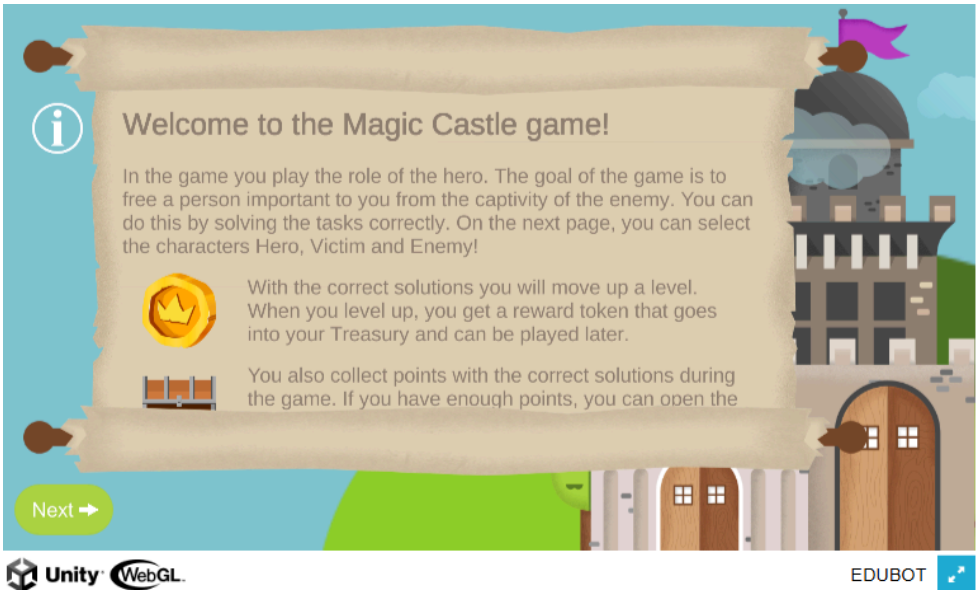
EDUBOT MOTIVATIONAL FRAMEWORK GAME

How does the framework game motivate the students?

How to set up a framework game in a learning route?



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Content

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1 The role of the frame game in the adaptive learning process

It would be pointless to go into detail about the importance of play in children's learning processes in general, as there have been countless studies, experiments and scientific papers on this topic. Let us consider its importance as a proven fact. Let us now turn to the motivational role of frame games in this specific application.

The "Castle Castle" framework game is specifically designed to support adaptive learning. The idea was to reward quick and effective progress in the learning material, but also to motivate students who do not manage to solve all the problems at first attempt, but who gain knowledge by moving more slowly, with the help of questions and explanations. Accordingly, the Castle Castle framework game has two reward mechanisms:

1. **Reward jumps with reward tokens** (to reward successful task completion and rapid progress)
2. **Reward progress on a learning pathway** (even with constant setbacks, but progress) **by collecting points and** getting **"treasures" hidden in chests** when certain scores are reached (to reward slower but diligent progress). *It is important that students who may not be able to complete the higher levels of the route (e.g. because they cannot solve the complex tasks at the higher levels) and thus successfully complete the route, can also earn all the "treasures" by going up and down the lower levels to collect the points needed to open the boxes.* In this way, the motivation of pupils who find it more difficult to cope with the curriculum can be maintained.

2 Description of the Castle frame game process

The game itself is simple: an armour-clad hero-caracter (HERO) must climb each level of a castle to free a prisoner (VICTIM) kidnapped by an enemy character (ENEMY). Along the way, he can earn game tokens for reaching a new level, or unlock treasure chests for reaching certain scores. At the end of the game, if you have successfully completed the learning path, you can free your target from enemy captivity.

Since the game is primarily designed to support adaptive learning paths, where the learner can move up, down or stay level between levels of the curriculum, we aimed to visually track this process , so that the (HERO) character moves forward, climbs a staircase to a higher level and

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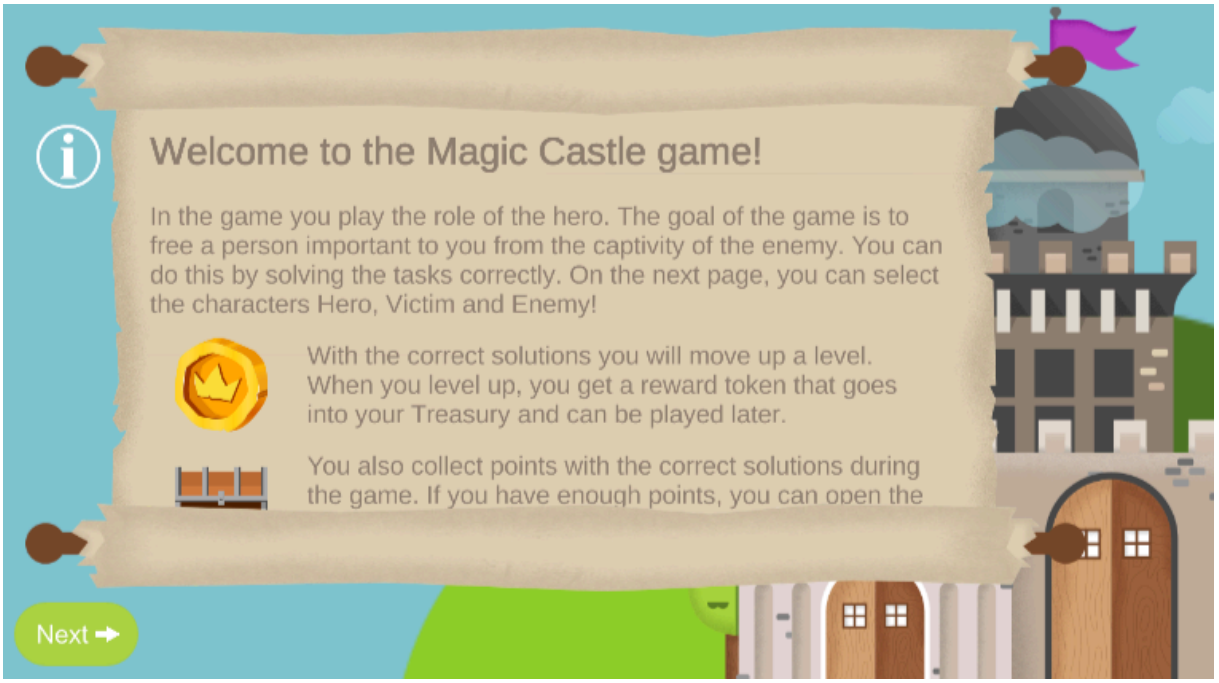
falls down to a lower one during the game, continuously tracking the learner's adaptive path through the curriculum.

