fall.

Why do we have this setting here, in the Adaptive section? Because you can apply different settings to each block of your route, and you might want one or several of them to be linear. For example, you might have a block in the beginning of the route with theoretical introduction you want all users to get through it and only start the adaptive exercises afterwards.

Experimental setting

As you may have noticed, there is an "Experimental" setting in the "Playback mode" box.

This is a setting to fully unleash the AI: there are no constraints for the assistant on how to guide the users, it will only rely on the student's performance and the comparison to other students.

We recommend this setting to experiment with for those who like adventures.

WHAT MAKES THE ADAPTIVE LEARNING ROUTES DIFFERENT FROM THE LINEAR LEARNING ROUTES?

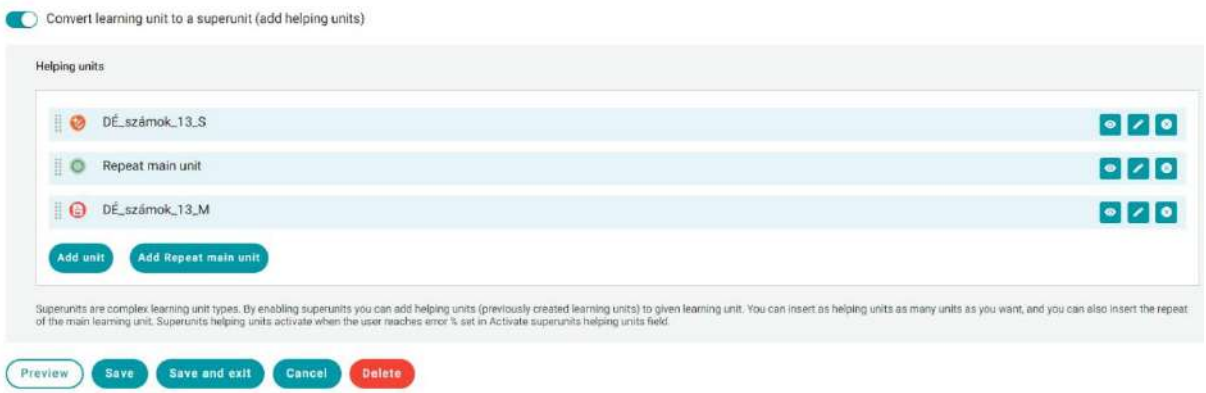
As we have mentioned it previously, linear learning routes bulid up from moduls which build up from units.

Superunits

The adaptive learning unit consists of superunits.

The superunit differs from the unit in that, in addition to the basic task, it also contains a helping task and/or supporting learning material, and explanations, so they are complex learning unit types. If the student has difficulties to successfully complete the unit these supporting task. A prequisite for a superunit is that the helping units are already created in the system as regular learning units.

To learn how to create a superunit, please see: https://www.edubot.hu/classyedu-user-manual-teachers/learning-units/superunits



LINEAR VS ADAPTIVE LEARNING ROUTES

How can I decide whether to create or apply a linear learning route or an adaptive learning route?

When we decide what kind of content to develop on the EDUBOT interface, it is important to choose content that suits our purpose.

The table below contains a comparison of the linear learning route and the adaptive learning route. The table contains the main characteristics of linear and adaptive routes.

	LINEAR LEARNING ROUTES	ADAPTIVE LEARNING ROUTES
When to use?	Presentation and familiarization of a new unknown part of the curriculum. Creating a test.	Deepening the curriculum, practicing, uncovering and filling in any gaps.
It's purpose	knowledge survey - in the form of a test, transfer of knowledge, introduction of unknown, new course material	deepening and practicing knowledge, uncovering gaps and blockages, clustering
How?	Each student should go through the same set of tasks, units.	Students follow different, individualized routes within the learning route.
What is the learning route made of?	Units (tasks)	Supernuits (basic task, supporting task, supporting learning material-pdf/video)
It's character	Less complex learning route.	It is a complex learning route.
What is in the focus?	The curriculum.	The student, the individum.
		According to the results we can make clusters.

HOW CAN THE EDUBOT CONTENTS BE USED?

4 main ways to use the interface:

- **(1) Creating/using test**
  - **creating linear test**
    - using an already existing test shared with you
    - copying an already existing test shared with you
    - creating test all by own (creating a totaly new test)
  - **creating adaptive test**
    - using an already existing test shared with you
    - copying an already existing test shared with you
    - creating test all by own (creating a totaly new test)
- **(2) Creating linear learning routes**
  - using an already existing linear learning route shared with you
  - copying an already existing linear learning route shared with you
  - creating linear learning route all by own (creating a totaly new linear learning route)
- **(3) Creating adaptive learning routes**
  - using an already existing adaptive learning route shared with you
  - copying an already existing adaptive learning route shared with you

- creating adaptive learning route all by own (creating a totaly new adaptive learning route)

- **(4) Creating adaptive learning routes supported with individual tutoring**
    - In light of the results of the adaptive route, students can be classified into clusters and their individual learning process can be supported within the framework of individual tutoring - this option differs from the previous one in that.

Using or creating test in EDUBOT interface

One of the most obvious and practical applications of digital content is the digitization of tests.

It is obvious, since digital education is above all suitable for testing specific, objective knowledge. We can easily tell the machine that 11x4=? the correct answer to question 44. At the same time, it is very difficult - for example - to write/correct a sentence in a digital environment, because artificial intelligence is not yet able to evaluate such a complex linguistic construction.

It's practical, because the digital support system, like a diligent assistant, corrects papers and immediately presents the result, which it also saves, so we can find it and use it again at any time later, if - for example - we want to track the progress of a student to follow. In addition, the digital test that has already been prepared can be used in several groups of students, it can be used again later on, and it can be used again either modified or unchanged.

A **linear test** means that the tasks of the test are given to each student in a row, one after the other, regardless of how correctly or incorrectly they answered the question.

It is also possible to prepare an **adaptive or "jumping" test**, where the student, after solving a task correctly, skips a few tasks of similar difficulty and immediately encounters a more difficult task. In most situations, the linear test is the right solution, adaptive testing can be interesting in the case of more extensive competence measurements.

When should you create a test on the EDUBOT interface?

If you want to assess with one or more groups of students whether they have mastered the course material and, if so, to what extent.

Why is the EDUBOT interface suitable for this?

This is because during the evaluation of the results, the system generates the results of both the group and the individual students participating in the group. Accordingly, the teacher can see the time spent on each route, as well as which part of the material or task caused difficulty for the given student.

This makes classification into a cluster easier, and AI can also be used during cluster classification. The AI makes a proposal for classifying the students into a possible cluster.

We have seen the advantages of test creation and what tests we can create on the EDUBOT interface, and now let's see what we can create and use tests on.

In this case, there are two ways to create a linear or an adaptive route:

- **creating your own test for student or**
- **using an already existing test wich is shared with you**

Linear / Adaptive playback mode - Linear route playback mode means that the student has to complete all learning units on the same difficulty level before he can move to units on a higher level. Adaptive playback means that if the system detects that the student is performing well at a given difficulty level, the student will be automatically moved to a higher level and the student can continoue the route.

Lets see the first option:

Creating new tests for students – complete workflow of running a test with your group.

So let's put together a list of tasks that we want to digitize! Let's plan that approx. how much time we spend on the test, including solving each task. Please bear in mind that during the digital test, the student must solve the tasks one after the other, he cannot jump back and forth from one task to another, as he might do in the case of a paper-based test.

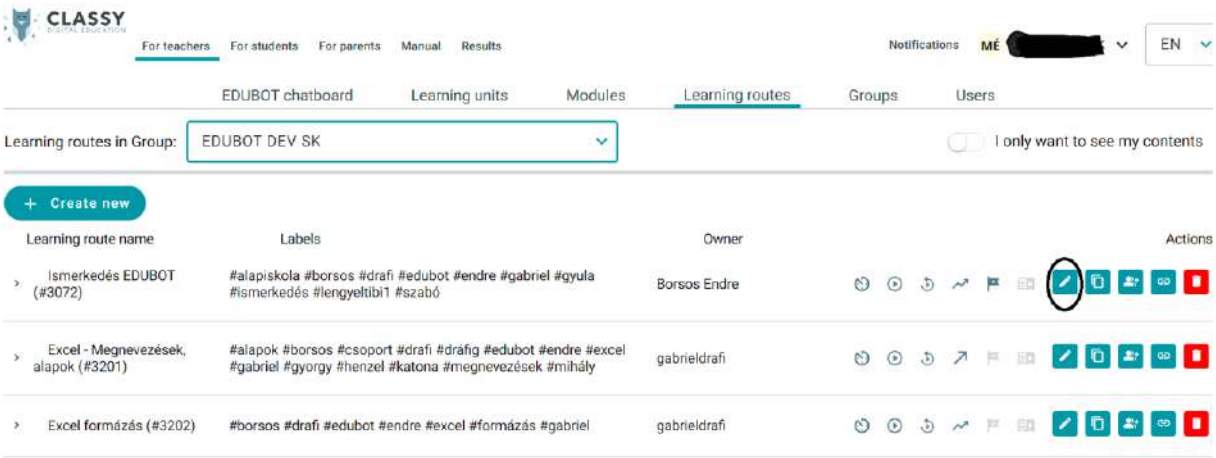
We should also take into account whether we want to implement the testing itself online or in a classroom environment. In the case of on-line testing, we cannot limit the use of various aids (or even the communication between students), so it is good to keep this in mind when preparing the tasks.

The following operations are presented below:

- First of all, we prepare the digital EDUBOT (EDUBOT) assignments
    - (see link: https://www.edubot.hu/classy-user-manual-teachers/learning-units/edit-learning-unit-types)
- Arrange them in order and group them into one or more modules
    - (see link: https://www.edubot.hu/classy-user-manual-teachers/modules and https://www.edubot.hu/classy-user-manual-teachers/groups/add-and-manage-users-group)
- We select a group of students with whom we want to take the test, and we create the learning route for the test in the group
    - (see:https://www.edubot.hu/classy-user-manual-teachers/groups/learning-routes-group)
- We specify the time frame of the test and supervise the testing process
- We look at and interpret the test results

Using an already existing test wich is shared with you

You can share the already prepared/already existing test with others, or you can decide to use an existing test that has been shared with you.



In such cases, the group assignment, the invitation of students to the group and the assignments and other settings must be carried out in the same way as discussed above in the section on creating the test.

What should you pay attention to if you use an existing test that has been shared with you, or if you share a test that you have created with others:

- If you change the settings of the test or the order of the modules, it will change for all users with whom the test is shared in the same way as with you.
- This applies to all settings. So, if a user with whom the test is shared hides it until a specified time, it will not be visible to other users until the specified time.
- This applies to the so-called test also to its owner, who originally created the test. If you share the test with a user, that user can freely change the test he shared.

In light of this, how and in what way is it worth sharing the price created - either linear or adaptive - test?

In the case of very close cooperation with the person with whom we shared the created test. With whomever we can possibly discuss any changes to the settings, we can discuss them.

Also, all of this is also true backwards, it is worth using a shared test where we know the users with whom the test is also shared. Although, based on experience, it is usually problematic for several such users to ensure that all users are properly informed of changes in settings.

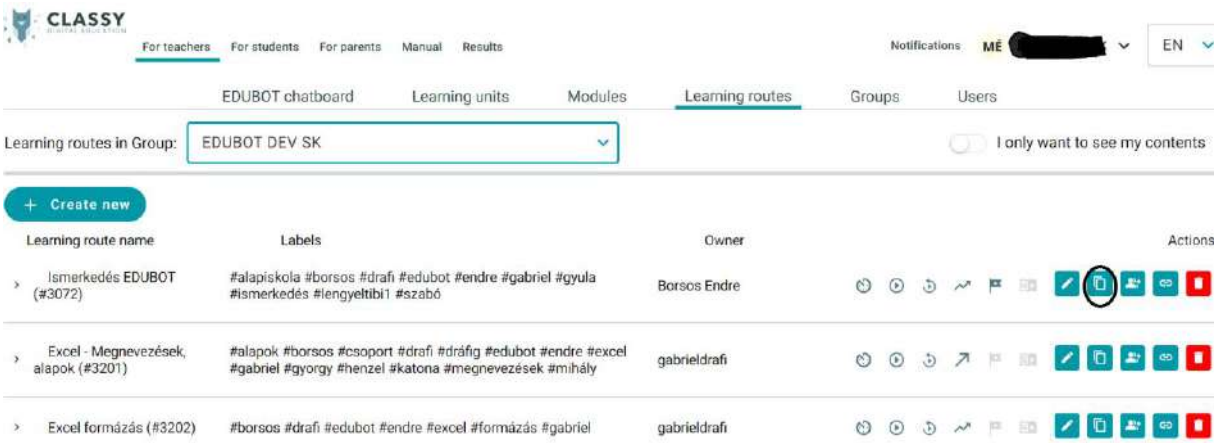
Another solution would be the method discussed in the next sub-chapter, which will be explained there.

TIP:

It is worth choosing a shared rout or test if you are working with other colleagues on the given set of tasks. This way, everyone can see everyone else's work - but everyone can also modify everyone else's tasks.

Copying already existing test which were shared with you

You can copy an already existing test which were shared with you or the test you created can be copied by another user.



In such cases, the group assignment, the invitation of students to the group and the assignments and other settings must be carried out in the same way as discussed above in the section on creating the test.

What is the advantage of copying an existing test that has been shared with us?

Why is it necessary to copy, why is it not enough to use the test shared with us?

1.) The primary advantage is clearly that we no longer have to worry about the test tasks and the assignment of the test itself.

2.) If we want to write the same test with several groups (classes), it is not necessary to create the test again from the beginning, but it is enough to copy the existing one. Thanks to this, it is not necessary to enroll several classes of students in the same group, but the same test can be written in different groups for each class.

3.) This solution is also beneficial if all teachers teaching the same subject in a school want to write the same test with the students.

4.) Based on all of this, the dear reader could say that it is fine, but all of this can also be accomplished by sharing an existing test. The biggest advantage of this function is that it eliminates the biggest disadvantage of an already created and shared test, namely that the shared content can be modified by everyone with whom it is shared.

5.) If you want to share the test you created with others, but you don't want others to change its settings, the surest way to do this is to share a copy of the test you created with other users.

6.) Also, if in the case of an existing test shared with us, we do not want the test's creator or others to change the settings, or we may want to use the test ourselves, but e.g. change the order of the tasks, skip certain tasks, modify the settings slightly, in order to keep them intact, it is best to make a copy of the test shared with us and modify it.

Regarding additional content, it is also true that content cannot be created without registration and the basic operations.

Linear learning route, adaptive learning route, and contents based on the adaptive learning route extended with tutoring are also available as specified above:

- if they are public or shared with you, you can even use or copy them as described in in chapters about creating a test, applying an existing test, and copying an existing test.

	Which functions of the EDUBOT interface can be used	HOW?	What are the advantages?	What is important to pay attention to?
0.	**Promotional use of the interface**	• The EDUBOT interface is, so to speak, the 0th way of using it, when we just view the interface without registering. However, many applications of the interface cannot be used at this time. • As an unregistered user, it is still possible to use the interface if an already registered user sends a link pointing to a route to the unregistered user. In this case, however, the performance on the route and other data are not stored by the interface.	You do not need to register, but some functions of the interface can be tested.	Many functions cannot be used in this form.

1.	Creating a test for students			
		Using already existing test which were shared with you.	You will receive the content and settings ready.	A shared route can be modified by anyone with whom the route is shared, even without your knowledge.
		Copying already existing test which were shared with you.	-You will receive the content and settings ready. -Only you can change it, you can continue to work with your own settings.	You have to make your own settings.
		Creating a totaly new test on the EDUBOT surface.	You can decide about the entire content, about who you give what permissions to, whether you make it public content	It requires more work.
2.	Creating linear learning routes			
		Using already existing learning routes which were shared with you.	You will receive the content and settings ready.	A shared route can be modified by anyone with whom the route is shared, even without your knowledge.

		Copying already existing learning routes which were shared with you.	-You will receive the content and settings ready. -Only you can change it, you can continue to work with your own settings.	You have to make your own settings.
		Creating a totaly new learning routes on the EDUBOT surface.	You can decide on all its details, as well as whether you want to make it public or not.	It involves more time and work.
Adaptive learning routes (teaching and learning)				
	The adaptive teaching method includes the evaluation of learning results and the classification of student clusters.	**Using already existing learning routes which were shared with you.**	You will receive the content and settings ready.	
		copying already existing learning routes which were shared with you.	-You will receive the content and settings ready. -Only you can change it, you can continue to work with your own settings.	You have to make your own settings.
		Creating a totaly new learning routes on the EDUBOT surface.	You can decide about the entire content, about who you give what permissions to, whether you make it public content.	It requires more work
4.	**Adaptive teaching and personal tutoring**			
			This feature combines the advantages of online space and even offline form of the education.	

			After being classified into a cluster, it is possible to progress with the students during individual or group tutoring, so the teacher can focus on the areas that caused difficulties for the given group of students.	

VIEW AND EVALUATE RESULTS

How to get reports from the EDUBOT system

The teacher can request a report on the completion of a learning route from the system. This report can refer to the analysis of the individual performance of each student, but the report for the entire group can also be downloaded.

Tip:

It often happens that the teacher downloads the report for the whole group, but this often distorts the results.

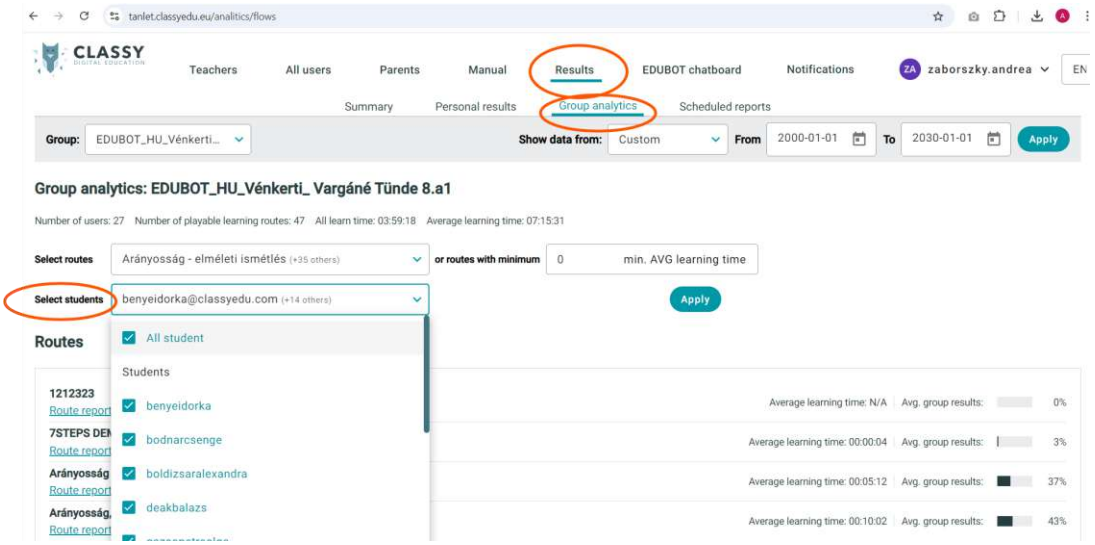
Students who, due to absences or possible other obstacles, do not even begin to complete the route are also included in the evaluation of the report as a default setting. This means that these students are included in the report as if they had not completed the route at all, i.e. expressed as a percentage, their performance is 0%.

The 0% performance of such students is added to the performance of the group and the group average is determined accordingly, thereby distorting the actual result and performance of the group.

In order to avoid this, when retrieving the report, you can do the followig steps:

1. Students who, although they are in the group, but for some reason did not actually start the route, must be manually removed from the given group.

