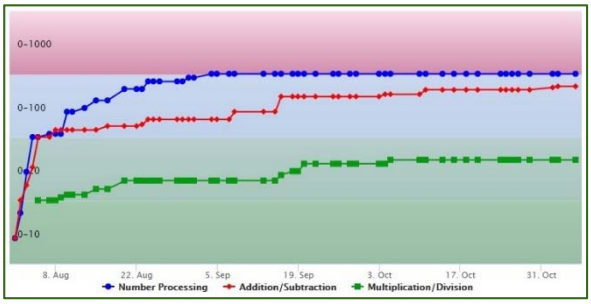
Dybuster®
Calcularis

Best Practices „Getting Stuck“

What should you do as an educator if you think that a student is getting stuck in a certain area of Dybuster Calcularis? And what information from Calcularis may help you improve your intervention?

Problem description

The progress curves of a student show the highest skill a student ever reached. If they stop going up over several training sessions, this means that a student is not advancing anymore in Calcularis. When may you assume that the student needs additional input?



Attention when interpreting the progress chart

- The progress chart only shows the highest skill ever reached. It is therefore only an approximation of the student's current state and does not suffice to decide if the child is stuck.
- A student may advance slowly but steadily (in the example, "Addition/Subtraction" advance roughly every tenth day).
- Note that "Number Processing" and "Addition/Subtraction" may only advance to the next number range at the same time. In the example, "NP" is limited by "A/S" and not because there is a problem in "NP".

Suggested Process

The following process takes place in Calcularis Coach. It is intended to provide you with know-how about the specific difficulties of a child and whether additional intervention is necessary:

1. **Check handling problems**

Sometimes, students do not advance simply because they don't know how to answer in a game. However, they master the math skills as such. Try to cover this case before considering difficulties with underlying skills:

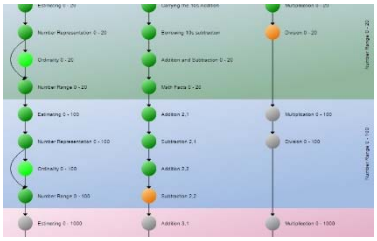
1. Open the "EXERCISES" view of the student.
2. Select a current date range, e.g. "LAST TWO WEEK" or "LAST MONTH".
3. In the list of exercises, click on the table header "Correct in %" to sort the list with the games with the lowest percentage at the top.

→ Which games currently cause most problems? Might there be a handling problem?
→ Together with the student, **go to the trial mode in Calcularis**, select them game, and have the student show you how s/he solves the game. Explain the handling if needed.

2. **Check for improvements within the skill**

Both "OVERVIEW" and "SKILLS" are simplifications of the actual learning graph used by Calcularis. See if there is improvement within the skill:

1. Open the "SKILLS" view for the student
2. Scroll to skills currently practiced (red or orange)
3. Click on skill of interest → "SKILLS IN TASKS" opens.
4. Click on "**VIEW TASK LIST**". This shows all tasks for that skill in the selected period. Do you observe an improvement?



3. **Search for error patterns**

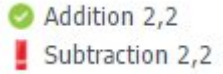
While you look at the list of tasks, **try to see error patterns**. Independent of whether a child is stuck (see next step) or not, it might be worth discussing such patterns with a child.

For the game "Calculator", pay attention to the time spent on the tasks. Is the child possibly counting with the fingers?

4. **See if Calcularis is stuck**

When a student is not performing well for a certain skill or game, Calcularis automatically will return to simpler skills or to support games which e.g. practice the same skill but allow more manipulation to enhance understanding. Once that support game is mastered, Calcularis returns to the skill or game where the problem showed up first. If the student still does not pass the skill, Calcularis will fall back to another support game. If that one is mastered, Calcularis returns to the skill with the problem, etc. Follow this process for the skill(s) in question:

1. Open "SKILLS IN TASKS".
2. Select the skill you are interested in (usually marked with **!**).
3. Scroll down in the section "Evaluation for: …":