2.1 The framework game home screen



On the home screen, an information board explains the rules of the game and the rewards available:

a. **Game token -** this reward in the form of a gold coin is given to the student when he or she successfully completes the level jump and moves to the next level. A game token is a pre-determined reward that can be redeemed for "game time" within the app.

b. Hidden rewards in treasure chests - these rewards are awarded to students who earn a certain number of points, regardless of whether they have successfully completed a level jump to meet the requirements of a level. The treasure chest can contain anything the teacher who created the route has put in it.

2.2 Character selection screen

On the next screen, the student/player can choose the characters of the game. He/she can choose any of the available characters for any role. In the initial game, there is a Prince, a Dragon and a Princess character. During the game, you can find additional characters in some treasure chests and use them in later games. So the character board grows from game to game.

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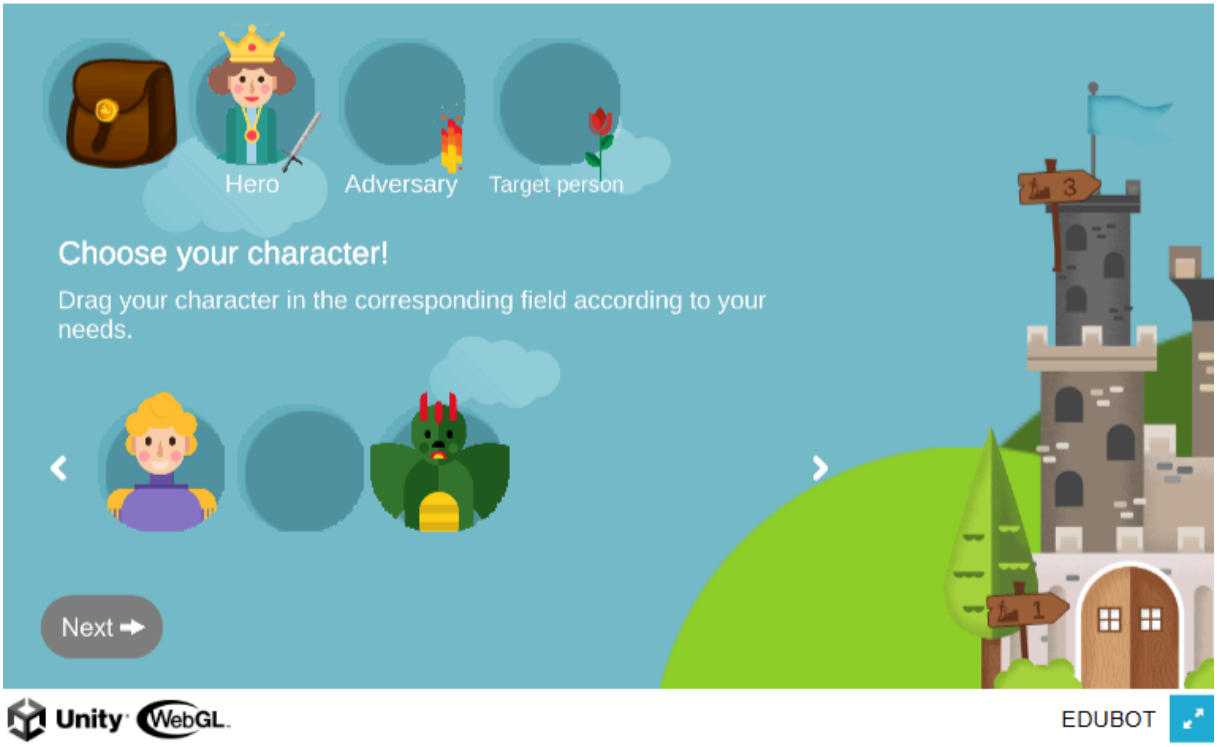
For example, in the picture below, a game starts where the princess (HERO) already selected. It remains to be decided which one of the dragon and the prince characters will become the (VICTIM) and the (ENEMY).



2.3 Progress in the learning route

With an adaptive pathway, each learner can move up through the levels at their own pace, or, if they encounter a problem they cannot solve, they can continue learning one level down in the curriculum. This movement is visually tracked by three types of animation in the game.

2.3.1 Progress between super units

The transition between the different super-teaching units is facilitated by the door-selection animation. The (HERO) character enters differently arranged rooms before each teaching unit. Different doors open from the room, the student can choose which exit to take.