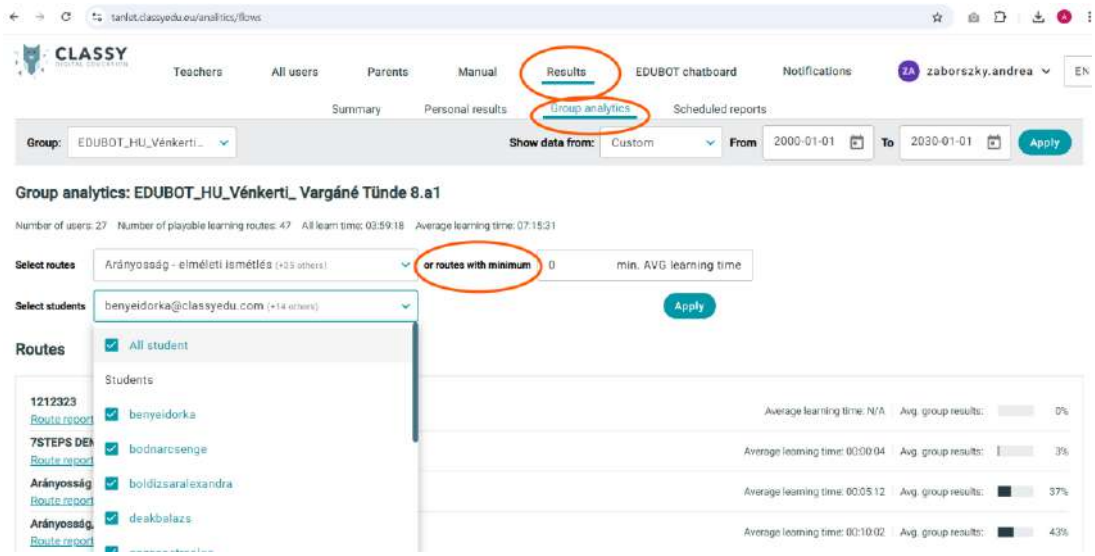
Here's how to do it:



Next to this option there is an option how to filter for routes which were used less than 1 minutes:

2. Thus, when retrieving the report, the teacher can also filter out those routes which were not used by the students by choising filter 1 minute and apply it.

Here's how to do it:



Important!

You have to filter when selecting the group, before you go on the given route.

By setting the time, you can filter not on students but on routes

LEARNING RESULTS - REPORTS

Downloading Reports

The results of the learning process can be viewed in the Results menu. The results are available in graphical form or can be downloaded in .xlsx format.

You can view data and analyses at the individual, group, and learning route levels:

- Summary Generation (available on the main Results homepage)
- Individual Results (Personal Results)
- Group Results
- Learning Route Results (selectable within Group Analysis)

One of the biggest advantages of the EDUBOT interface is that the results of each route can be downloaded by group. We talked about this briefly earlier.

During the tracking of student activities, we can primarily monitor students' performance in various mathematical or IT topics/routes through the Learning Routes menu.

General Summary

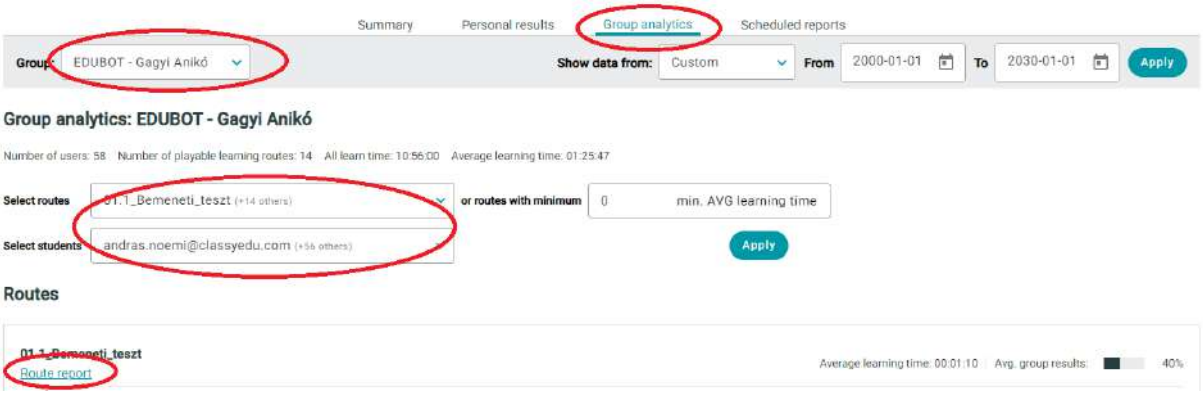
Provides a comprehensive overview of users' performance and progress on the platform. This aggregated report includes the following data in graphical form:

- Total learning time by group
- Average time spent on learning routes by group
- Summary of my groups

- Summary of learning routes
- Summary of content

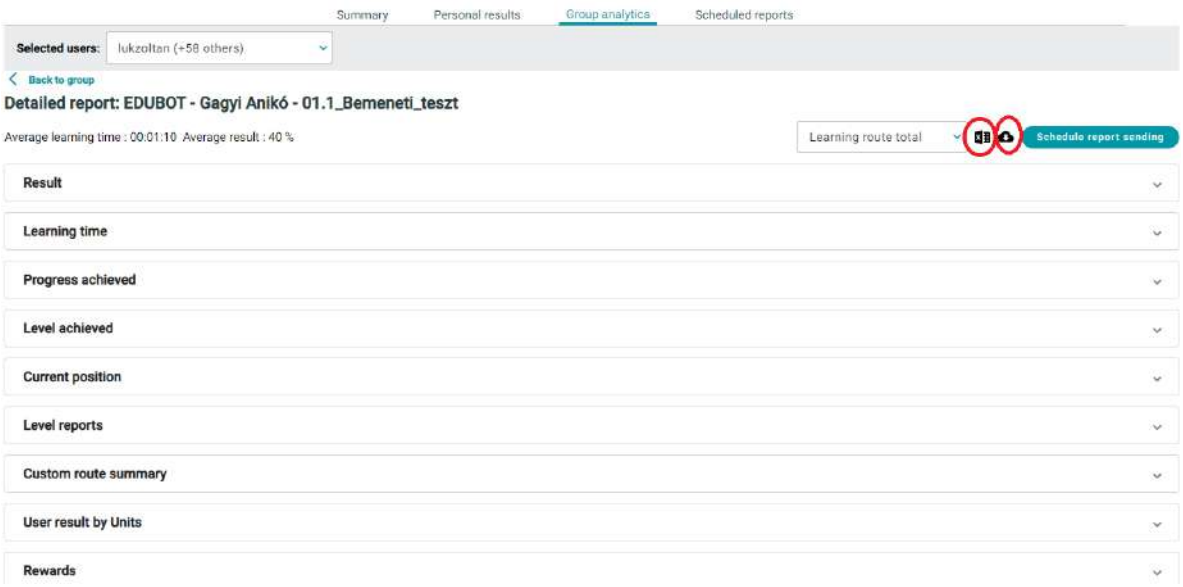
Group Results

By clicking on the Group Analysis main menu, you can select the desired group, and then choose the route and users within that group.



After listing the routes, clicking on a specific route will display the following detailed results. These results can be downloaded in .xlsx format by clicking the X button in the upper right corner or in .pdf format by clicking the download button.

You can download the following results, broken down by the entire learning routes, block, and levels, or by user or units: achieved results (in %), learning time, routes taken, achieved level, current status, statistics on levels, individual route summary, totals for answers, and rewards.

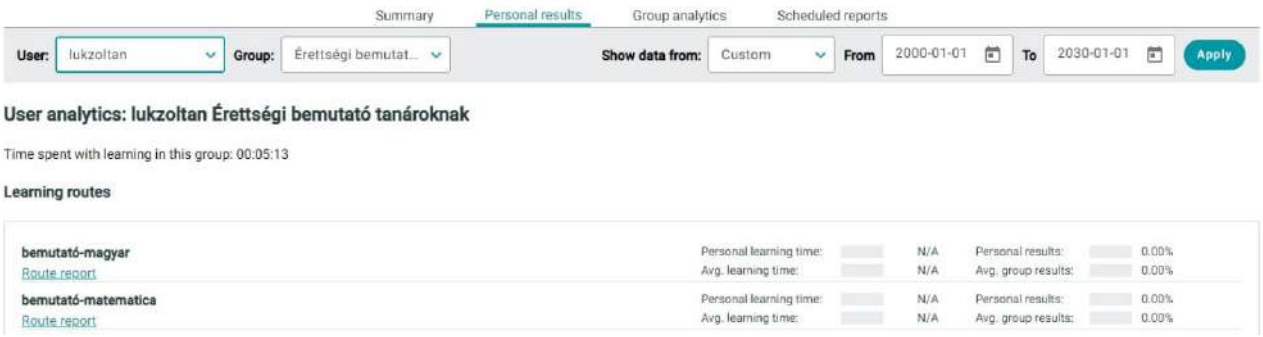


Filtering Options:

You can filter by time interval and specify the minimum learning time above which the system will list the results.

Individual Results

In the eLearning system, the "Individual Reporting by Student" feature allows for a detailed report on a specific student's progress and performance.



What can we see from the downloadable reports?

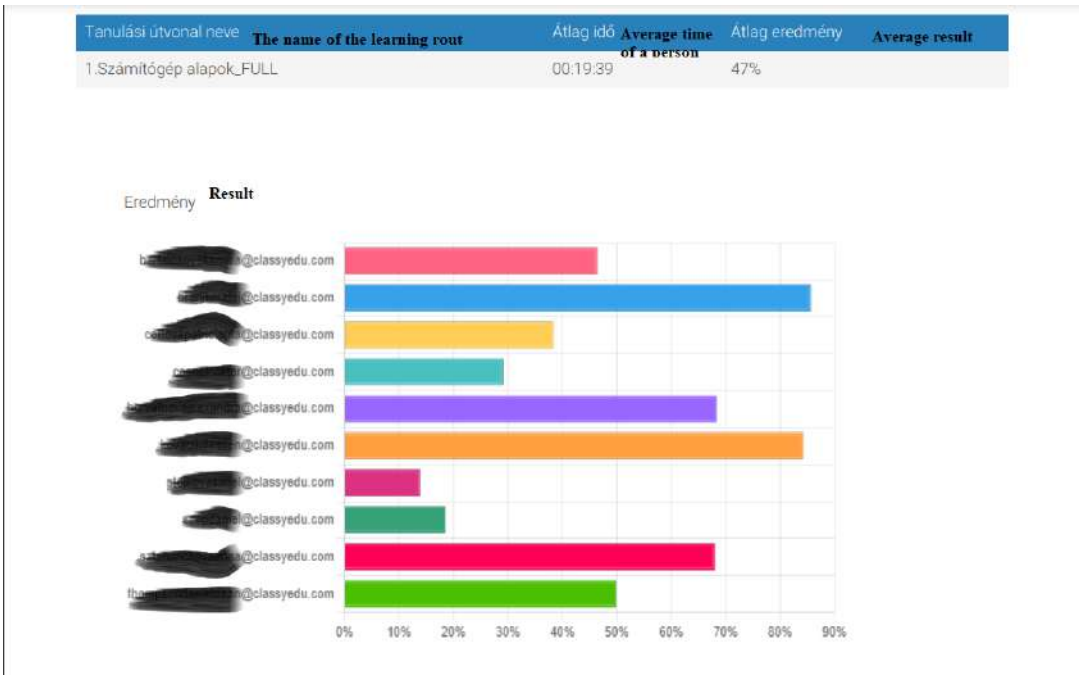
The downloaded reports contain a lot of information for the teacher:

- How much time did the students spend on the given route:
    - in total,

- on average,
- one by one.

- which student followed which routes,
- what result did each student achieve,
- what is the average result within the group,
- the progress they made,
- the actual status of students,
- reached difficulty level,
- within the adaptive learning routes, what route did each student take?
- who had difficulty with which task,
- Did they succeed in completing the repetitive, helping task? Have they viewed the handouts, video or PDF.

Below are a few statements related to the routes:




Tanulási idő
Learning time
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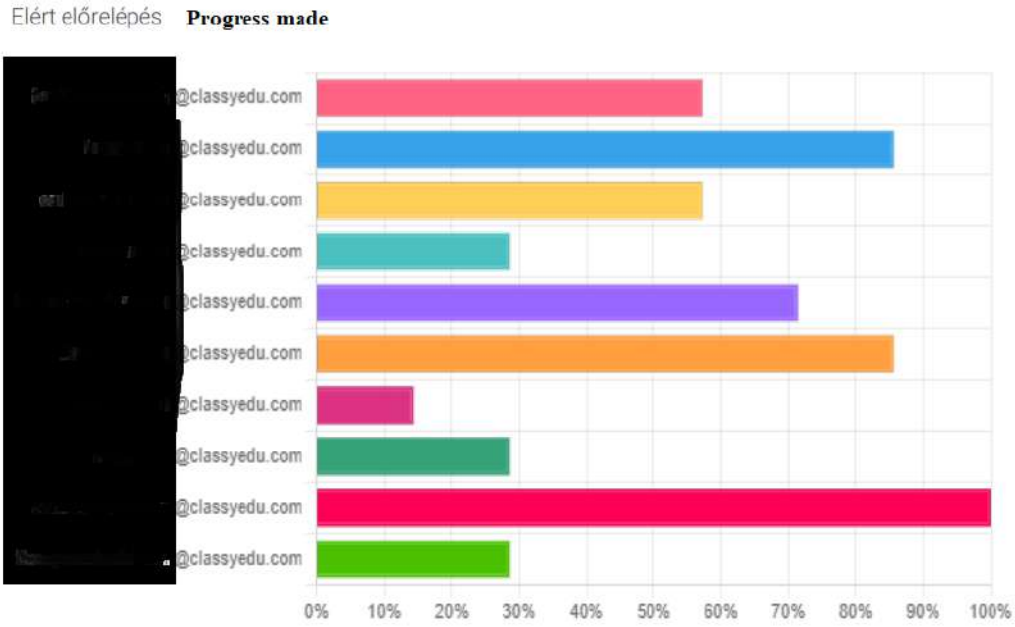
Elért előrelépés
Progress made
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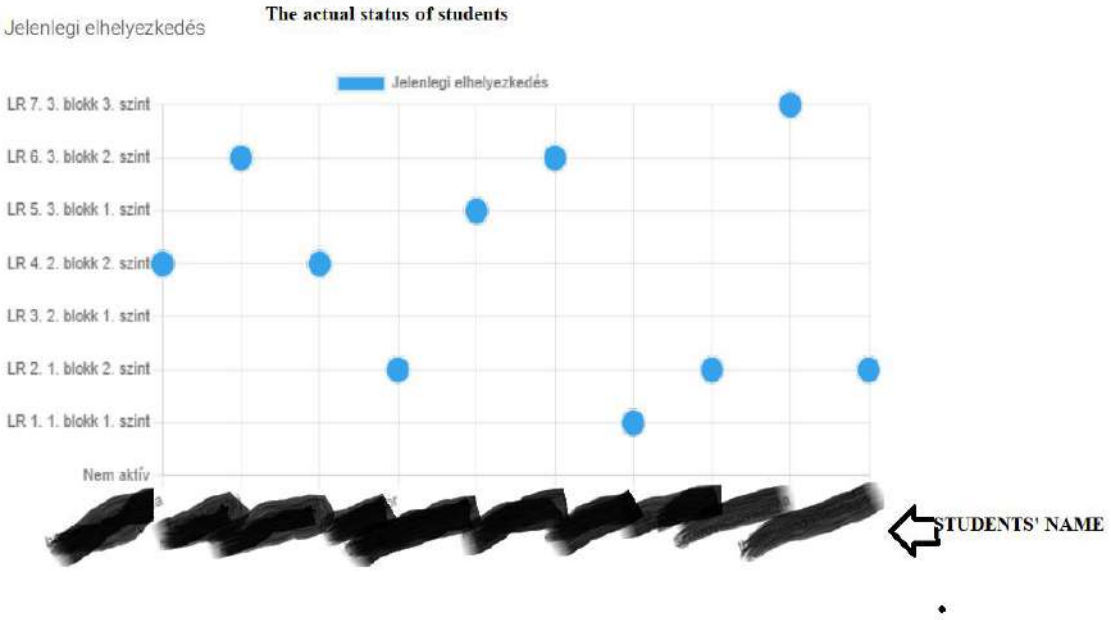
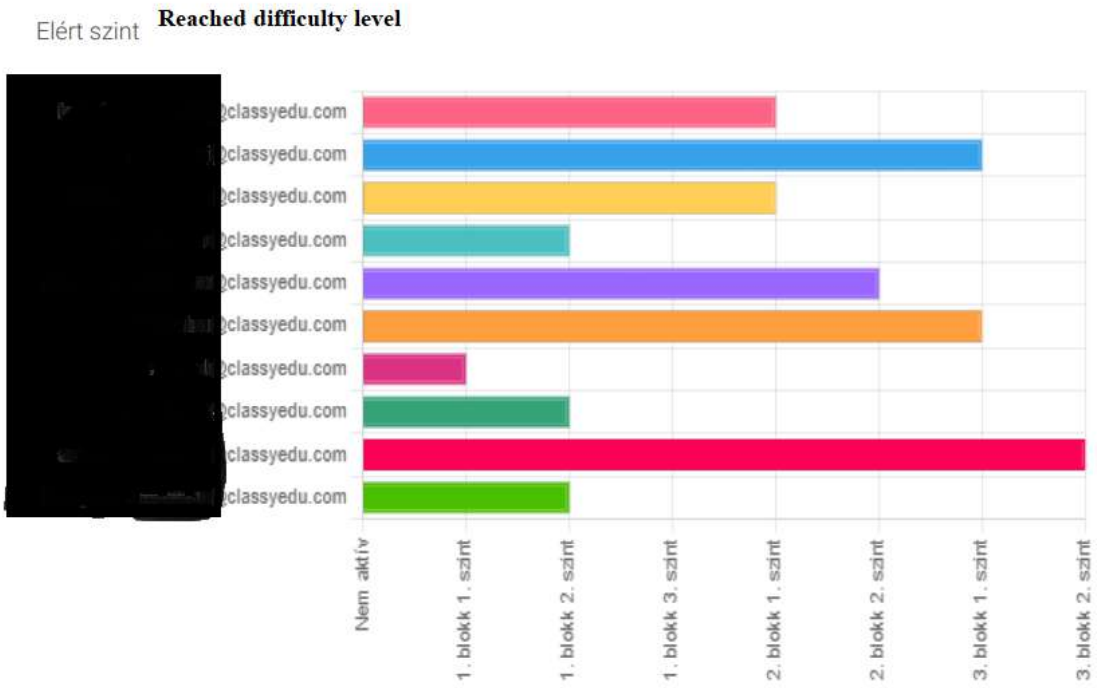
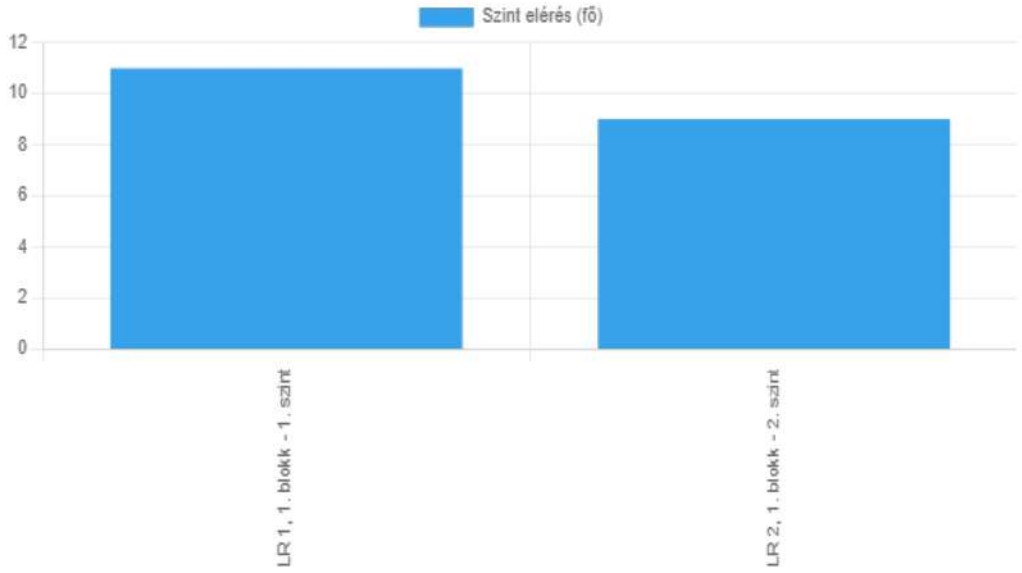

Jelenlegi elhelyezkedés
The actual status of students
Jelenlegi elhelyezkedés
LR 7. 3. blokk 3. szint
LR 6. 3. blokk 2. szint
LR 5. 3. blokk 1. szint
LR 4. 2. blokk 2. szint
LR 3. 2. blokk 1. szint
LR 2. 1. blokk 2. szint
LR 1. 1. blokk 1. szint
Nem aktív
STUDENTS' NAME


Elért szint
Reached difficulty level
classyedu.com
Nem aktív
1. blokk 1. szint
1. blokk 2. szint
1. blokk 3. szint
2. blokk 1. szint
2. blokk 2. szint
3. blokk 1. szint
3. blokk 2. szint

Szint elérés **REACHED DIFFICULTY LEVEL**



CREATING EDUBOT PERFORMANCE CLUSTERS

Cases when the use of clusters is advised

The use of clustering can be beneficial in various situations.