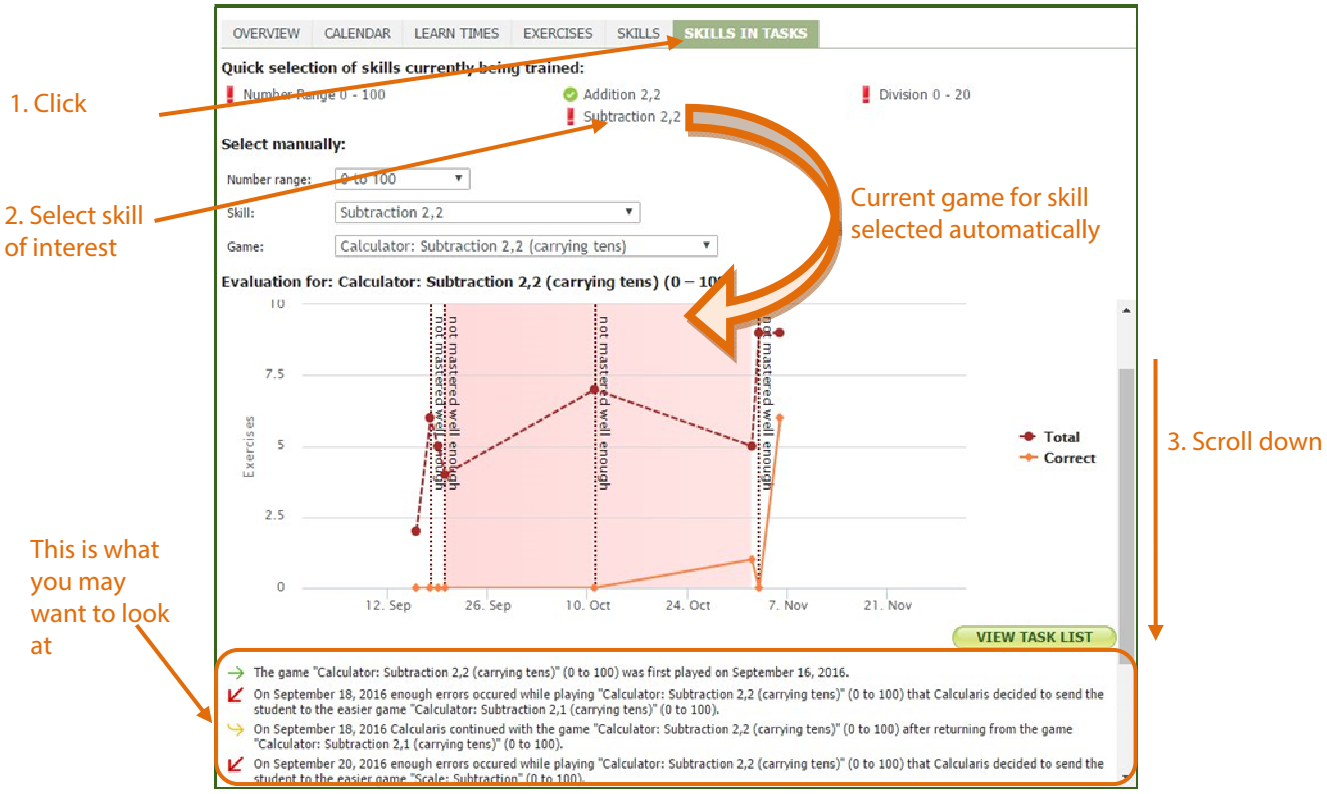


→ This will show you a list of the games that Calcularis tried and tries to do.

If Calcularis offers different support games to the student (see example next page), there is no immediate need to intervene. However, if Calcularis starts to oscillate between the skill with the problem and just one or two support games, this shows that Calcularis ran out of options.
→ Offer additional material outside of Calcularis.

Detail Interpretation of „Skills in Tasks"

For Step 4, "See if Calcularis is stuck", you need to look at "SKILLS IN TASKS" and at the games that Calcularis selects for a child. This is how you do it:



In the above example, we are interested in looking at the difficulties of the student in "Subtraction 2,2". Clicking on it opens the statistics for "Calculator: Subtraction 2,2 (carrying tens)". Within the skill of subtracting two digit numbers, carrying tens as mental calculation is hence the most prominent problem.

The sequence of decisions of games to practice by Calcularis shows that it tried to do "Calculator: Subtraction 2,2 (carrying tens)", →, but that it then decided to quit it, ↙, in favor of the simpler skill "Calculator: Subtraction 2,1 (carrying tens)". When this worked, Calcularis returned to "Calculator: Subtraction 2,2 (carrying tens)", ↘. It afterwards tried more of the simpler skills and different support games, and finally returned to the game on 3rd November. It seems to have found the right instruction, because the student now manages to get 6 tasks right, see chart in illustration above.

→	The game "Calculator: Subtraction 2,2 (carrying tens)" (0 to 100) was first played on September 16, 2016.
↙	On September 18, 20XX, enough errors occurred while playing "Calculator: Subtraction 2,2 (carrying tens)" (0 to 100) that Calcularis decided to send the student to the easier game "**Calculator: Subtraction 2,1 (carrying tens)**" (0 to 100).
↘	On September 18, 20XX, Calcularis continued with the game "Calculator: Subtraction 2,2 (carrying tens)" (0 to 100) after returning from the game "Calculator: Subtraction 2,1 (carrying tens)" (0 to 100).
↙	On September 20, 20XX, enough errors occurred while playing "Calculator: Subtraction 2,2 (carrying tens)" (0 to 100) that Calcularis decided to send the student to the easier game "**Scale: Subtraction**" (0 to 100).
↘	On October 11, 20XX, Calcularis continued with the game "Calculator: Subtraction 2,2 (carrying tens)" (0 to 100) after returning from the game "Scale: Subtraction" (0 to 100).
↙	On October 11, 20XX, enough errors occurred while playing "Calculator: Subtraction 2,2 (carrying tens)" (0 to 100) that Calcularis decided to send the student to the easier game "**Completion**" (0 to 100).
↘	On November 2, 20XX, Calcularis continued with the game "Calculator: Subtraction 2,2 (carrying tens)" (0 to 100) after returning from the game "Completion" (0 to 100).
↙	On November 3, 20XX, enough errors occurred while playing "Calculator: Subtraction 2,2 (carrying tens)" (0 to 100) that Calcularis decided to send the student to the easier game "**Plus-minus: Subtraction 2,2 (carrying tens)**" (0 to 100).
↘	On November 3, 20XX, Calcularis continued with the game "Calculator: Subtraction 2,2 (carrying tens)" (0 to 100) after returning from the game "Plus-minus: Subtraction 2,2 (carrying tens)" (0 to 100).

For this student, there was no need to intervene, even though it seems it did not advance between 16th September and 3rd November. However, if Calcularis kept oscillating e.g. between "Calculator: Subtraction 2,2 (carrying tens)" and "Plus-minus: Subtraction 2,2 (carrying tens)", there would be need to intervene.