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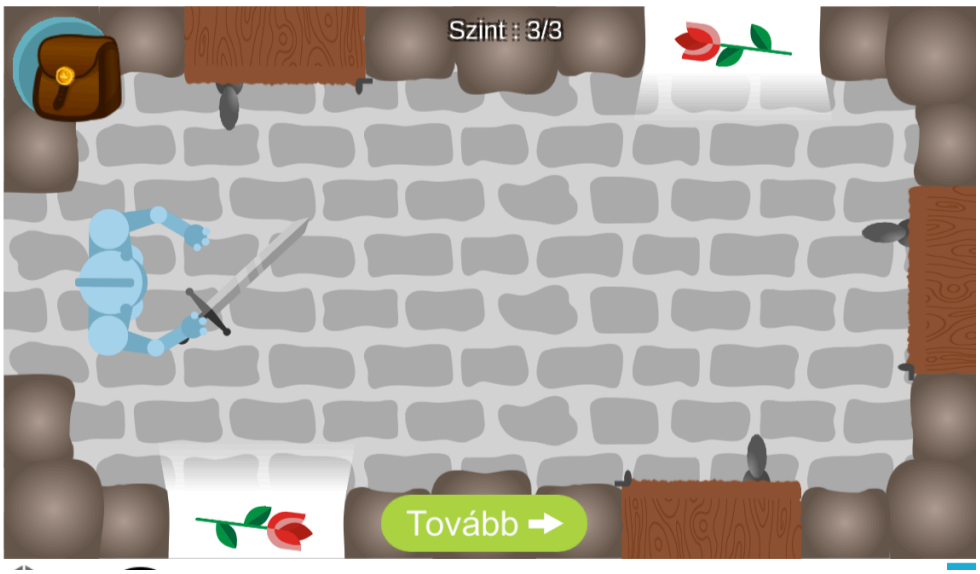


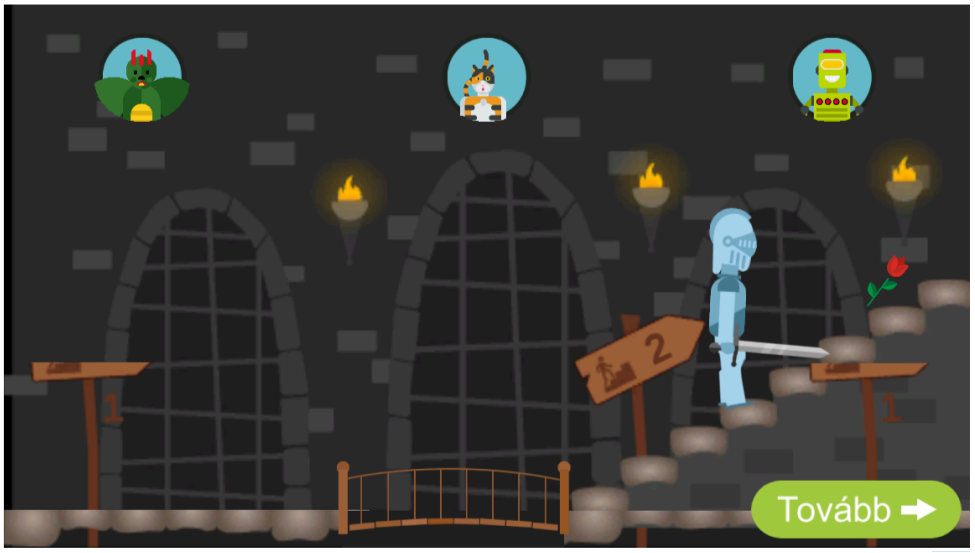
Link to the animation:

https://drive.google.com/file/d/1Xhk0mVb-getluF4jYhE6AwfklCxs4eZY/view?usp=sharing

2.4 Display movement between levels:

The up and down movement between levels is represented by animations.

2.4.1 Level Jump animation - character (HERO) goes up a staircase, character (VICTIM) throws a flower stalk at him.



Video link:

https://drive.google.com/file/d/1DxF9rKgkJ5D42RHGkh6bYcF9N9NlUApd/view?usp=sharing

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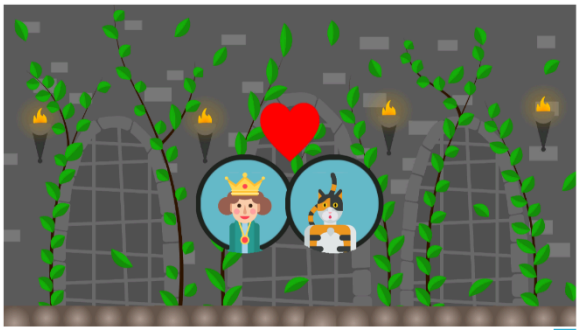
2.4.2 Level fall animation - the (ENEMY) character incinerates the bridge with fire, so the (HERO) character falls. The (ENEMY) character makes an evil laugh.

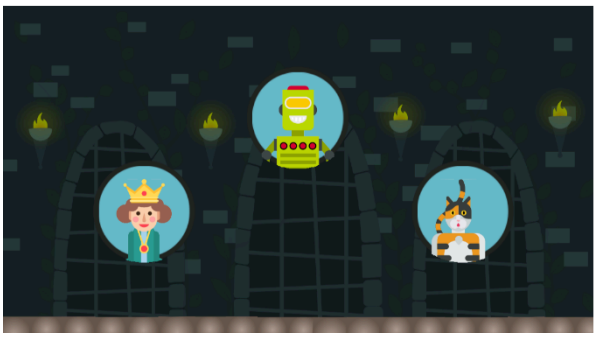
Video link:

https://drive.google.com/file/d/1I9B2r9uEf0X3K_UX8126pgK-jbxKqFx-/view?usp=sharing

2.4.3 End of the learning path

At the end of the route, a short animation indicates that the mission was successful, the (ENEMY) character failed, and the (HERO) and the rescued (VICTIM) character meet.





Link to the animation:

https://drive.google.com/file/d/1osyon508l9tR192MpimGZhsLovwrc2A7/view?usp=sharing

2.5 Acquiring rewards and the functioning of the Treasury

The student will be notified immediately if he/she has received a reward in the frame game.