It is a common problem in many cases that some students dispose of knowledge above the class average level in a certain subject, while some others are well below.

There are diverse situations when it is beneficial to break down the class into smaller groups of students struggling with the same challenges and address their problems separately.

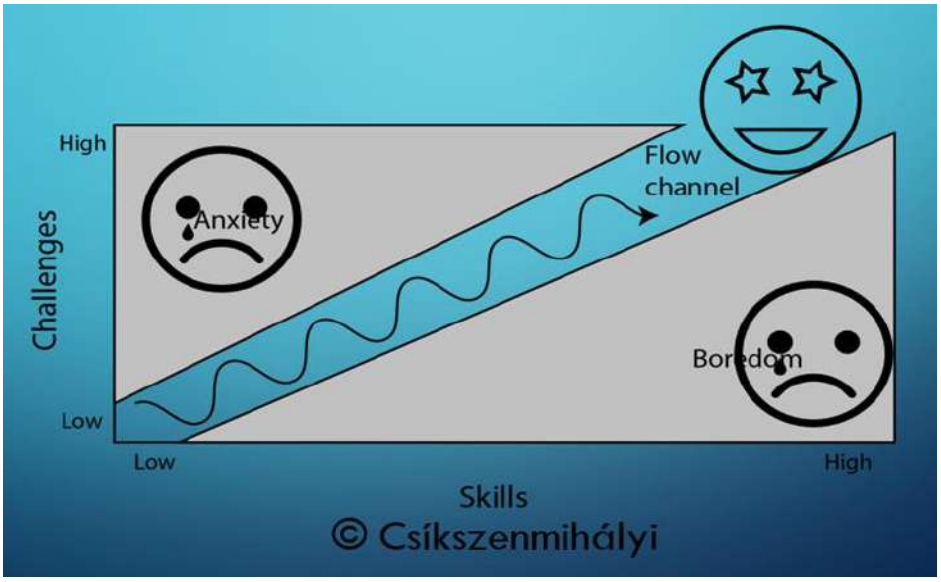
If there are several classes learning the same materials, these clusters can be formed across the classes.

Specific cases when clustering can be very beneficial include:

- Preparation for exams
- Correpetation
- After-school work with students risking early school leaving

Goal of Clustering

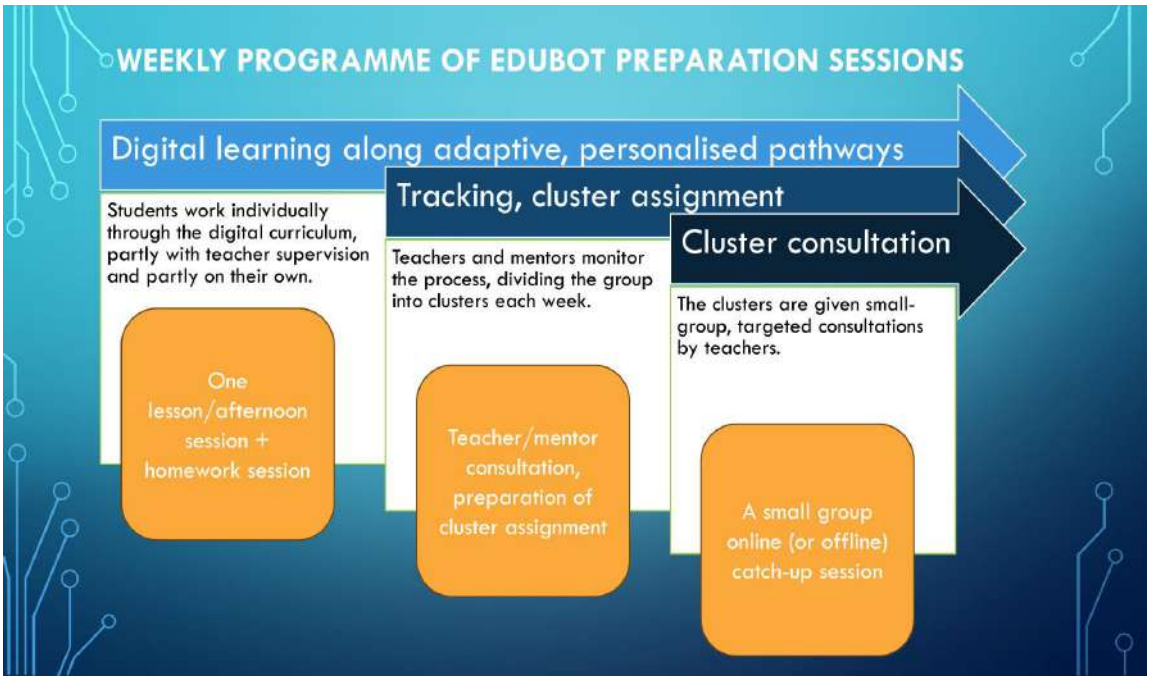
The EDUBOT methodology's main goal is to keep students on a learning track we call "Flow channel" between boredom and anxiety assuring that every student is faced with challenging, but not overwhelmingly difficult learning tasks.



Our digital learning routes adapt to the learning habits of the students. Those who excel in a certain field, will go on and get more complex tasks, while those who struggle will get supporting questions, knowledge elements and explanations to help them overcome their problems.

However, EDUBOT is not to create a digital system that takes over the complete learning process.

We believe that adaptive digital routes can be the most efficient if the learning process is supervised by teachers, and the students regularly get personal support in form of small group tutoring. The results of our pilot sessions also show that this is the way how the best result can be achieved in preparation for exams.



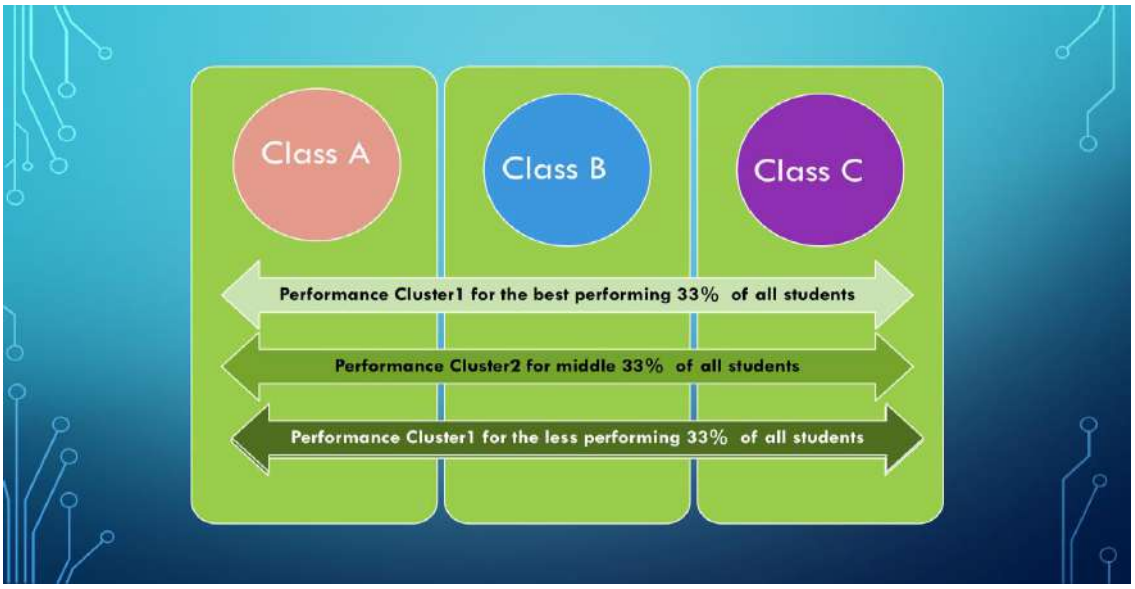
EDUBOT supports you to differentiate the learning process in your class(es) by offering the possibility to create performance clusters from the students of one-or several class(es).

This is the way we connect digital learning and personal tutoring.

For example, in our pilot sessions in Hungary we used performance clusters across the participating classes, and the clusters were tutored by the teachers of the classes who distributed the clusters among them each week. As we used the same number of clusters and classes, all teachers had one cluster to work with.

How to create performance clusters?

One way to create the clusters is to analyse the results and create the classes manually.

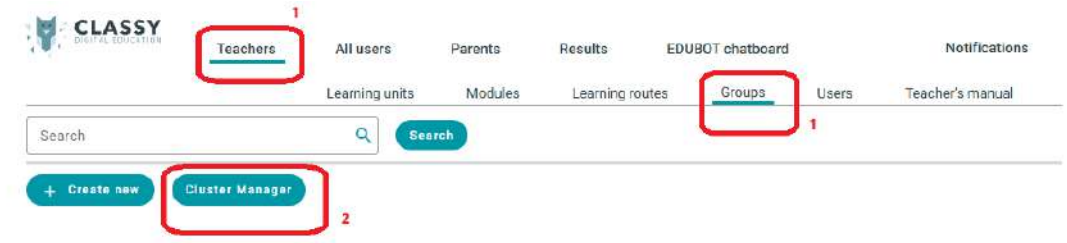


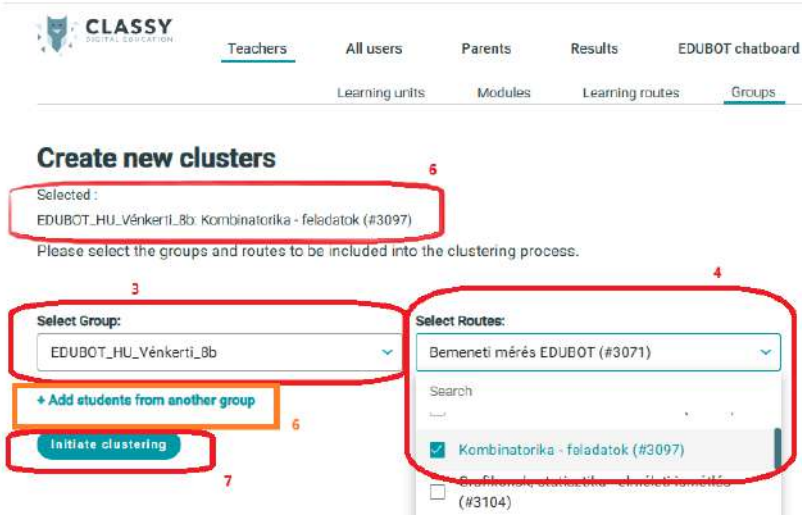
However, as this process can be time -consuming, especially if you have several classes to cluster, you might need a helping hand.

EBUBOT Assistant will do the clustering for you.

Steps to be taken:

1. Go to Teachers/Groups
2. Select Cluster manager
3. Select "Create new cluster"
4. Select the group you want to work with, then select the route the results of which you want to be taken into account in the process. *You can also select several routes if you want.*
5. If you want to include another group in the clustering process, select "Add students from another group", and repeat the process above. *Please note that the best matching clusters will result if you select the same route in all groups. The Assistant will perform the clustering at any selection, but obviously, the most matching dataset of student performance will be provided by results of a single route.*
6. Check under the "Selected" line, if the selection is correct.
7. Push "Initiate clustering"





You will receive a message that clustering has been initiated.

This process can take a few seconds or minutes depending on the quantity of the data to be analyzed by the AI.

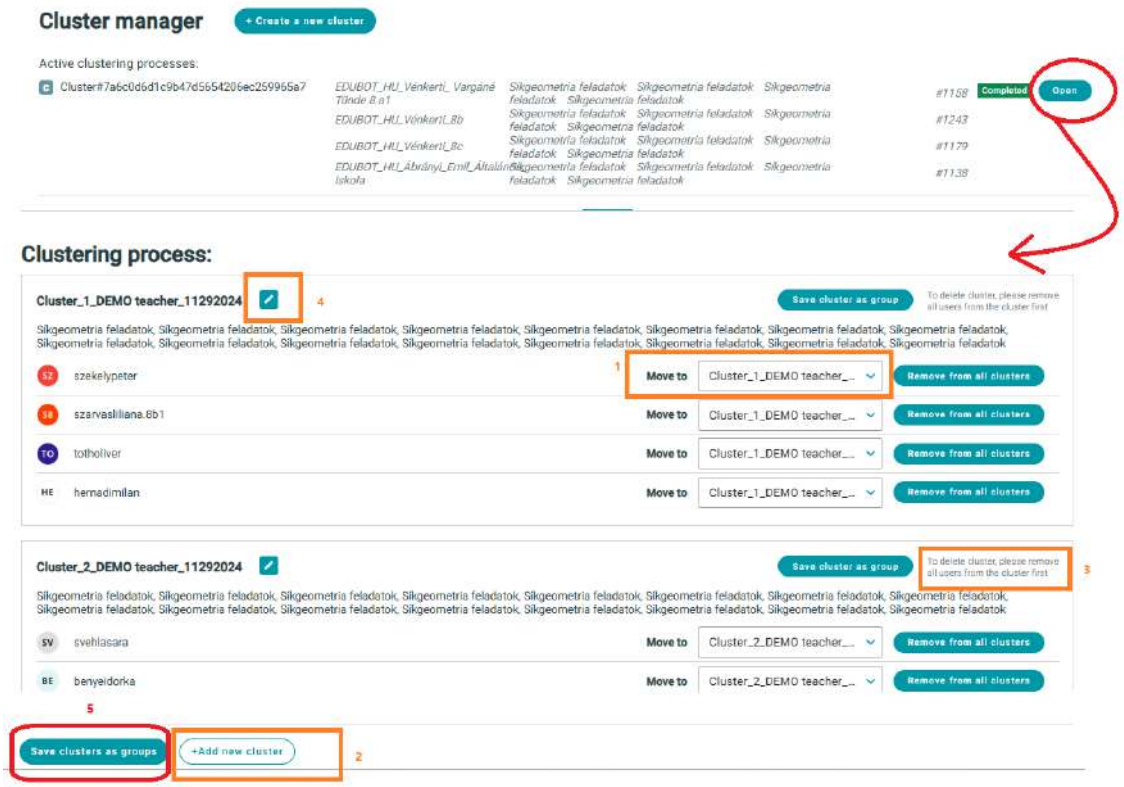
When the process is completed, you will get a notification on the platform and also in e-mail.

You can also check yourself if the completed processes in the “Cluster manager”. If your process is marked “Comleted” in the list of “Active clustering processes”, you can open the result by clicking on “Open”.

You will see the clusters proposed by the Assistant listed (see the image below).

You can now manually move students from one cluster to another (1), add new clusters (2) and delete emptied ones (3). We recommended to rename (4) the clusters you want to work with, so that you can easily identify them later.

When you are ready with the modifications, you can press “Save clusters as groups” (5). The clusters will now be saved as groups, and listed as groups in the “my Groups” menu. From now on, you can work with them as with any other learning group.



Your clusters will appear in the “Group” menu, “My groups” list.

You can use the created cluster groups to offer them learning routes tailored to their needs, or you can offer them personal tutoring.

HOW TO MOTIVATE STUDENTS?

It is also often observed during class that students quickly lose their motivation.

This is often no different on the online interface either.

In addition to the fact that the teacher tries to maintain the students' attention and enthusiasm during personal meetings with various playful methods, the frame game of the EDUBOT interface also serves this purpose.

The frame game

The purpose of the frame game is to make the use of the interface more effective and interesting

learning process.

The use of the frame game is optional. The teacher can decide to use it - when he feels that it is worth motivating the students extra, or if playfulness is suitable for maintaining their attention - or not. The frame game can be assigned to any route, including the linear learning route and the adaptive learning route.

The scene of the frame game is a castle where different characters exist.

The player is the hero of the story (Hero), who strives to free the victim (Victim) who is languishing in the captivity of the enemy (Enemy).

During the adaptive route, the character (the Hero) must climb the levels of the castle to reach the tower and free the Victim.

There are two reward mechanisms in the Castle frame game:

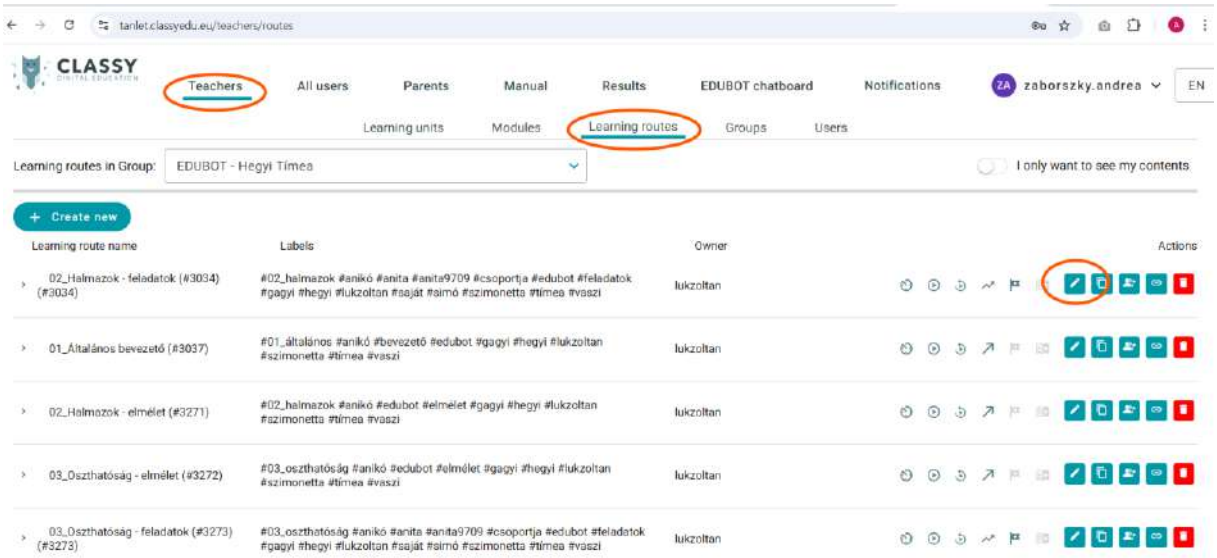
- *Reward token* - this reward in the form of a gold coin is given to the student when he successfully fulfills the conditions of the level jump and moves to a new level. It is a pre-determined reward that the student can redeem for "game time" within the application.