As mentioned above, there are two types of rewards: the reward for fast progress is a reward token for level jumping, and the reward for diligence is treasures hidden in chests.

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2.5.1 Game tokens rewarding level jumping

The tokens can be used to play a simple jumping game, which the student can start from the Treasury.

We plan to add more games to the motivation space in the future and you will be able to choose between them.

2.5.2 Treasure chests

You can see the treasure chests on the "room with exits" screen of the frame game. The chest will appear when it is possible to know how many points the player will need to obtain it. The chest always shows how many points are needed to open it, and a visual indication of how "close" the player is to getting the treasure.

Link to the video showing the animation of the crate opening:

https://drive.google.com/file/d/1ETuUps59MsJX1M98xYElRQ_Aytf_TGEL/view?usp=sharing

The boxes can be anything the teacher editing the route puts in them: a new character to use in later games, a link to a cartoon or story, a simple illustration, or even a star or other symbol worth a school merit point.

2.5.3 The Treasury

All the student/player's acquisitions are added to the Treasury. If you haven't had time to look at your gifts in the middle of your studies, that's fine, everything will be waiting for you in the Treasury.

The Treasury can be accessed from the main menu by clicking on the "Treasury" icon,

or from any intermediate point in the frame game by clicking on the leather tab in the top left corner.

During the frame game, a message indicator on the bag shows when a new item has been added to the Treasury.

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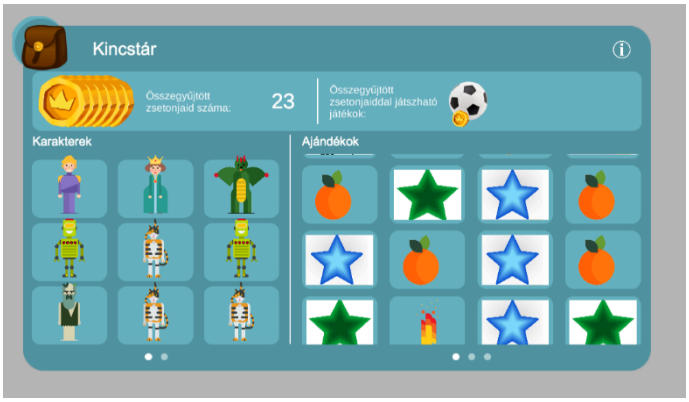

You can see the characters on the left, the gifts on the right, and the reward tokens on the top row, which can be used in the reward game by clicking on the ball.

3 Short- and long-term goals and the tools to support them

3.1 The use of the Enchanted Castle framework game reward system in gamification for adaptive learning pathways

It is important that the game has an ultimate goal to be achieved, which motivates children to solve the task. In this case, according to the framework game, this is the release of the prisoner, which requires them to get to the tower, i.e. to complete the learning path from the easiest to the most difficult level, at which point they have to solve all the tasks there.

But to keep the momentum going, it is good to set smaller targets. In our case, collecting points is a way of motivating the student to solve the next problem correctly, or to answer a question or listen to an explanation - all of which are worth points. By visually displaying the treasure chests and posting the scores required to open them, we provide direct motivation by setting a direct proximal target that the learner feels he or she has a chance to achieve even if the task is difficult. A good motivational tool is NOT knowing exactly what is in the next box. The teacher can tell the students what rewards he has put in what order, but it is better to just list them - "I have made a learning path for you to get a special character, a surprise reward and a blue star, three of which you must collect to get an A" - and then everyone can hope that that reward will be the

in the next box, whatever you want.

Another motivational tool that rewards excellent performance is the reward chip, which is earned specifically by making fast progress. Those who go for it want prestige rewards. However, the characteristic of game tokens is that they are used up in the game, i.e. they "run out".

In the future, we plan to introduce an appreciation badge system for token collectors (a certain number of tokens would allow them to enter higher and higher leagues, "bronze", "silver", "gold", etc.). This development would serve the purpose of motivating students to embark on

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new learning paths. Currently, this function is filled by new characters that can be acquired during the game, which can be used for character selection in the future.
In summary, of all the motivational tools available to them, gifts hidden in crates are the most immediate motivation, tokens are an incentive for excellence and characters are a long-term motivation to start new routes.
In view of the above, it makes sense to use these tools when setting up routes.

3.2 Using the frame game for linear routes

The framework can also be used for linear paths, with the difference that in this case there is no downward movement between levels, so obviously the (HERO) character can never "fall", and has to "fight" every task on every level.

Regardless, if the linear curriculum is broken down into levels, moving up, "level jumping", is also included in the game, so that the student can earn reward tokens. And of course, treasure chests can be placed in any route, even if there is only one level in the route.

The level jump reward tokens and treasure chests can be set up separately for each route, so if someone finds it very odd to add the towered Castle to a single level curriculum, there's no need to do so, treasure chests can be placed along the route regardless.

3.3 The role and location of treasure chests

The learning pathway can hide any number of treasure chests, which the student discovers while solving the task. There are two types of rewards that can be placed in the chest: characters and gifts (pictures, video or other text content).