- *Rewards hidden in treasure chests* - these rewards are given to the students when they collect a certain amount of points, regardless of whether they succeed in leveling up by fulfilling the requirements of a level. The treasure chest can contain anything that the teacher who created the route put in it.

On the screen, an information board presents the rules of the game and the rewards that can be obtained to inform the students.

Setting Up the Framework Game

On the Teacher Interface, there is the option to assign the framework game to individual routes. After selecting the appropriate Learning Route, you need to set up the framework game using the Edit button.



In the Story Frame menu, you need to make the appropriate settings.

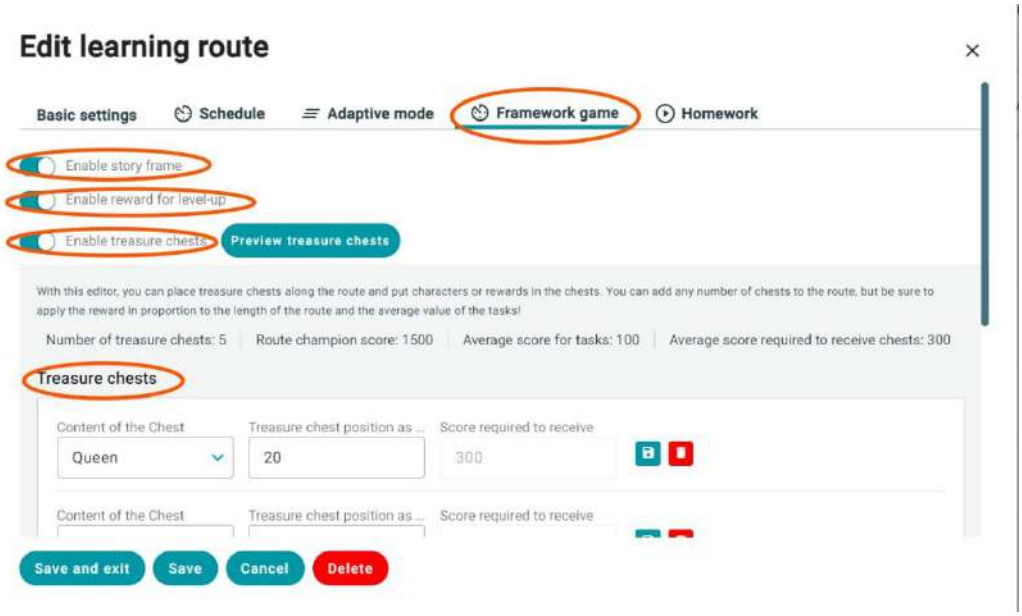
For the framework game, the following must be enabled: Enable story frame.

The framework game takes place in a castle, and the goal is to rescue a prisoner locked in a tower. By default, the student can choose from three characters (princess- victim, prince-hero, dragon-enemy).

To enable rewards and treasure chests, the other two options need to be checked:

Enable reward for level-up and Enable treasure chests.

Rewards can be created in the Treasure Chests window, which can be a character or other rewards, such as links to online resources, videos, or other text content. You can create a new reward using the New reward option.



When placing the reward, it is necessary to determine the Chest position in the percentage of the route using the menu option, so that the student can receive the reward after completing a certain percentage of the route. After making this setting, the system will automatically display how many points the student needs to earn to receive the reward accordingly.

FAQ

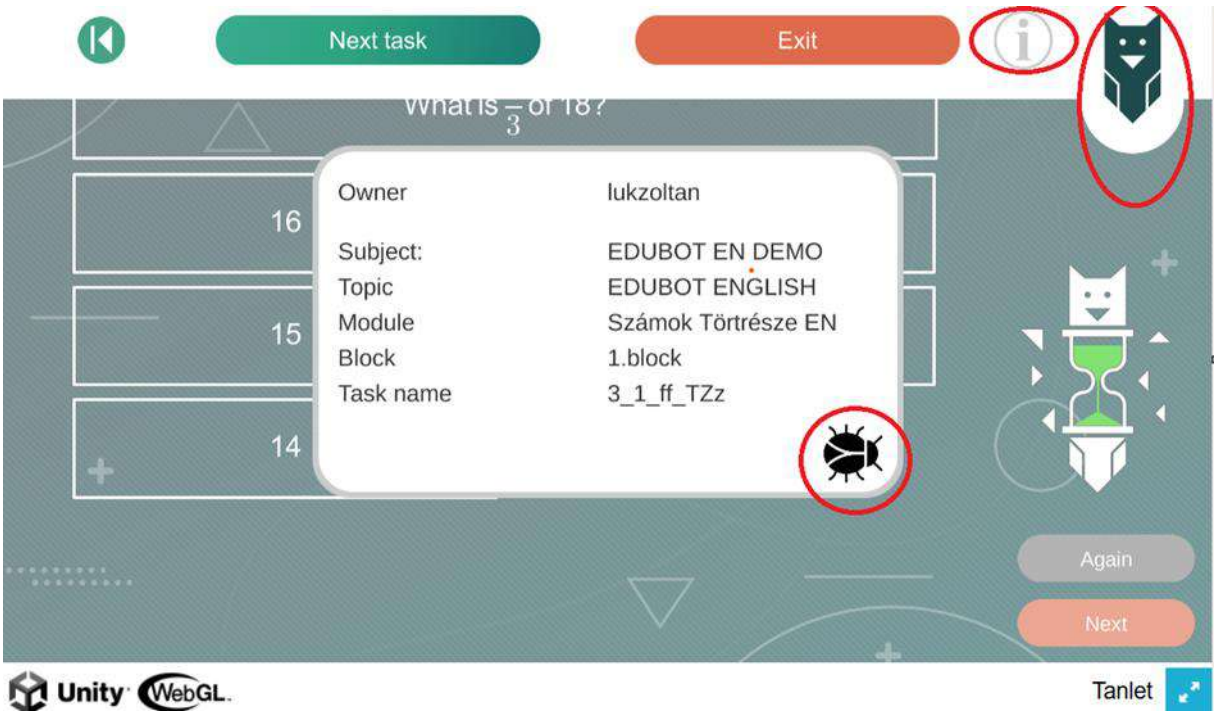
How does learning and progression in a level-jumping curriculum work?

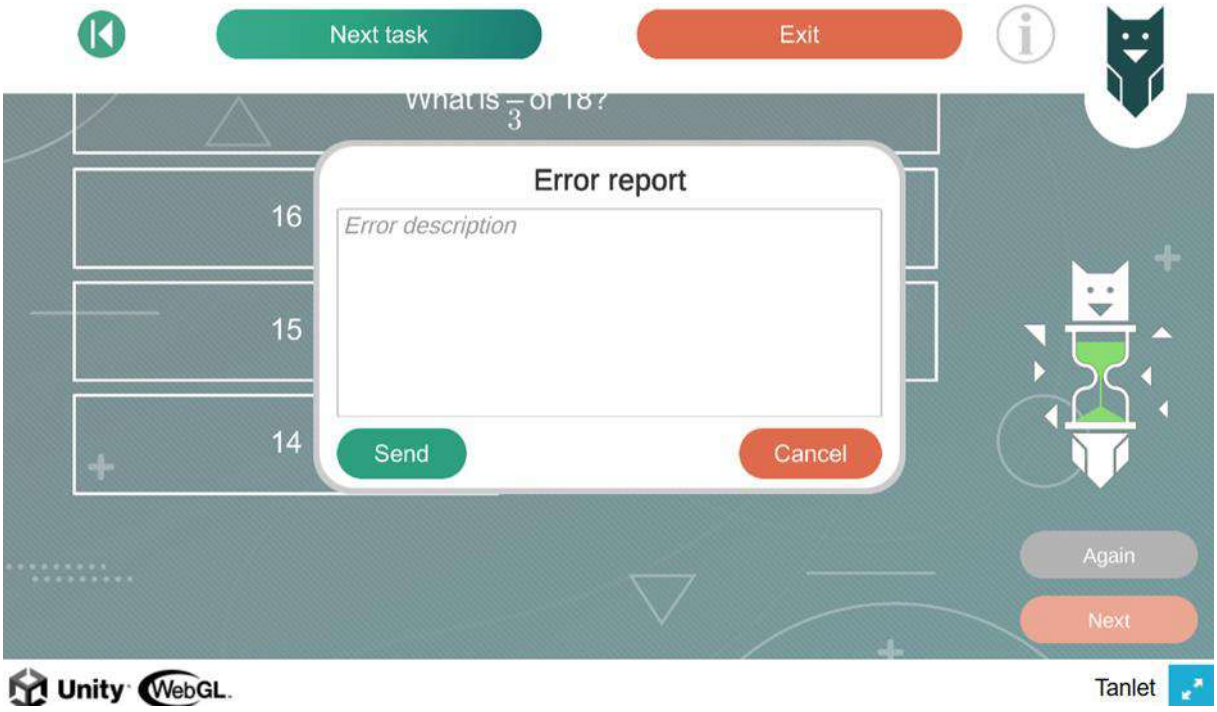
A common question is why the student drops a level if he or she has solved the problem after the help task, i.e. the second time. A task is only considered successfully solved if the student solved it without any help. If the student fails to get the correct solution the first time, he/she is given the help task and can then try again with the original task. However, at this point, the level will have already been reached, regardless of whether or not the problem is solved.

How can I report technical or content errors found in the system?

A bug report should be sent for any errors encountered in the system. The way to send a bug report is as follows:

- Click on the owl in the top left corner!
- Click on the Info button
- Click on the black bug icon in the bottom right corner!
- In the pop-up window, it is necessary to enter the error encountered.
- Send to





Is it a good idea to use multiple screens in one task when developing content?

Using multiple screens is effective when you want to ask several questions of the same type. However, it is not recommended to place more than 2-3 tasks in a game engine, as this can lead to

undue setbacks, which can be caused by a student failing a single task. It is therefore advisable to maximise the number of surfaces so that there is not too much room for error.

How can the student continue the learning process the next time so that he/she doesn't have to start from scratch?

The default setting in the system is that the student always continues the task where he/she left off. If the replay option is not checked in the route setting, the student can only solve the route once, otherwise he/she can solve it several times.

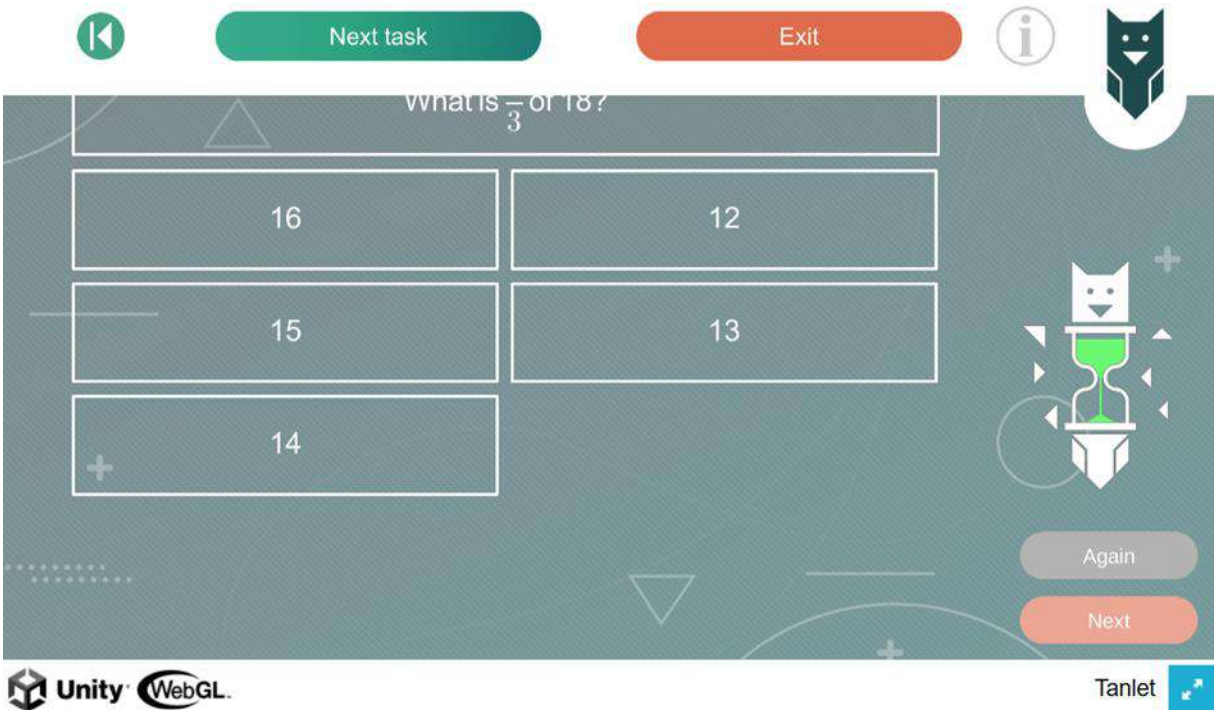
How does navigation work when solving a task?

1. Click on the owl to navigate backwards and forwards between the learning units. You can move forward using the *Next Unit* menu and backward using the navigation arrow in the top left corner.

2. You can also use the owl icon to exit the system by selecting the *Exit* menu.

3. If the student cannot answer the question correctly, he/she can go back to the task and read it again by using the *Repeat* button in the bottom right-hand corner.

4. Once the student has solved the task, but the time limit has not yet expired, the *Next* button allows the student to move on to the next task without waiting.



How should the learner be prepared for the learning process?

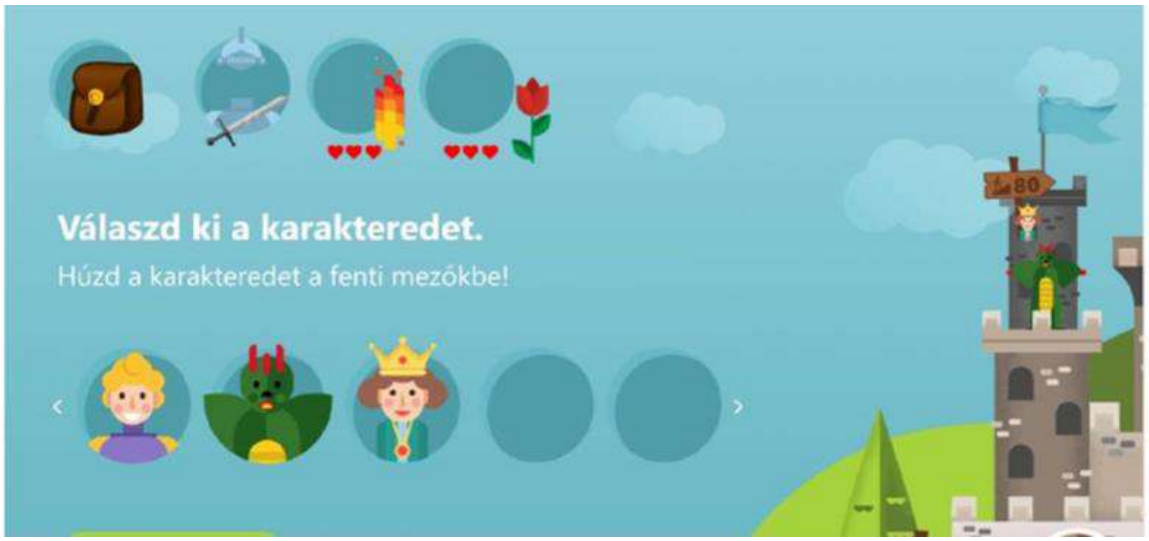
To ensure a successful learning activity, it is useful to provide some basic information to students before they start the task. These are:

- In the system, you can see and track the student's activity, for example, how much time he or she has spent on a task. This in turn allows you to draw conclusions about whether the learner really took the task seriously, read the text, guessed, etc.
- It is worth clarifying how to navigate the system, especially the *Reset* button, as this gives the student the opportunity to start again if he/she has made a mistake.
- When it comes to falling down between levels, it is important to make it clear to children that if they have not managed to complete the task without any help, they will fall down one level. This will not change if he or she successfully completes the task after the help task.
- Finally, on the assessment, it is worth clarifying that in test mode, the system will take all the answers and let the student go on, but this does not mean that they have solved it correctly and will be awarded a mark. In the practice mode the engine always shows

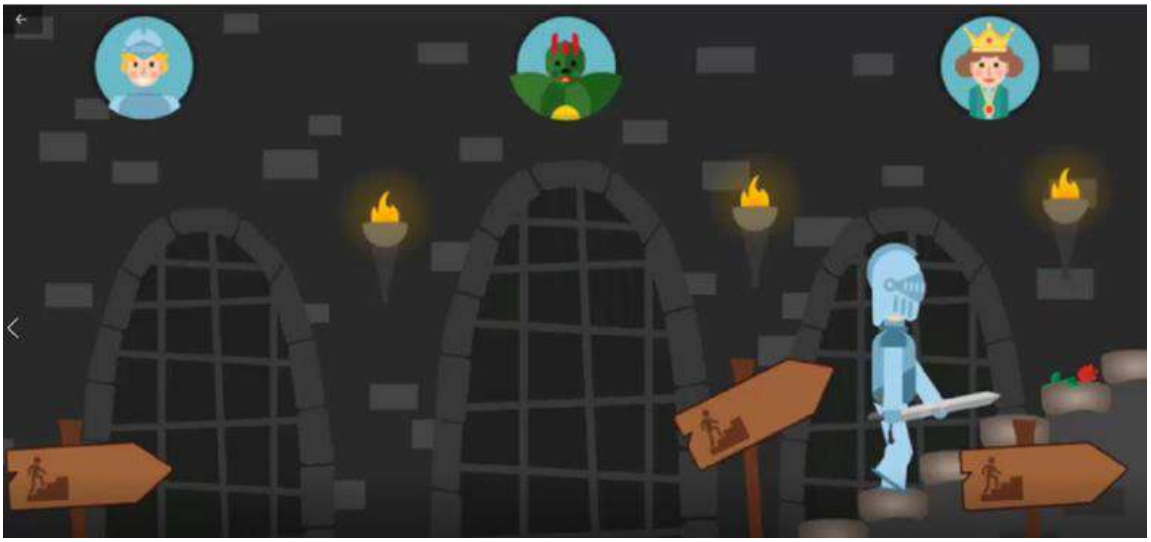
immediately whether the answer was correct or incorrect, in the test mode only if you click on continue will the system indicate whether the answer was correct or not.

How does the framework game work from a user perspective?

The castle frame game is all about solving tasks at different difficulty levels to reach the top level. According to the game, the character of your choice must get to the top of the tower to free the prisoner. The student can choose from several characters, which is possible at the beginning of the learning process.



If successful, the student is given the next task from a more difficult difficulty level, i.e. the character moves up the stairs. If the answer is incorrect, the student moves to a level with easier tasks and the hero falls.



PRESENTATION OF LOCAL CONTENT POOLS – HUNGARY

The aim of curriculum development

The aim of the curriculum development is to support preparation for secondary school admissions, so that students can successfully master the requirements for the upper primary school mathematics exit level, the end of grade 8.

We want to deepen students' mathematical knowledge and the competences that enable them to apply their knowledge in practice, mathematical-logical and digital competences. The 12 topics of the admission test are presented in the form of progressively more difficult exercises of varying difficulty.

Topics

1. Rational numbers 1.
2. Unit of measurement
3. Combinatorics
4. Graph icons
5. Proportionality
6. Text exercises: quantities, proportional division 1.
7. Percentages, fractions
8. Text exercises: fraction, percentage
9. Plane geometry angle calculation
10. Geometry of space
11. Coordinate systems, functions
12. Text mixing, movement Age

The result of content development

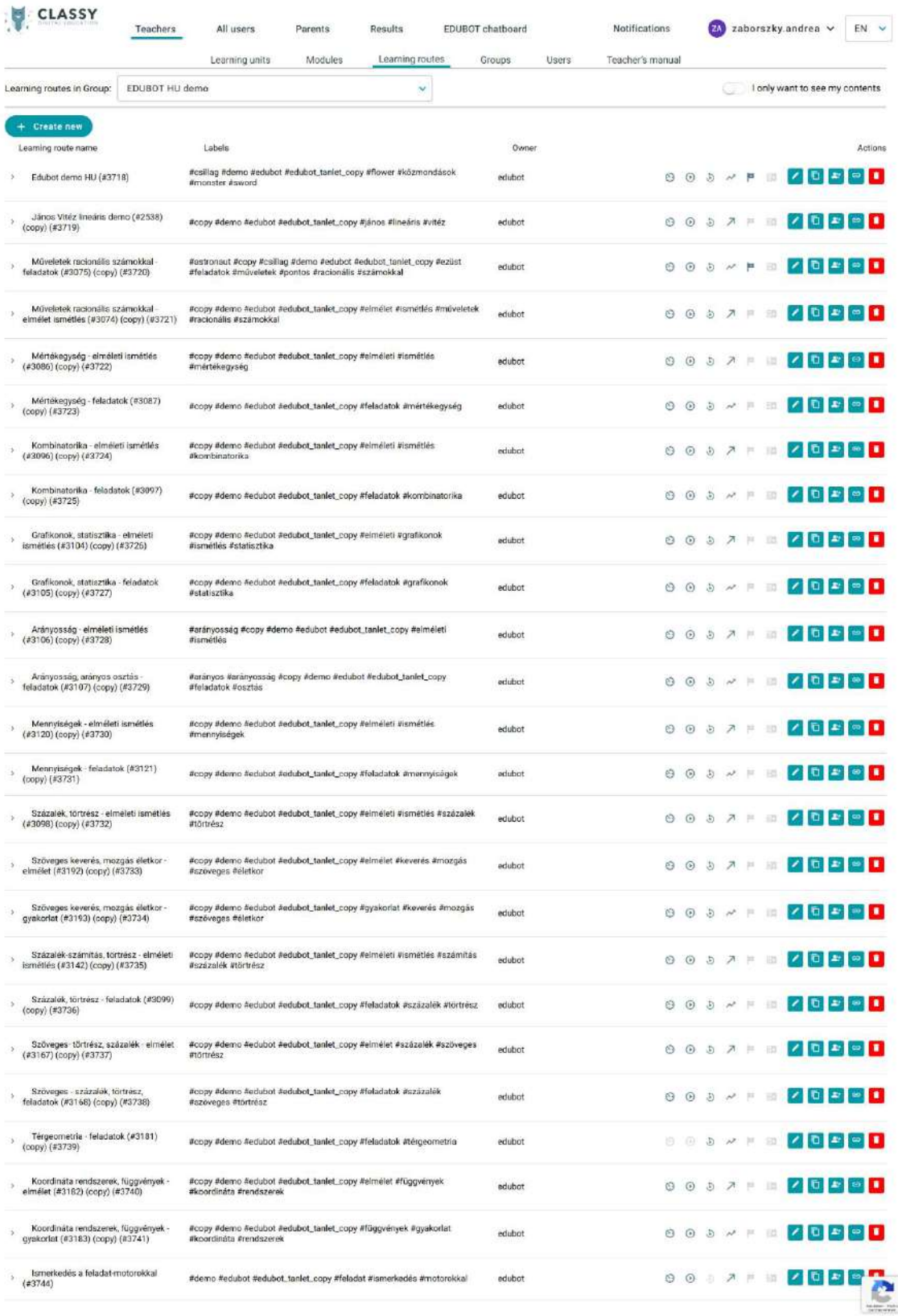
- 12 mathematics topics

- 12 linear pathways - Theoretical knowledge: a text-based theoretical introduction has been developed for each topic, containing the knowledge base needed for the given topic, such as basic concepts, formulas, keywords, etc.
- 12 adaptive pathways: several hours of adaptive maths content of different levels of difficulty with help tasks and explanations
- 500 linear task
- 300 SU with exercises and explanations in the adaptive part
- 1520 individual tasks in total
- text and vlogger style video commentaries

The digital content can be accessed via the following path: ***Teacher interface - Learning paths - Edubot EN demo***

Modules - learning pathways

The 12 topics are organised into 12 pathways/modules in the learning interface.

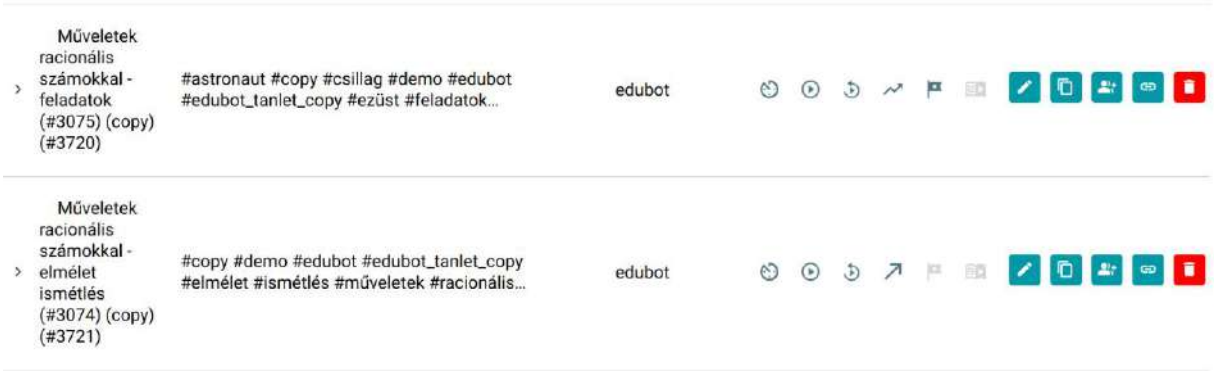


Curriculum structure: linear and adaptive content

Each of the 12 topics has a specific number of tasks, arranged hierarchically by difficulty level. The topics were structured along progressively more difficult levels, moving from easier tasks to increasingly more difficult ones. At each difficulty level, several versions of each question type are produced. In case the student successfully solves the problem, he/she can move up to a higher level, if he/she fails, he/she falls back to an easier level, in which case he/she is given another of the three problems.

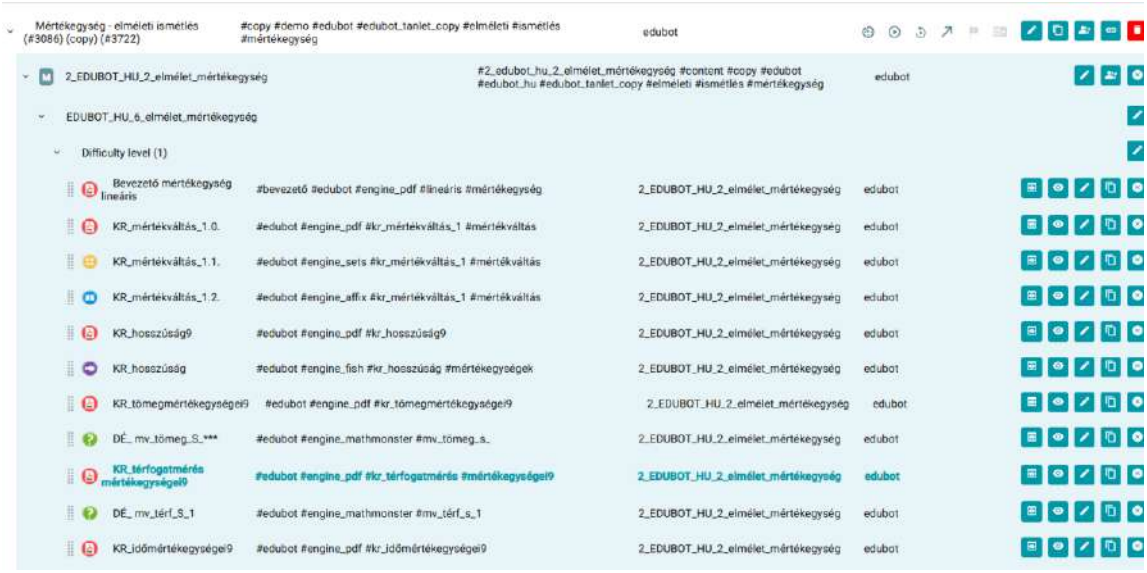
Each topic was processed using two learning modules, a linear and an adaptive pathway. In total, there are 12 linear and 12 adaptive modules.

- linear route: an "information" MODULE
- adaptive pathway: a "skills gap filling" MODULE



Linear pathway: consists of theoretical knowledge elements, summarising what knowledge the student should have for the given topic. The linear pathway is designed for the student to master/repeat the basics of the given topic, such as definitions, basic concepts, formulas, etc. The tasks are individual tasks (not superunits), can be text, video or interactive/game tasks.

Illustrating the structure of linear content the Units of Measurement topic

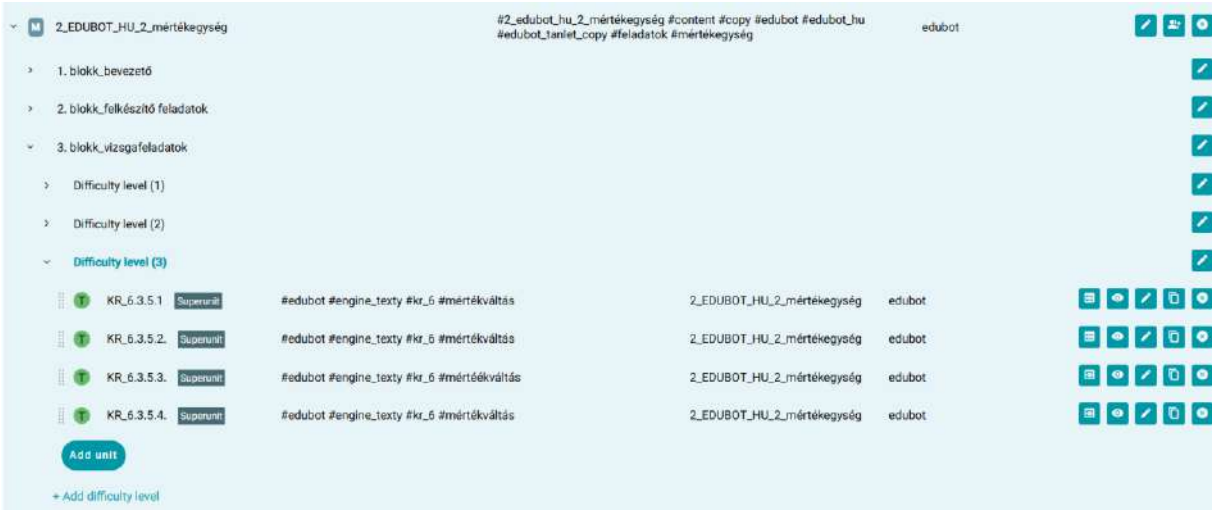


Adaptive route:

Content of the adaptive pathway: increasingly difficult practice exercises with help tasks and explanations

- the adaptive modules each contain three blocks
- block 1 contains a theoretical introduction
- blocks 2 and 3 contain 3 levels of difficulty
- and the difficulty levels contain 3-9 superunits
- content of the superunits: main task - help task/knowledge item - text or video explanation. The knowledge element with a facilitating function conveys some theoretical knowledge in a textual form, while the facilitating task is an interactive, playful exercise.

Illustrating the structure of adaptive content within the Units of Measurement theme



Block 1: introduction - theoretical introduction text (PDF) to prepare learners for the learning activity, navigating the learning interface, content structure; progression through the learning material; rules of the framework game; collecting Edubot stars

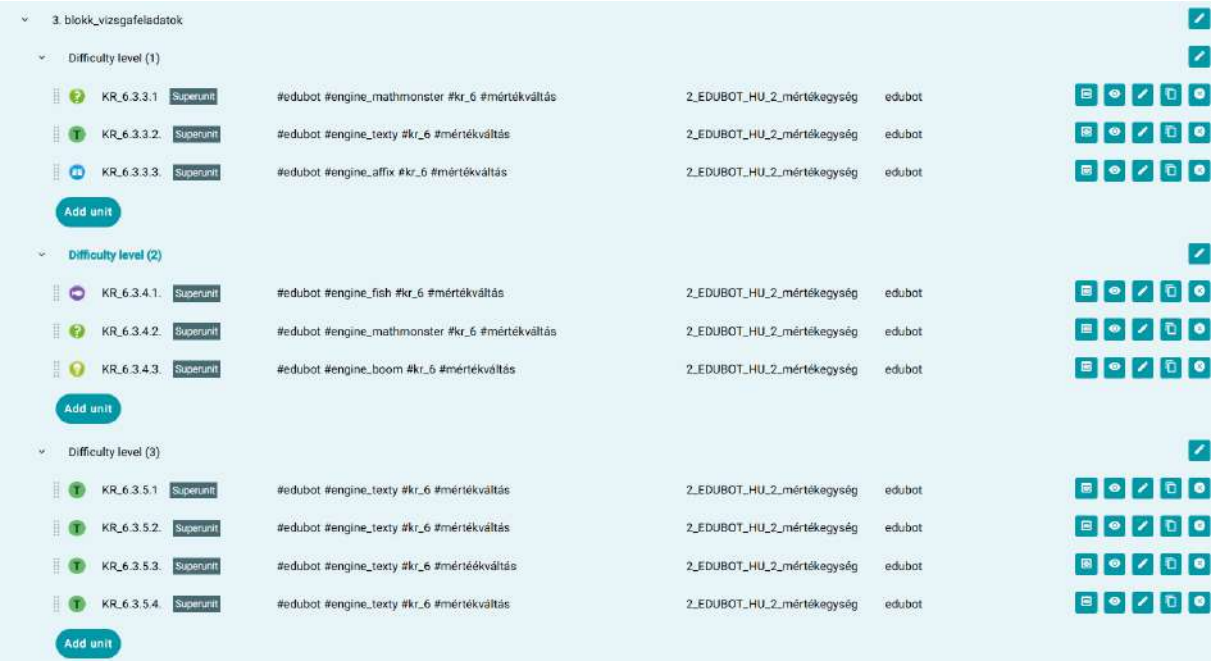
Block 2: Preparatory exercises: contains easier exercises to help you prepare for more complex tasks. This block contains 3 levels of difficulty, with several superunit tasks per level, which contain a help task/knowledge element and an explanation in addition to the main task.

Block 2 of each topic contains 10-20 super-units, each of which includes an interactive main task, 2-6 knowledge items and/or help tasks and an explanation. In total, at least 600 learning elements.

Block 3: Examination papers - only papers at the intermediate to the highest level, based on the admission tests of previous years. Also consists of 3 levels of increasing difficulty.

Each 3rd block contains 10-12 super units, each consisting of an interactive main task, 1-3 supporting tasks/skills and a text or video explanation.

Illustration of the structure of the examination papers within the Units of Measurement topic



Methodological suggestions for the learning activity

It is recommended that the 12 topics in the digital curriculum are taught consecutively, at regular intervals, e.g. weekly. If a new learning material is processed every week, the whole learning activity is completed in 12 weeks. Care should be taken to ensure that there is no significant overlap between the different subjects, and that work on a new subject starts when the previous subject has been completed.

How to work through the topics: linear and adaptive content

Each topic is presented as a linear and adaptive pathway. The linear routes are labelled as theory, while the adaptive ones are labelled as exercises/practices

It is recommended to start with the linerary, which contains the theoretical knowledge elements (e.g. basic concepts, formulas) that the student should have for the given topic. It is then recommended to continue with the adaptive pathway, which consists of superunits of different levels of difficulty, with supporting exercises and explanations, moving from simpler to more complex tasks.

Introductory route

In any case, it is recommended to start learning on the educational platform with the *Guide*, which allows students to familiarise themselves with the interface, how to navigate it and the different game engines, as the guide contains all the task types created with the game engines.

Measuring performance improvement: input - output test

If you want to work through the entire digital mathematics curriculum, all 12 topics, in preparation for the entrance exam, it is worth assessing the students' level of achievement before the learning activity starts, in the form of the input test, and at the end of the learning activity, in the form of the output test.

Outcomes: monitoring of learning activities

It proposes to create clusters at different levels based on the learning ladders. The results of the learning process can be found in the *Results* section. The results are available in graph format or can be downloaded in Excel format. Among other things, basic data such as the individual learning time of the learners, the learning path followed, the percentage of results achieved, the relation of individual results to the group average, etc. are recorded.

Creating clusters - online small group consultation

Based on the results achieved in each topic, it is recommended to work with and develop students in individual performance groups. Pupils in the same small group have similar levels of knowledge and ability structures, and face similar difficulties

Clusters will be created based on the reporting data, taking care to create clusters with a lower number of clusters, with a recommended maximum of 15 clusters for development.

Availability of digital learning materials

The digital learning materials are available without registration via the links below using the GuestLogin/Customer login:

Rational numbers - linear path

Rational numbers - adaptive path

Unit of measurement - linear path

Unit of measurement - adaptive route

Combinatorics - linear path

Combinatorics - adaptive route

Graphs - linear path

Graphs - adaptive route

Proportionality - linear path

Proportionality -adaptive route

Quantities - linear path

Quantities - adaptive route

Text exercises: fraction, percentage - linear path

Text exercises: fraction, percentage - adaptive route

Plane geometry - linear path

Plane geometry -adaptive exercises

Spatial geometry - theory

Spatial geometry - adaptive routes

Coordinate systems, functions - linear path

Coordinate systems, functions - adaptive path

Text mixing, movement age - linear path

Text mixing, movement age - adaptive path

Percentages, fractions - linear path

Percentages, fractions - adaptive path

Presentation of local content pools – Poland

Introduction.

The course 'Examination for eighth graders' is dedicated to students in the seventh and eighth grades of primary school. It is compulsory for eighth-grade students to take the exam at the end of primary school. The course is widely available, free of charge and is an alternative to commercial materials. It enables students at school and at home to repeat material, understand problematic issues and thus improve their mathematics performance and better prepare for the final exam. The format of the course moves the learning of mathematics into the virtual world, making it possible to use the course anywhere, anytime. The course includes theory with examples and review tasks has 10 sections covering the following topics and numbers of hours:

Properties of numbers (lesson 3h) - Powers of measurable bases (lesson 2h) - Elements (lesson 2h) - Percentages (lesson 2h) - Algebraic expressions and equations (lesson 3h) - Text problems including percentages and proportional division (lesson 3h) - Planimetry (lesson 4h) - Stereometry (lesson 3h) - Introduction to combinatorics and probability calculus (2h) - Applications of mathematics including graph reading and elements of descriptive statistics (6h).