Treasure chest placement: the placement of treasure chests should be approached from a motivational point of view, i.e. they should be placed at points where they encourage students to continue learning and provide a suitable sense of achievement for all students, both faster and slower learners
As described above, the points system is designed so that the boxes can be accessed and opened in almost any layout, even by students who would otherwise not be able to complete the route successfully. This is because students who do not complete the route may encounter more tasks, so that they can achieve the same score as students who complete the route without failure by solving repetitions and help questions, and by consulting explanations.
To illustrate this, here is a figure showing the adaptive path of a student who is making flawless progress (orange) and a student who is making up-and-down progress (red) in a 3-level curriculum with 4 super-teaching units per level:

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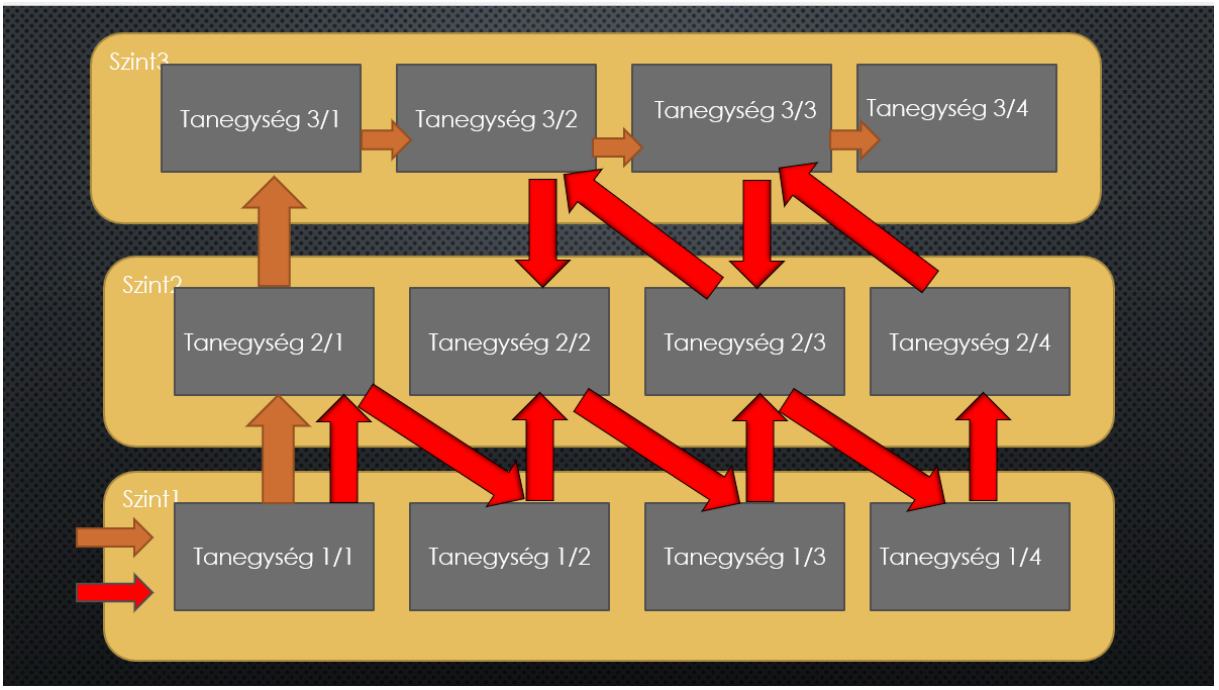

When placing the boxes, it is recommended that the following aspects are taken into account:

- age: use of age-appropriate rewards
- levels of difficulty: it is important that rewards are placed proportionally at each level of difficulty, so that lower achievers who only do the easier tasks can find them. For a larger syllabus, where there are 5-10 tasks per level, it is worth having several boxes per level.
- determination of key percentages: the location of treasure chests in the routes can be determined as a percentage.
- Proportionality: it is important that rewards are proportional to the task performed, so that a more difficult task can earn a higher reward.

Number of treasure chests: it is recommended that the number of rewards is neither too frequent, as it would lose its motivational effect, nor too infrequent, so that students are likely to encounter treasure chests during a shorter learning activity.

The form and function of rewards:

- *content that supports learning:* learning can be justified by creating lighter, more playful content related to the subject matter, such as a song or story, as a reward.
- *a break during learning:* at the same time, the reward can also serve the function of entertainment, relaxation, in which case the contents of the treasure chest help students to rest in the learning process, not to be connected to the curriculum, so that they can then continue with the task with renewed energy.

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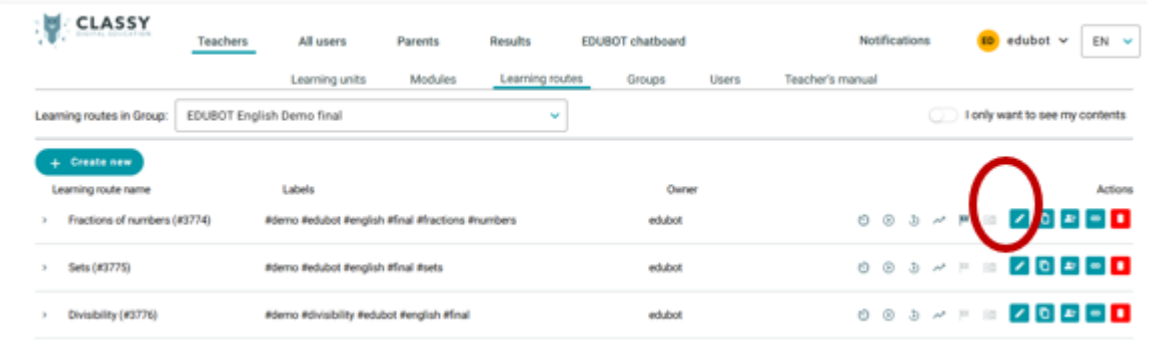
Assign a framework game to a learning path

TO SET UP THE FRAME GAME, FOLLOW THE STEPS BELOW:

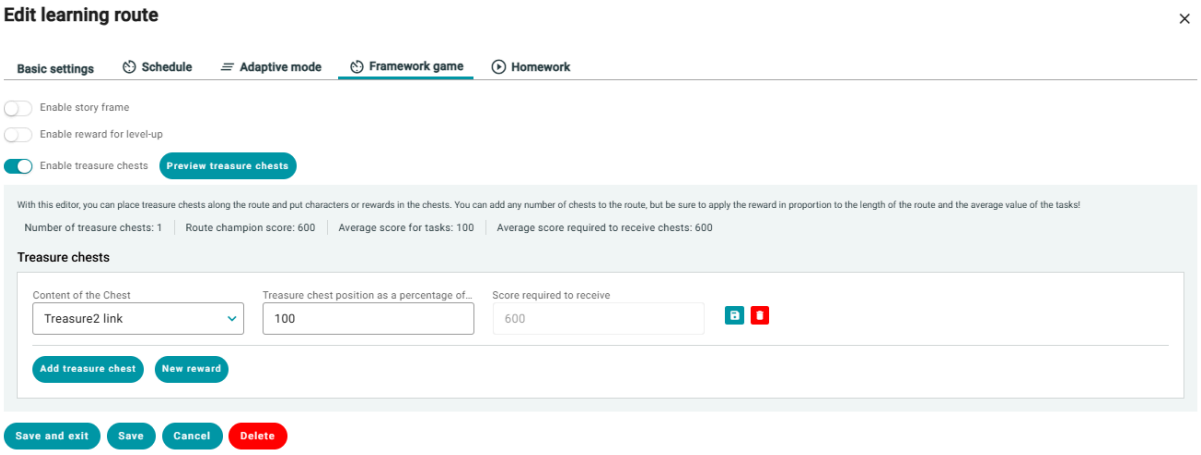
Step 1: Select the route to which you want to assign the frame game.

In the Teacher interface, select the relevant student group in the *Student Groups* menu, then browse to the path of the student group to which you want to assign the frame game. Click on the *Options* button next to the route name (see point 4) to apply the frame game.

Teacher interface⇨ Learning paths⇨ Settings/Settings



Step 2: Select the Frame Game menu item!



Step 3: Edit the frame game

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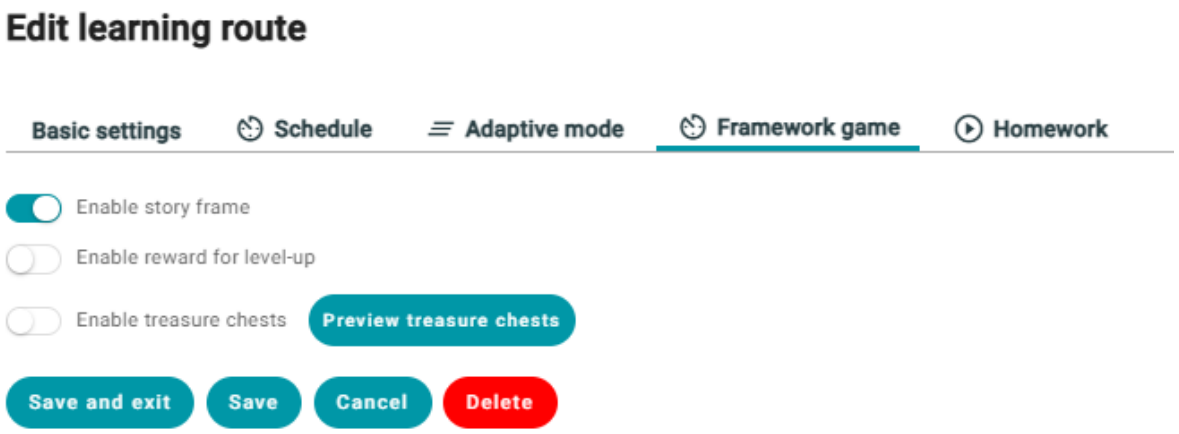
The codename for the frame game is "frame story", which is the first step to choose. If you don't want to include the Castle Castle in the game - for example because you only have one level of route - you don't need to select the frame story. We can still place the treasure chests regardless.



The game has two reward mechanisms to support adaptive learning:

1. Reward jumps **with reward tokens**
2. Reward progress on the learning path (even with continuous setbacks, but progress) by collecting points and **earning "treasures" hidden in chests** when certain scores are reached.

The two reward systems can be set up separately or simultaneously for a route.

3.4 Setting up reward chips

The idea of reward chips is to reward students who meet the level-jumping conditions.

The student who completes as many levels as quickly as possible will earn a lot of chips. A level is only rewarded once, so if a student falls back, they will not get reward tokens the next time they move up. Reward tokens can be "redeemed" for a jump game available from the Treasury, as described in Chapter 2.

Setting up a reward chip is simple, either you have one or you don't - you have to choose between the two options.