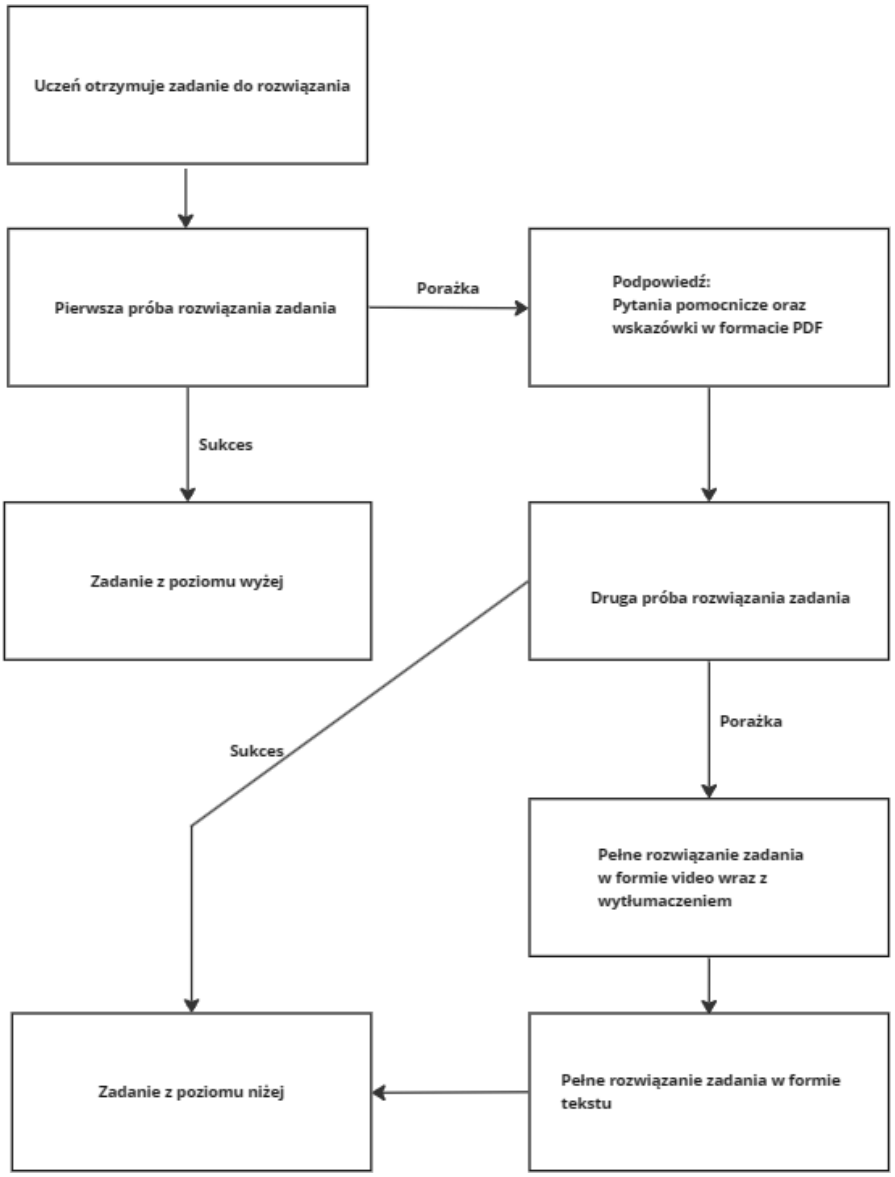
Course structure:

Each section of the course is divided into two parts:

- The first part contains theoretical explanations with requests for tasks typical of the topic. This part is arranged in a linear way, which means that each student has to go through each element of the learning path in turn.
- The second part consists of at least 14 tasks of varying levels of difficulty requiring an understanding of the issues and examples from the theoretical part. Some of the tasks in this part are analogous to those in the first part, which additionally supports students, especially those who need to solve more tasks, need more examples to understand and assimilate the discussed topic, to solve tasks on their own. Some of the tasks in the second part are tasks from exams of previous years, which is of additional value for students. In the second part, the tasks are arranged in adaptation paths. The pupil is given the first

task on the adaptation path and attempts to solve it. If the pupil solves the task correctly, he or she is automatically moved to a higher level where he or she is given more difficult tasks to solve. If the learner solves the first task on the adaptive path incorrectly, he/she is automatically moved to a lower level where he/she receives additional hints in the form of pdf, video, help questions and solves another task on a lower level. After another failure, he or she can take advantage of further help offered by the system as well as the online consultation provided by the teachers. If, on the other hand, he succeeds in solving the task correctly at this level thanks to the additional explanations, he can move up a level.

The algorithm for the adaptation task is presented below:



Examination requirements, and course chapters.

The table below presents the content taught in Grades VII and VIII, with the assignment of the issues discussed in them to the relevant sections of the course.

Powers with measurable bases	Chapter 2
Elements	Chapter 3
Creating algebraic expressions with one and more variables	Chapter 5
Transforming algebraic expressions. Algebraic sums and operations on them.	Chapter 5
Percentage calculations	Chapter 4
Equations with one unknown	Chapter 5
Simple proportionality	Chapter 5 Chapter 6
Properties of geometrical figures in the plane	Chapter 7
Polygons	Chapter 7
The number axis. Coordinate system in the plane.	Chapter 7
Spatial geometry	Chapter 8
Introduction to combinatorics and probability calculus	Chapter 9
Data reading and elements of descriptive statistics	Chapter 10

Theoretical pathways:

Theoretical paths have the same name as the mathematical sections of the course, for example, introduction to primes, introduction to percents.... It is advisable to start with the linear paths in a department.

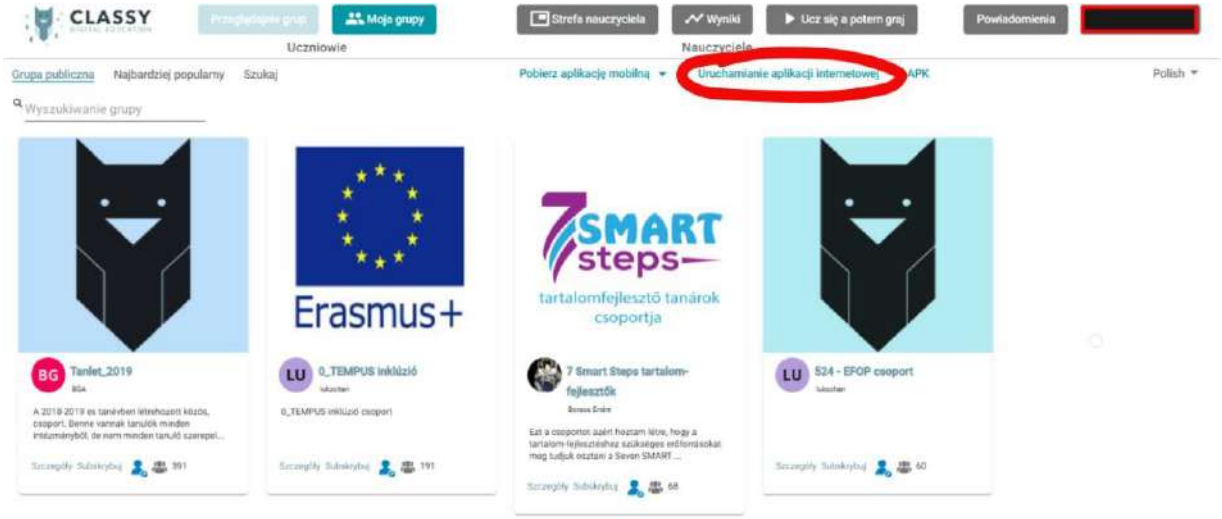
Adaptation pathways

Adaptation pathways are named according to the scheme exercise primitives, exercise percentages.

Tutorial

Before starting to work through the sections of the course, it is advisable to familiarise students with the tutorial, which includes a presentation of the types of tasks occurring in the course.

To start the tutorial, click on the "Browse groups" button and then click on Start web application.



Then locate and select the path entitled tutorial. Please make sure to set the Polish flag.

The other learning paths with the selected course content are launched in the same way.

The recommended order in which the sections should be reworked is:

- Properties of numbers
- Powers with measurable bases
- Elements
- Percentages
- Algebraic expressions and equations
- Text tasks including percentages and proportional division
- Planimetry

- Stereometry
- Introduction to combinatorics and probability calculus
- Applications of mathematics including graph reading and elements of descriptive statistics

Task types in adaptation part two:

- Test tasks
- True/false tasks
- Open tasks with gap-filling
- Self-checking tasks
- Identical combination tasks
- Tasks requiring the assignment of elements to the correct areas

A significant proportion of the tasks are open gap-filling tasks. Where the complement is a fractional or a non-quantifiable number, the answer needs to be coded according to the scheme provided each time in the task information. In most cases, fractional answers should be written in the form of non-integer fractions where the coding is in the form of improper fractions, with 3 4 coded as '3/4' and 11 5 as '11/5'. Answers with primes should be coded as follows: 3 √ 5 as '3p5', while 7√ 2 as '7p2'. Be sure to maximise the extraction of the factor before the root where possible. If difficulties arise, it is advisable to explain the coding rules to students.

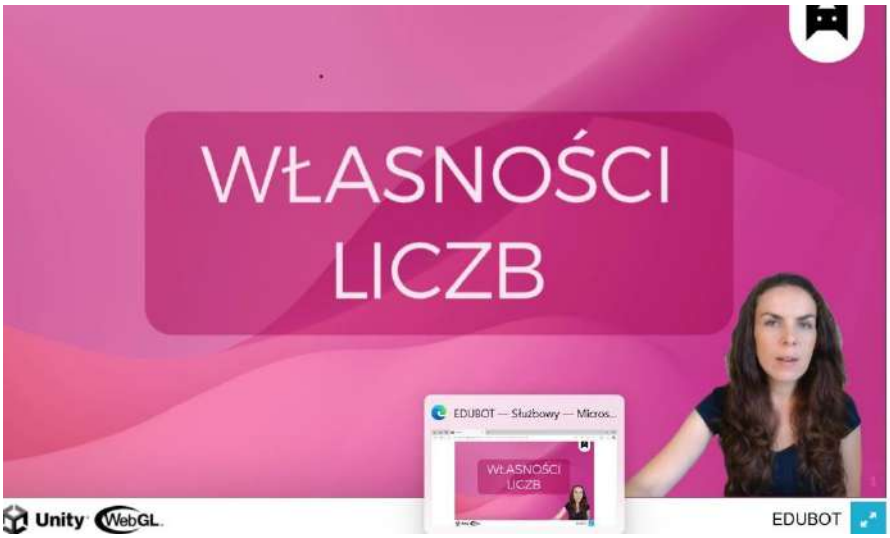
How to work with the course:

The course is versatile, it can be used in class, the teacher can create groups of students, share the paths with them as well as have a resource for the student's self-development outside the classroom. Each task in the course has a written solution (pdf) as well as a video solution. This approach gives the learner immediate feedback on whether he or she has mastered the subject matter. In our opinion, the blended learning system is better than the traditional course books, which do not contain the answers to all the tasks or present them in a way that is not very accessible, which often leads to a situation in which the student makes mistakes when solving the tasks on his/her own, which he/she is unable to correct without the help of the teacher, parents or

other third parties. An alternative form of work can be group work. We dedicate this form especially to the sections containing more complex tasks (sections 6, 8,10).

DIAGRAMS for the individual sections of the course "Examination for 8th graders" on the EDUBOT platform

Properties of numbers



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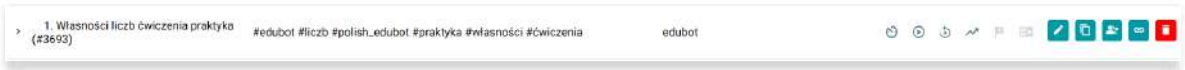

Tasks

In the section below, you will find tasks, including some that have appeared in the eighth-grade examinations in previous years. The correct answer will allow you to move on, any negative answer will refer you to a hint which suggests that you solve the task again. The correct answer is highlighted in green and the wrong answer is displayed in red.

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Powers with measurable bases

Tasks

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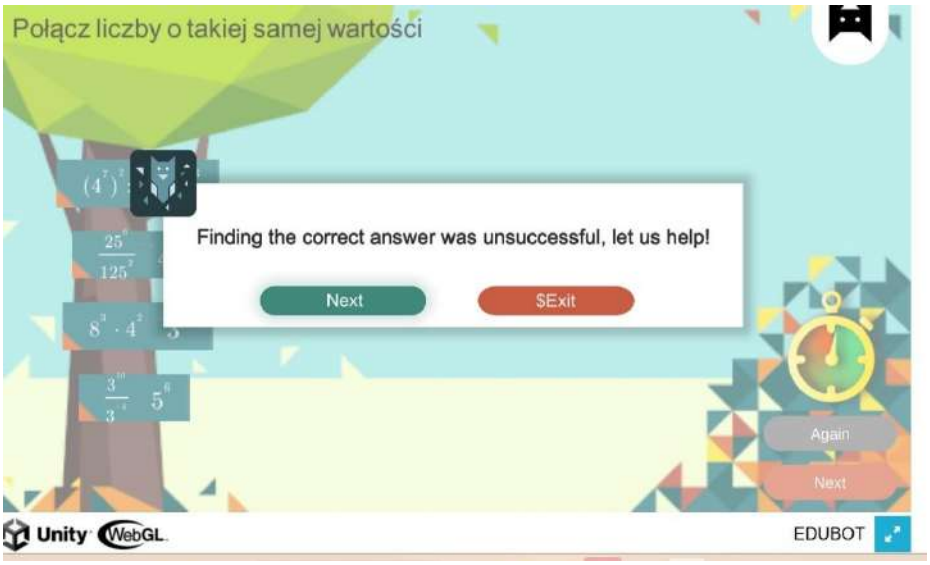
answer will refer you to a hint which suggests that you solve the task again. The correct answer is highlighted in green and the wrong answer is displayed in red.



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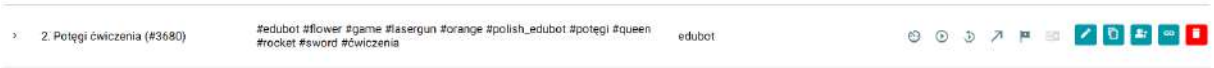

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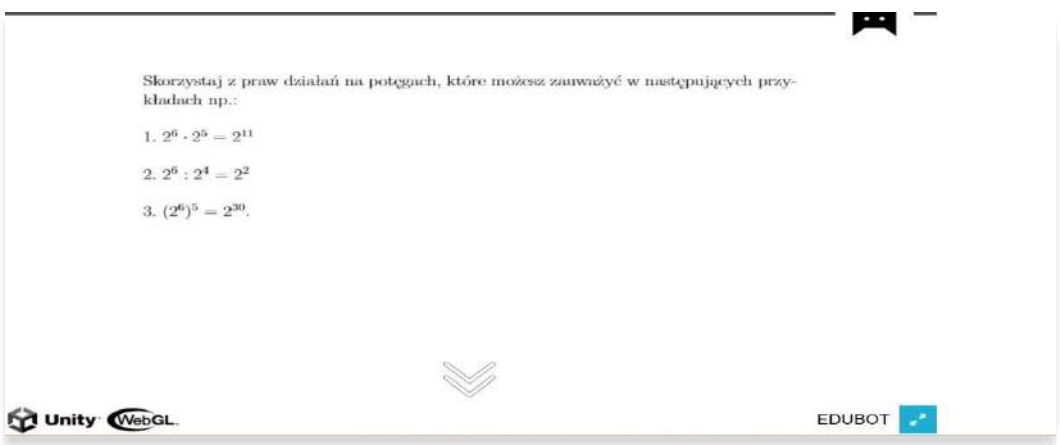

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Elements

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Tasks

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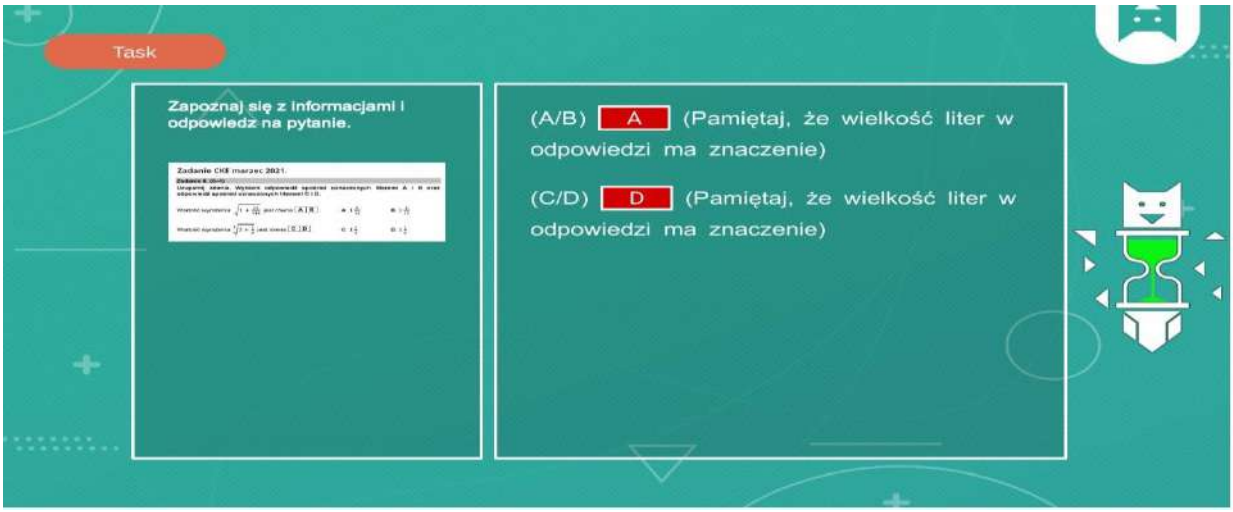

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Percentages

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Tasks

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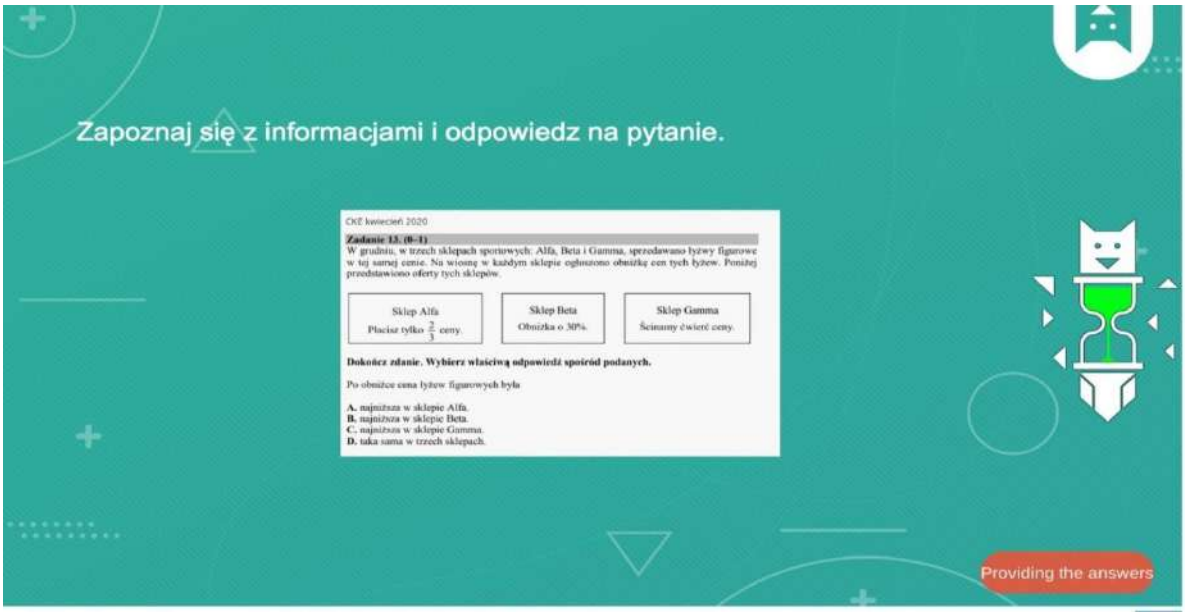

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5. Wstęp do równań (#3670)	#bronz #csillag #edubot #ezüst #gold_bar #green #nulla #polish_edubot #pontos #robot #równań #silver_bar #star #wstęp	edubot

Algebraic expressions and equations

https://edubot.classyedu.eu/app/?shareToken=UmwRtvVE6KIJBzJmDRDQvG9iwPJrHxc2

5. Równania ćwiczenia (#3683)	#bátyám #edubot #gyimes #játék #közmondások #laci #polish_edubot #robot #równania #sandor #történik #valami #velem #weores #ćwiczenia	edubot

Tasks

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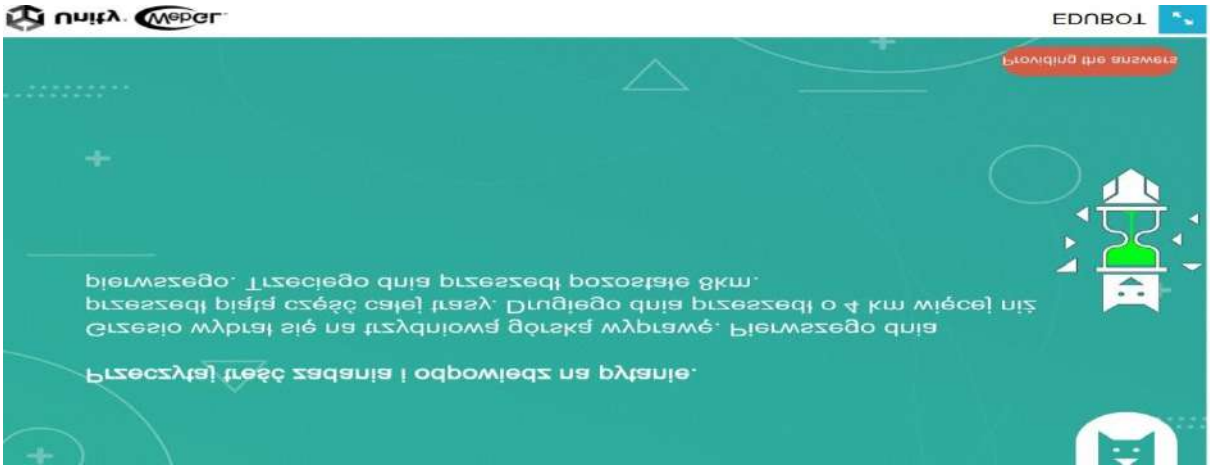

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Text tasks including percentages and proportional division

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Tasks

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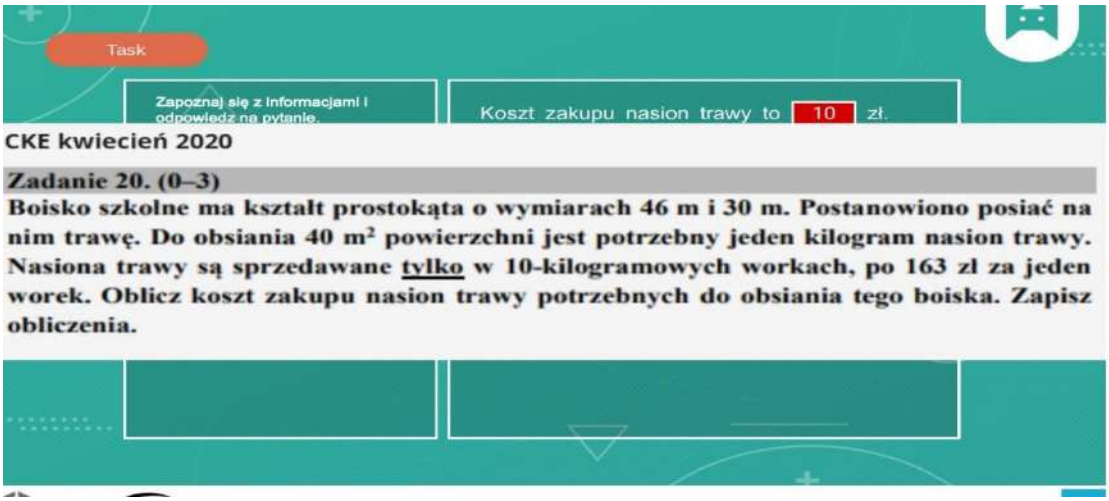

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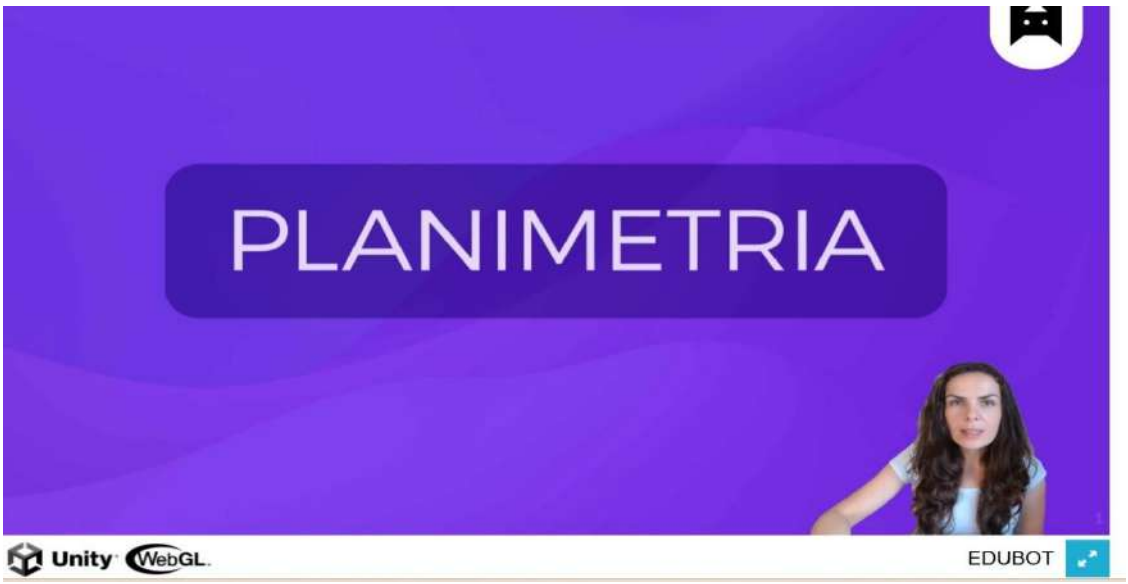
Planimetry



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Tasks

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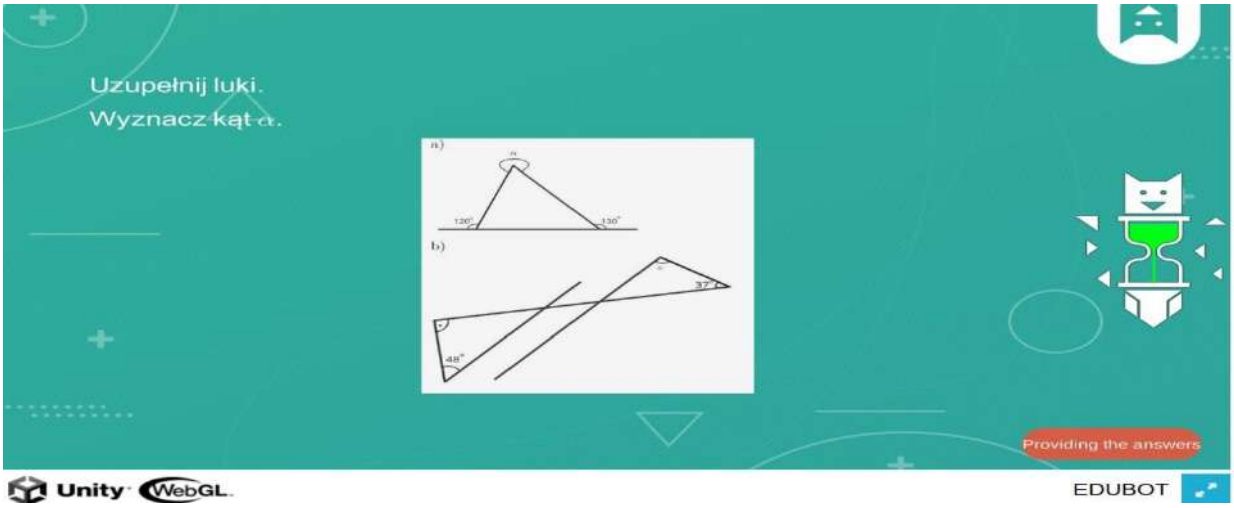

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Stereometry

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Tasks

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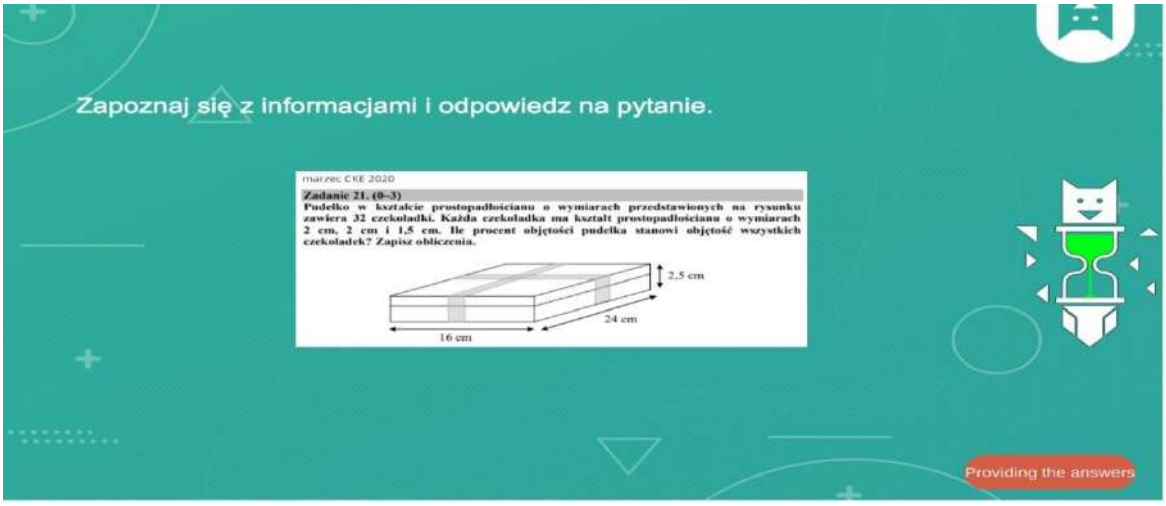

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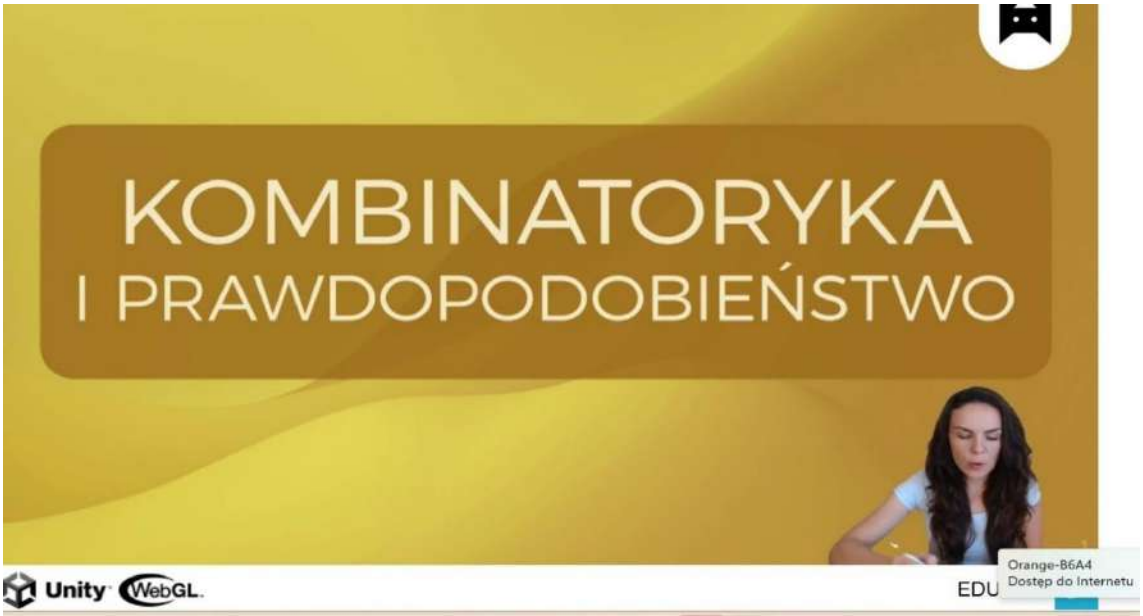
Introduction to combinatorics and probability calculus



https://edubot.classyedu.eu/app/?shareToken=9rexq1PRVwfDP5z6YpfWXHwv1c5EE2e5

9. Kombinatoryka ćwiczenia (#3687)	#alien #bronz #csillag #edubot #gold_bar #green #kombinatoryka #nulla #polish_edubot #pontos #silver_bar #star #ćwiczenia	edubot	

Tasks

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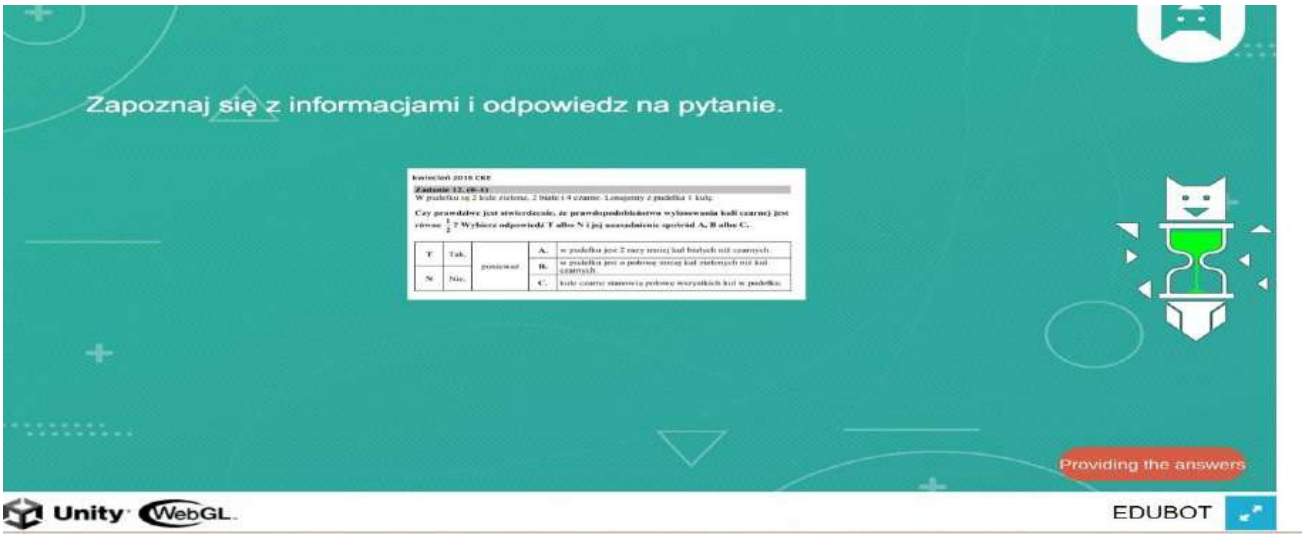

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10. Wstęp do zastosowań matematyki (#3675)	#edubot #flower #game #hero #lasergun #matematyki #orange #polish_edubot #rocket #sword #wstęp #yarn #zastosowań	edubot	

Application of mathematics including graph reading and elements of descriptive statistics

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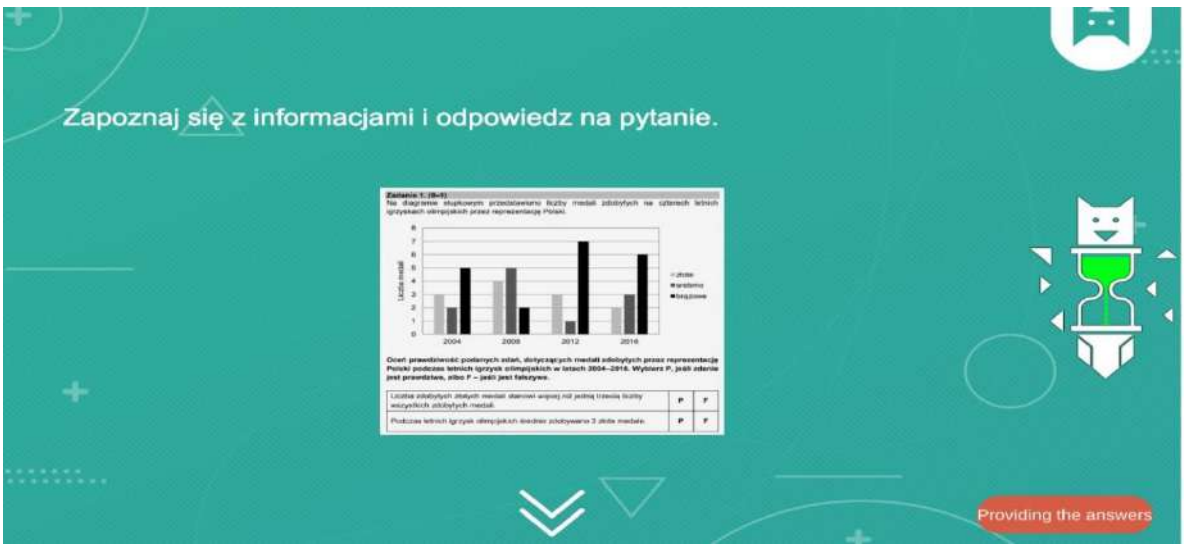
Tasks

In the section below, you will find tasks, including some that have appeared in the eighth-grade examinations in previous years. The correct answer will allow you to move on, any negative answer will refer you to a hint which suggests that you solve the task again. The correct answer is highlighted in green and the wrong answer is displayed in red.



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PRESENTATION OF LOCAL CONTENT POOLS – ROMANIA

The aim of curriculum development

The main aim of curriculum development is to facilitate effective preparation for the National Assessment Examination in secondary education, with a particular focus on deepening and systematising students' mathematical knowledge and developing the expected competences. The curriculum is based on the level of mathematical knowledge expected at the end of grade 8, with a particular emphasis on pupils' analytical thinking, problem-solving skills and the strengthening of mathematical and digital competences.

The curriculum contains both theoretical and practical elements, with content developed in six main themes to support student development. Each module is based on a differentiated, progressively more challenging task structure that allows for individual progress and successful adaptation to the assessment requirements.

Topics

1. Sets
2. Divisibility
3. Proportional pairs and their properties
4. Fractional parts of numbers
5. True and false statements
6. Point sets and line segments in the plane

The result of content development

- 6 mathematics topics
- 6 linear pathways - theoretical knowledge: for five topics, a text-based theoretical introduction has been developed, containing the knowledge base needed for the given topic, such as basic concepts, formulas, keywords, etc. The true-false question topic is a comprehensive one, with tasks covering a significant part of the 5th–8th grade

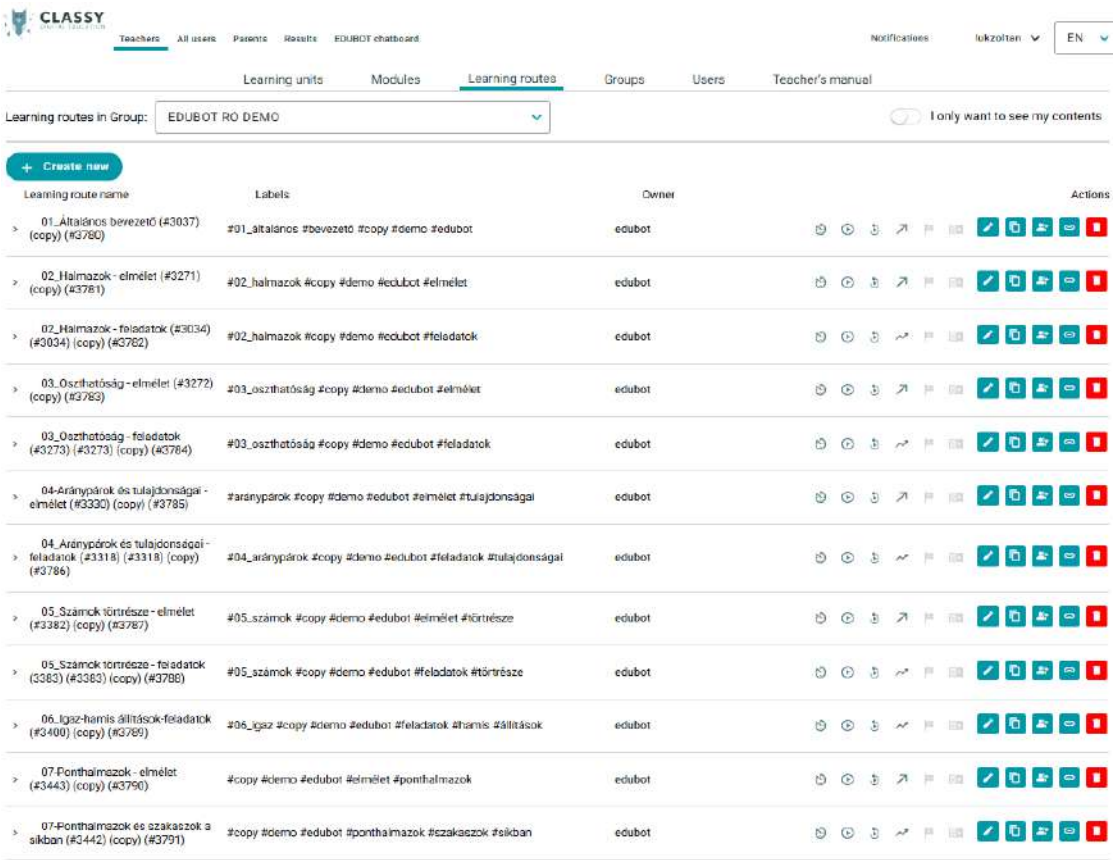
curriculum, which is why the editors did not find it necessary to develop a theoretical section for this topic.