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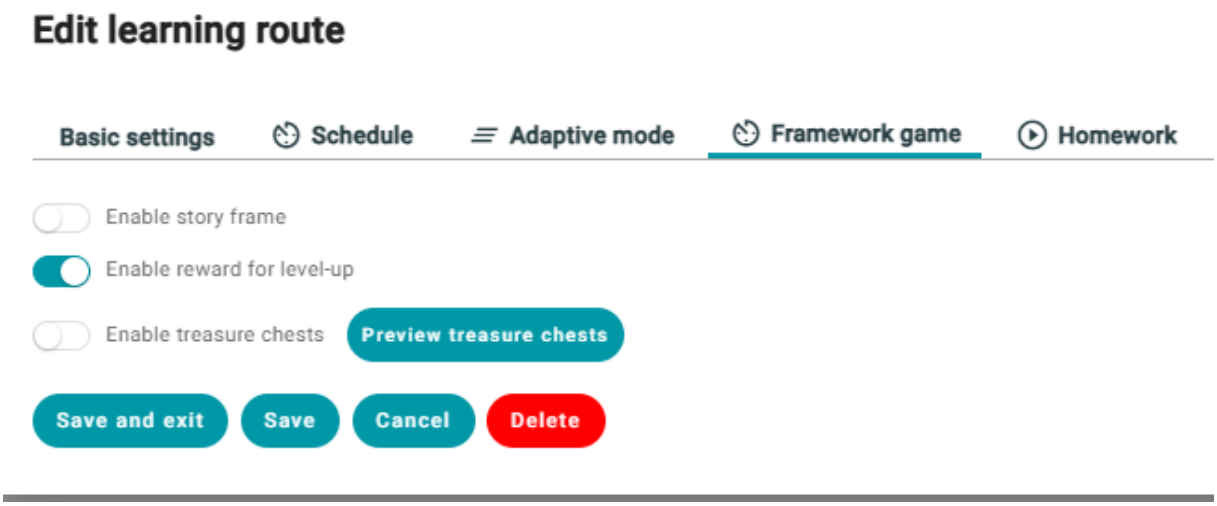
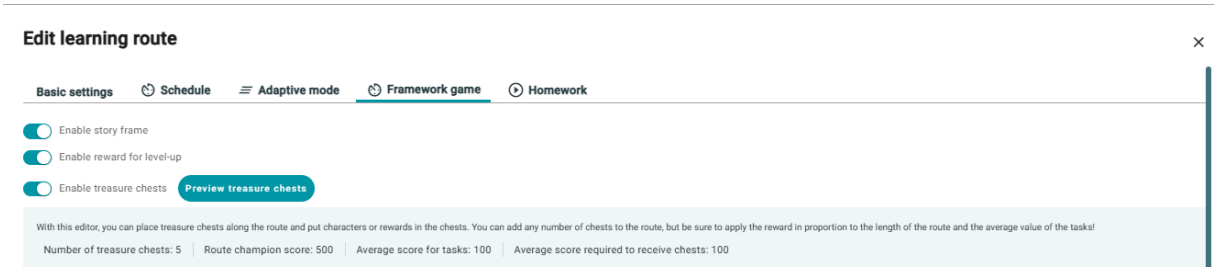


The reward chip setting is not required to set up the treasure chest game. You can edit a frame game with only reward chips, or you can edit a frame game with only treasure chests.

3.5 Treasure Chest game setup

Setting up the treasure chest game requires a bit more work. This game opens up many possibilities for the route setter. It can be done simply, but it also leaves room for creativity.

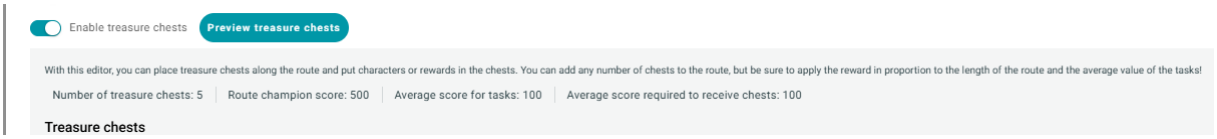
Click on the "Enable Treasure Chests" button to start editing.



3.5.1 Planning the placement of the crates and the of "treasures"

In the Treasure Chest editor window that pops up after selecting the function button, you have the option to place the chests on the route and select the treasures you want to place in them.

The pop-up window first gives you some indicative information to help you plan.



We show you the championship score for the route (the shortest adaptive route) and the average number of points you can earn per task. From this, we can deduce roughly how many

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chests will be placed, as it would not make sense to place so many chests that players would receive multiple rewards for solving a single task.

We can also see that there are two types of rewards that can be hidden in the treasure chests (see the *Treasure Chest editor* window):

- **Characters:** you can add characters from the existing characters (e.g. robot, cat) to the 3 characters in the default system. Once a character has been acquired during the learning process, it will be available to the student for future use.
- **Reward gifts:** this category includes other rewards, which always include a picture that must be uploaded, and optionally a link to an external web resource, which may lead to a video or other text content (e.g. a song, a story). However, you can also create more serious rewards that go beyond the scope of the game: for example, stars that can be converted into merit points: if you collect three blue stars, you get an A. To apply such rewards, it is worth looking a little deeper into the points system.

If we do not find a reward that suits us in the list, we have the option to invent and create a new reward, which will then be added to the list.

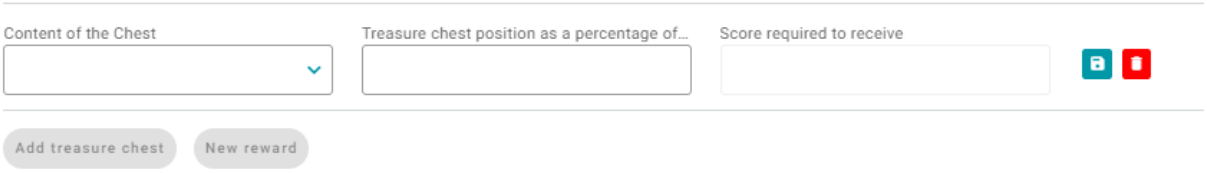
3.5.2 Choosing the treasures and placing the chests on the learning path

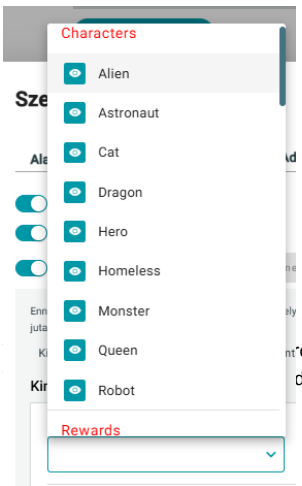
Once you know roughly how many chests you plan to add, click *Add a Treasure Chest* to get started.

Here you can decide what characters or gifts to put in the boxes and where to place the box on the route.