- 6 adaptive pathways: several hours of adaptive maths content of different levels of difficulty with supporting tasks, text and video explanations
- 43 linear learning units
- The total curriculum contains 236 superunits, 505 adaptive individual tasks and 548 learning units.

How to access digital content: ***Teacher interface - Learning paths - EDUBOT RO DEMO***

Modules - learning pathways

The 6 topics are organised into 6 linear theoretical + 6 adaptive practical pathways/modules in the learning interface.



Curriculum structure: linear and adaptive content

Each of the 6 topics has a specific number of tasks, hierarchically arranged according to difficulty levels. The topics were structured along progressively increasing difficulty levels, moving from easier tasks to increasingly difficult ones. At each difficulty level, several versions of each question type are produced. In case the student successfully solves the problem, he/she can move up to a higher level, if he/she fails, he/she will fall back to an easier level, in which case he/she will be given a different problem from the ones in the level.

Some topics was processed using two learning modules, a linear and an adaptive pathway. In total, there are 6 linear and 6 adaptive modules.

- linear route: an "information" MODULE
- adaptive pathway: a "skills gap filling" MODULE

Linear pathway: consists of theoretical knowledge elements, summarising what knowledge the student should have for the given topic. The linear pathway aims to ensure that the student masters/repeats the basics of the topic, such as definitions, basic concepts, formulas, etc.

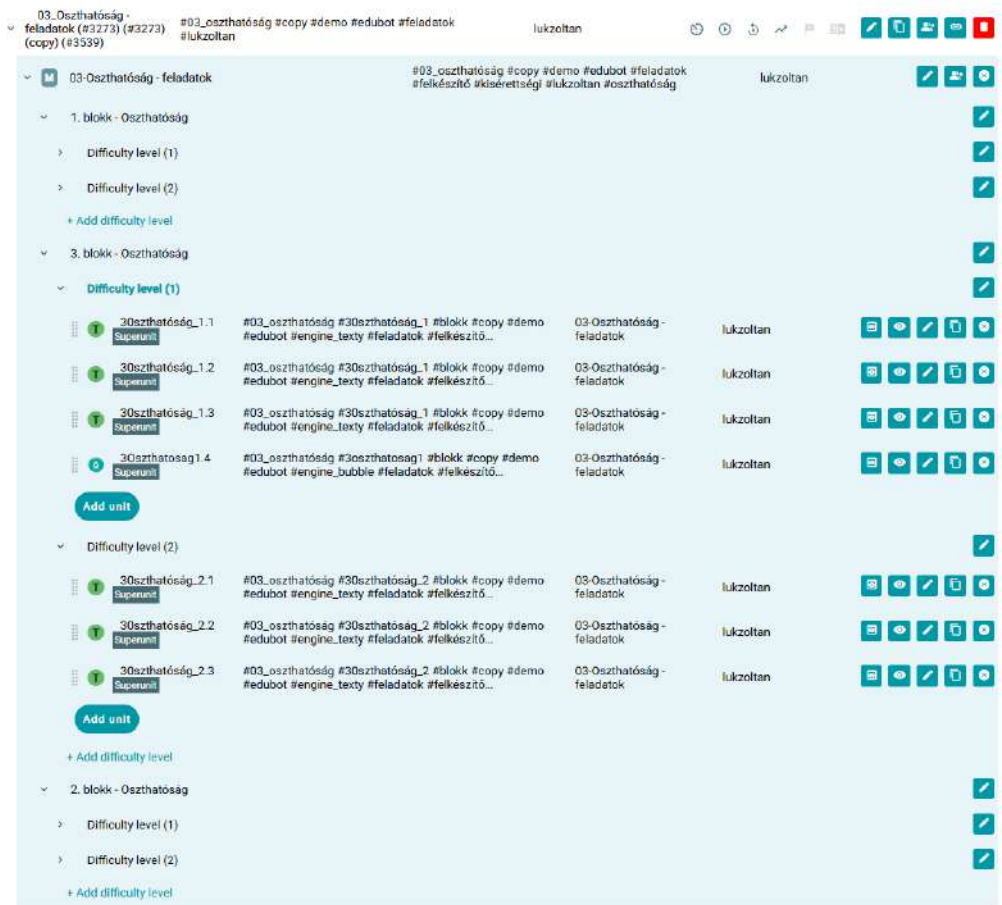
Demonstrating the structure of linear content within the topic of Divisibility

Adaptive route:

Content of the adaptive pathway: increasingly difficult practice exercises with help tasks and explanations

- adaptive modules each contain at least three blocks, with increasingly difficult tasks in line with the skills assessment test methodology.
- block 1 contains easier tasks, with occasional help elements
- Block 2 contains tasks of medium difficulty
- Block 3 contains more difficult, competition-level tasks
- the difficulty levels contain at least two sub-levels of 3-5 superunits
- content of the superunits: main task - supporting task/knowledge element - text or video explanation, if appropriate. The knowledge element with a facilitating function conveys some theoretical knowledge in a textual form, while the facilitating task is an interactive, game based exercise.

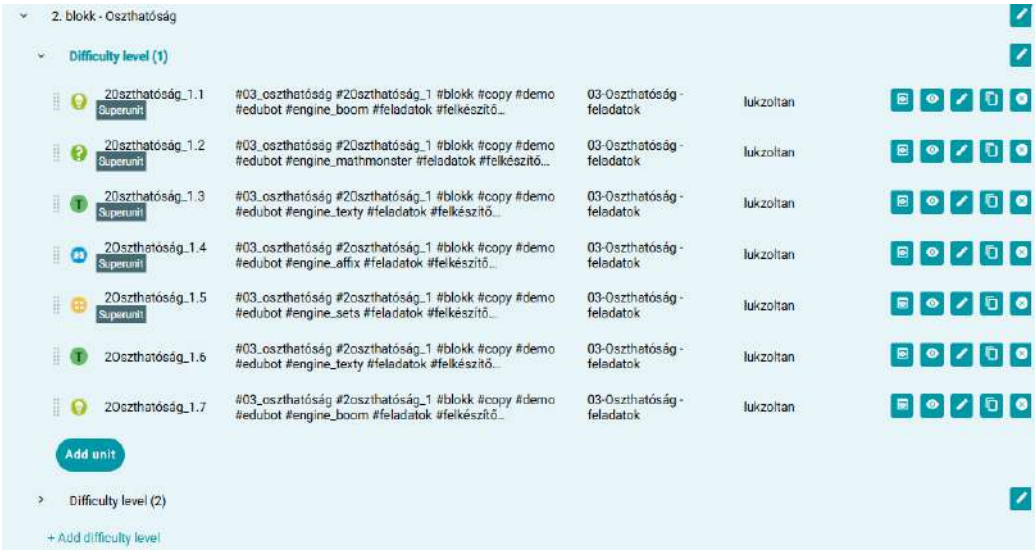
Demonstrating the structure of adaptive content within the theme of Divisibility



Block 1: easier tasks, occasional superunits.

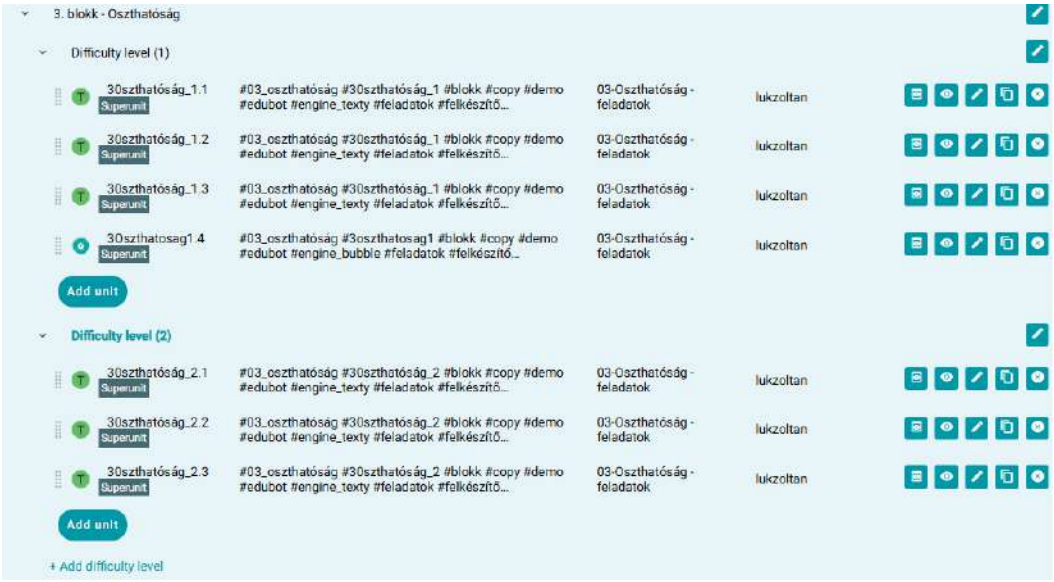
Block 2: contains exercises of medium difficulty to help students prepare for the more difficult tasks. This block contains 2 levels, with several superunit tasks per level, which include a help task/knowledge element and an explanation in addition to the main task.

Block 2 of each topic contains 10-20 super-units, each of which contains an interactive main task, knowledge element and/or supporting task, with an explanation depending on the complexity of the task.



Block 3: only more difficult tasks, corresponding to the third and final level of the aptitude test. At this level, each main task is accompanied by at least one knowledge element, text or video explanation.

Illustration of the structure of the examination papers within the topic of Divisibility



Methodological recommendations for planning the learning process

It is recommended to divide the processing of the digital learning material, which contains six topics, into consecutive periods, such as on a biweekly basis. If a new topic is covered every two weeks, the entire learning process can be completed in about 12 weeks. It is important to ensure that there is no significant overlap between topics. The new material should be started when the previous learning phase has been fully completed.

The process of working through the themes: theoretical and practical approaches

Some topics has been created in two different ways: a theoretical and a practical learning route. The theoretical pathway aims to provide the basic knowledge, such as basic concepts and formulas, needed to understand the topic. It is recommended to start learning with this route.

It is then worth moving on to the practice-oriented, adaptive route, which offers exercises and detailed explanations at different levels of difficulty. This pathway is designed to move learners

gradually from simpler exercises to more complex problems, ensuring a deeper understanding and application of knowledge.

Introductory route

The learning process should start with the "Introduction" path on the learning platform. This pathway provides students with the opportunity to learn the basics of using the platform, including the navigation functions and the operation of the different game engines. The route includes task types created with different game engines, giving a comprehensive overview of the learning opportunities available on the platform.

Assessment of learning outcomes: input and output measures

If the full 6-subject digital maths curriculum is to be used to prepare for the entrance examination, it is advisable to carry out an initial assessment with an entrance test before the learning process. Once the material has been mastered, progress can be measured in a similar way, using an output test, to get an accurate picture of the evolution of the learners' performance.

Monitoring and analysis of learning outcomes

On the basis of the learning reporting data, it is recommended that different levels of grouping be established according to the performance of the learners. The reporting data is available in the "Results" menu of the elearning platform, where it can be viewed and downloaded in graphical representation or in .xlsx format. The system records basic information such as the individual learning time of the learners, the learning path they followed, the percentage of performance and the comparison of individual results with the average performance of the group.

Small group online consultation - clustering

Groups should be set up based on achievement in each subject area, taking into account the individual performance and development needs of the pupils. Students in the same group should have similar levels of knowledge and skill profiles and face similar challenges.

The groups are based on the reporting data collected by the system. It is important to keep the number of groups small. It is recommended to limit the size of the groups to a maximum of 15 people in order to ensure effective development.

Availability of digital learning materials

The digital learning materials are available without registration via the following links using the GuestLogin/Customer login:

Sets - theory

Sets - exersises

Divisibility - theory

Divisibility - exersises

Proportional pairs and their properties - theory

Proportional pairs and their properties - exersises

Fractional parts of numbers - theory

Fractional parts of numbers - exersises

True and false statements - exersises

Point sets and line segments in the plane - theory

Point sets and line segments in the plane - exersises

PRESENTATION OF LOCAL CONTENT POOLS – SLOVAKIA

The content development in Slovakia aims to support the learning of Information Technology (IT) for students from grade 6 to grade 9. The concept behind the development of these materials is to assist teachers in presenting the subject matter while allowing students to learn at their own pace and according to their individual needs.

The content covers the following topics:

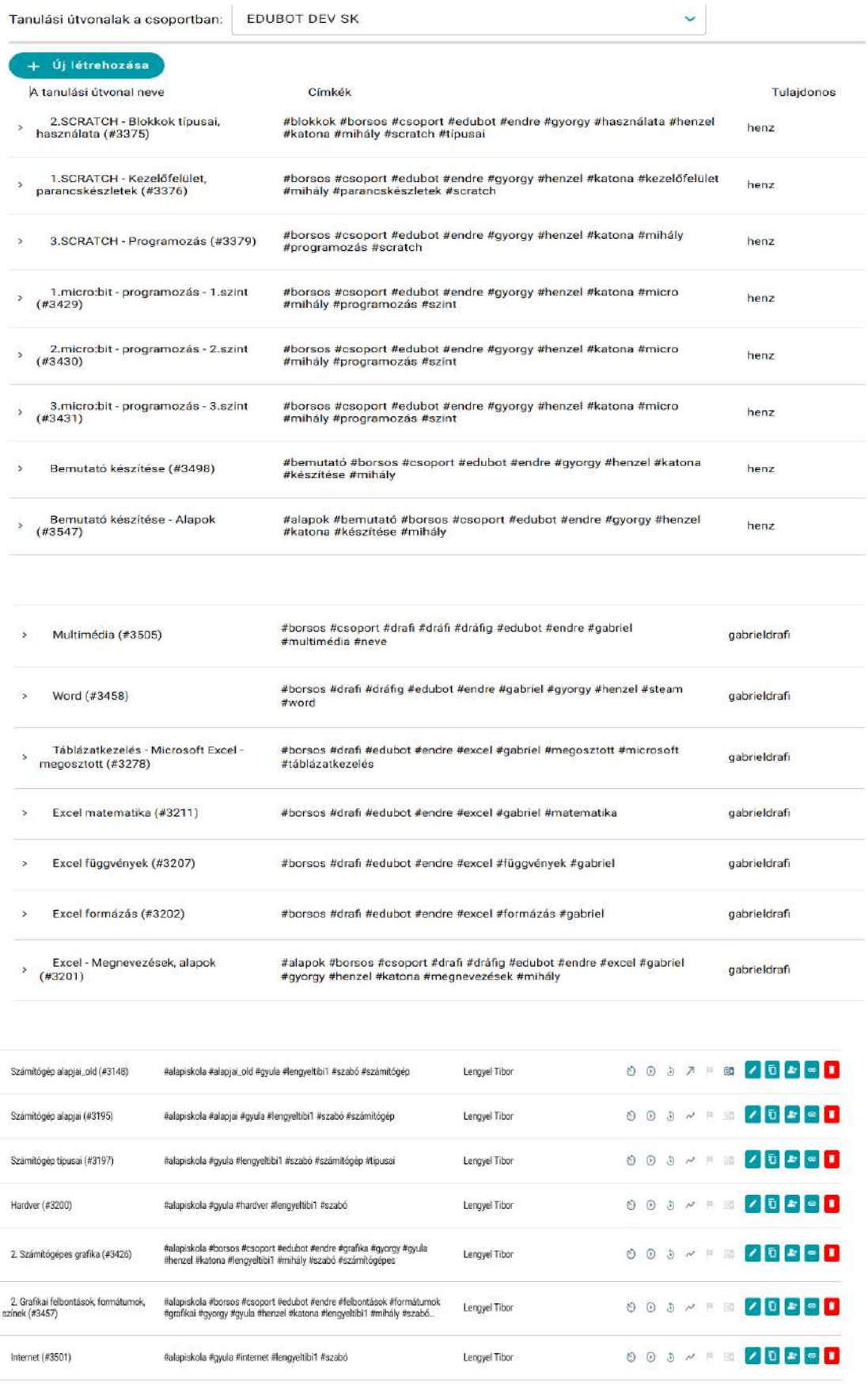
- Fundamentals of Computer Science
- Computer Graphics – Graphic Image Editing
- Word Processing
- Working with Spreadsheets
- Presentation Creation
- Algorithms and Programming – SCRATCH
- Algorithms and Programming – Microbit
- Internet Security
- Multimedia

Content Development by the Numbers:

- 9 IT topics
- 6 linear learning routes
- 15 adaptive learning routes: several hours of adaptive tasks with varying levels of difficulty, including supportive tasks, text, and video explanations
- A total of 21 learning routes
- 469 linear tasks
- 281 supportive tasks and explanations in the adaptive section
- A total of 750 tasks
- Text and video explanations

Access Pathway for Digital Content: Teacher Interface – Learning Routes – Edubot SK demo

Modules – Learning Routes



Curriculum Structure: Linear and Adaptive Content

Students can explore the 9 topics through approximately 21 learning routes, which can also be utilized by teachers in the classroom. These learning routes vary in difficulty, and within each route, students may encounter tasks of different levels. When a student successfully completes a basic task, they are presented with a more challenging task. Upon solving that, they can advance to the next level. If students encounter difficulties with any type of task, they can rely on supportive resources, such as explanatory PDF documents or videos, to help them understand the content.

Within each topic, it is recommended that students begin by solving the introductory or so-called basic route to get familiar with the topic.

For example:

- **SCRATCH:**
    - SCRATCH – User Interface, Command Sets
    - SCRATCH – Types of Blocks, Usage
    - SCRATCH – Programming
- **Micro:bit:**
    - Micro:bit – Programming – Level 1
    - Micro:bit – Programming – Level 2
    - Micro:bit – Programming – Level 3

Access to Digital Content

Multimedia - adaptive

Word - adaptive

Spreadsheet Management – Adaptive

Excel Mathematics – Linear

Excel Functions – Adaptive

Excel Formatting – Adaptive

Excel Basic Functions – Linear

SCRATCH - Types of Blocks and Their Usage- Adaptive

SCRATCH – User Interface, Command Sets – Linear

SCRATCH – Programming – Linear

Micro:bit Programming Level 1 – Adaptive

Micro:bit Programming Level 2 – Adaptive

3 Micro:bit Programming Level 3 – Adaptive

Presentation Creation – Adaptive

Presentation Creation – Basics – Linear

Computer Basics – Adaptive

Computer Types – Adaptive

Hardware – Adaptive

Computer Graphics – Adaptive

Graphic Resolutions, Formats, Colors – Adaptive

Internet - adaptive