Click on the "add treasure chest" 

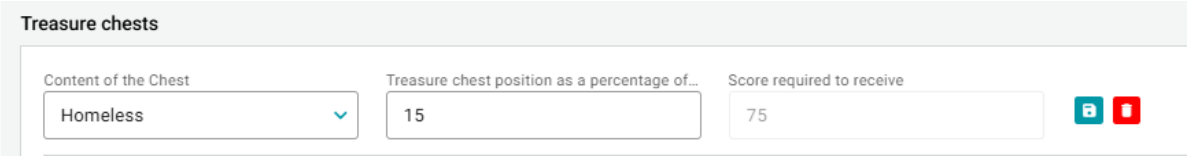
button!





Select the treasure you want to place from the Character and Reward list (the Reward list starts below the Character list) , select the percentage of the route you want to place the treasure chest and press "save  Add as many chests to the route as you see fit, put in as many characters or gifts as you want.

The window will show you what you have put in the chests, and also how many points players will need to get each chest.



The latter value is automatically calculated by the system, we need to enter the percentage of the championship route that the player can open the hidden treasure chest in the "*Chest position in % of route"* menu.

Step 5: Look at the location of the rewards!

However, before you leave, you should check the *treasure chests by clicking on the View the treasure* chests button 

to see what difficulty level and percentage of the route your treasure chests are at.

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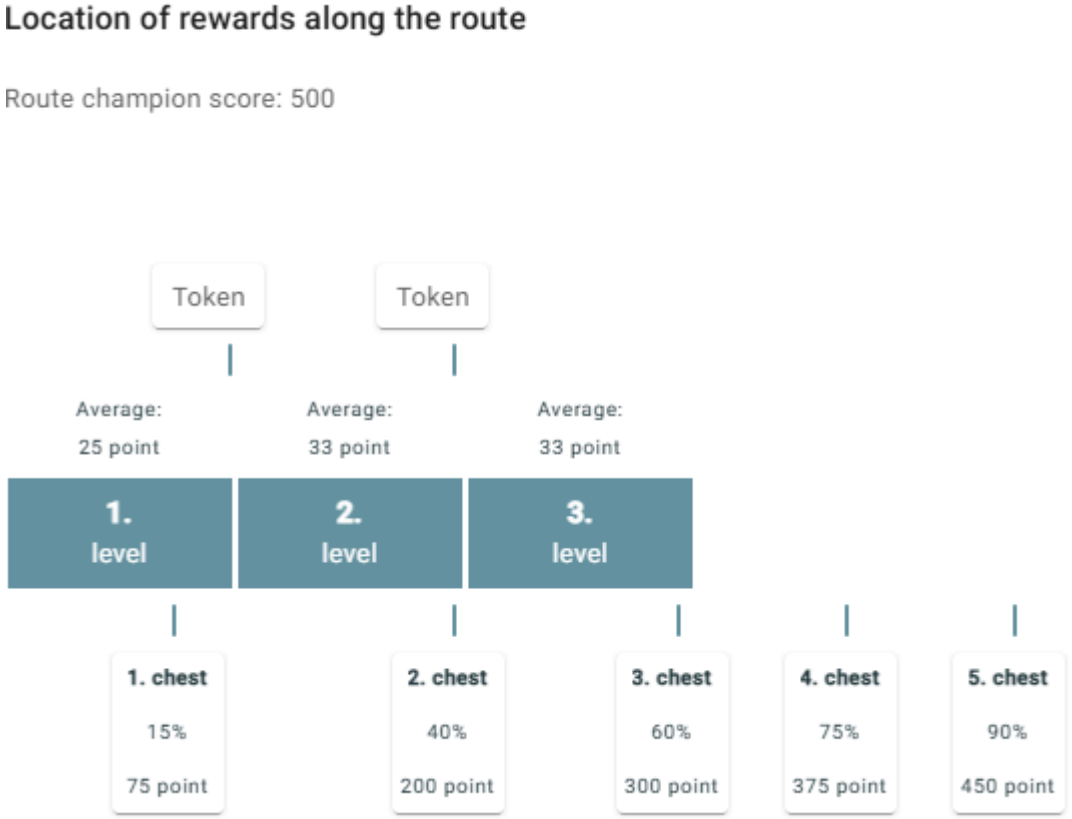


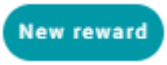
To illustrate the specific example, *the route has* a total of 5 treasure chests (1 character and 4 other rewards) placed at 3 difficulty levels

This means that the student can open the first box when he reaches 75 points. The 75 points are reached with one correct solution (100 points). If the first answer is not correct, but the answer is correct after a question, the student can open the box after two tasks. If you cannot solve the first problems at all, you can also collect 75 points relatively quickly with the help of questions and explanations.

When placing the boxes, always take into account the target group, e.g. if you want to focus on motivating slower learners, you may want to place several boxes in the first part of the route.

Also, remember that you don't have to choose from the list, you can also create custom rewards. These two topics will be explored further below.

3.5.3 Create new rewards

If you can't find the right treasure for your goal in the Rewards list, you can create your own rewards by to 

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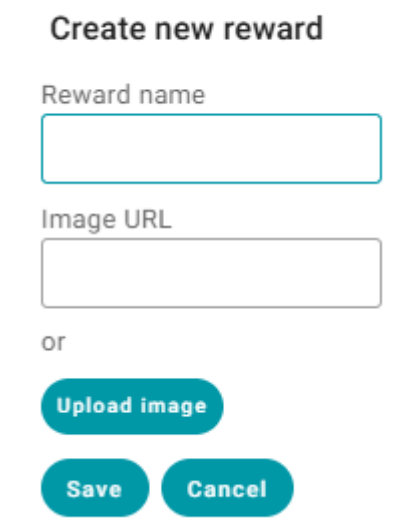

New rewards can be uploaded as an image or url.

These rewards will now be part of the Rewards list and can be selected from there. It is possible that the reward will only appear in the list after the page is updated.

If you don't find the reward you created in the list, save the frame game setting, refresh the page and return to the setting.

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