

EdTech: GraspLe Evaluation

Seyyed Kazem Banihashem, Omid Noroozi
Education and Learning Sciences (ELS)
Wageningen University and Research (WUR)





Evaluation team



Seyyed Kazem Banihashem

Postdoctoral Researcher (ELS-WUR)
Main evaluator



Omid Noroozi

Associate Professor (ELS-WUR)
Supervisor

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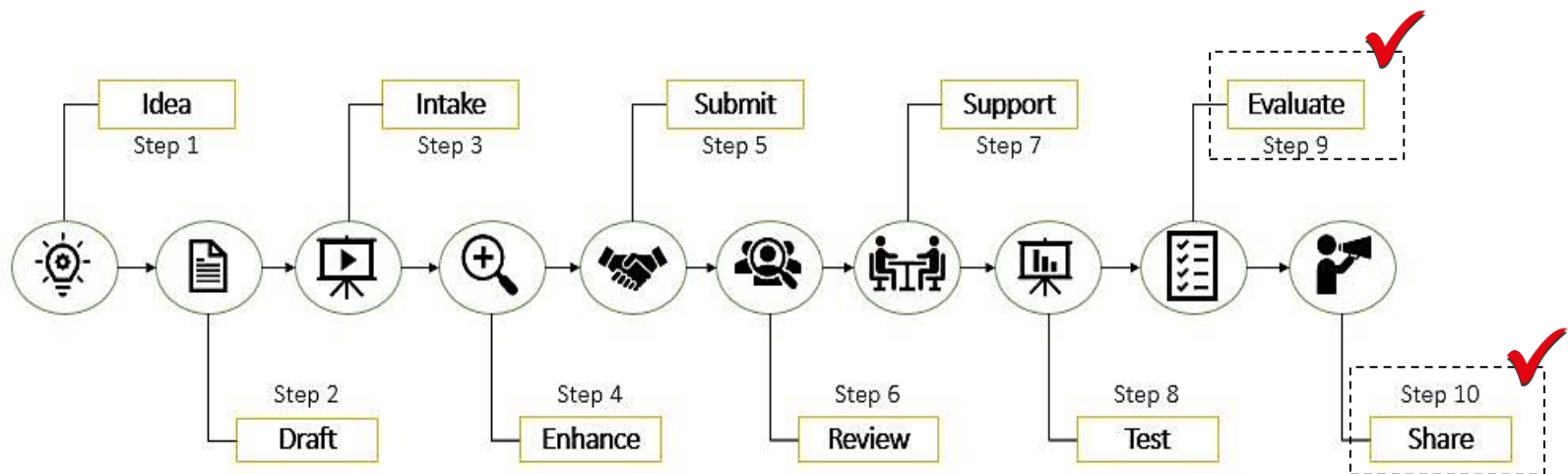


Content

- EdTech community
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EdTech community

- Supporting teachers who experiment with new EdTech tools in education
- Enhancing quality of education at WUR with EdTech tools
- EdTech evaluation: Step 9 (evaluate) and Step 10 (share)
- For more information: <https://www.wur.nl/en/Education-Programmes/Community-for-Education-Innovation-with-EdTech.htm>





Overview of Grasple

- Grasple is an online practice and assessment platform for math and statistics education
- Some functionalities:
 - Creating interactive exercises in math and statistics
 - Providing immediate personalized feedback
- Website: <https://www.grasple.com/>
- Youtube video:
 - <https://www.youtube.com/watch?v=ekuYTFuflrg&t=3s>



Method - context

Grasple was tested in two courses:

■ Course A:

- Grasple was used in P2 – Academic year 2021-2022
- Grasple was optional to be used as an addition by students

■ Course B:

- Grasple was used in P 1 and P2 – Academic year 2021-2022
- Grasple was optional to be used as an addition by students



Method - participants

- Course A
 - 68 students in total - 46 students used Grasple
 - Participants: Students (N = 7), teachers (N = 1)
- Course B
 - 500 students in total - half of students used Grasple
 - Participants: Students (N = 9), teachers (N = 2)



Method - data

- Qualitative data
 - Interview - teachers
 - Survey open-ended questions - students
 - PACE evaluation - students

- Quantitative data
 - Survey - students



Method – teachers' questions

1. Are you satisfied with using GraspLe? Please explain
2. To what extent GraspLe was successful in achieving learning goals?
3. Did GraspLe add any other values to the course?
4. Did GraspLe help you to decrease your workload?
5. How would you explain ease of use of GraspLe?
6. What were the weaknesses and the strengths of GraspLe?
7. Do you have any suggestions for further improvements of GraspLe?
8. Would you recommend using GraspLe for other courses?



Method – students' questions

1. Are you satisfied with using GraspLe? Please explain
2. Did GraspLe contribute to your skill development? Please explain
3. Has GraspLe decreased your workload?
4. Has GraspLe been easy to use? Please explain
5. Are you willing to use GraspLe again? Please explain
6. Will you recommend using GraspLe for other courses?
7. For what kind of courses, can GraspLe be used?
8. What are your suggestions for further improvements of GraspLe?

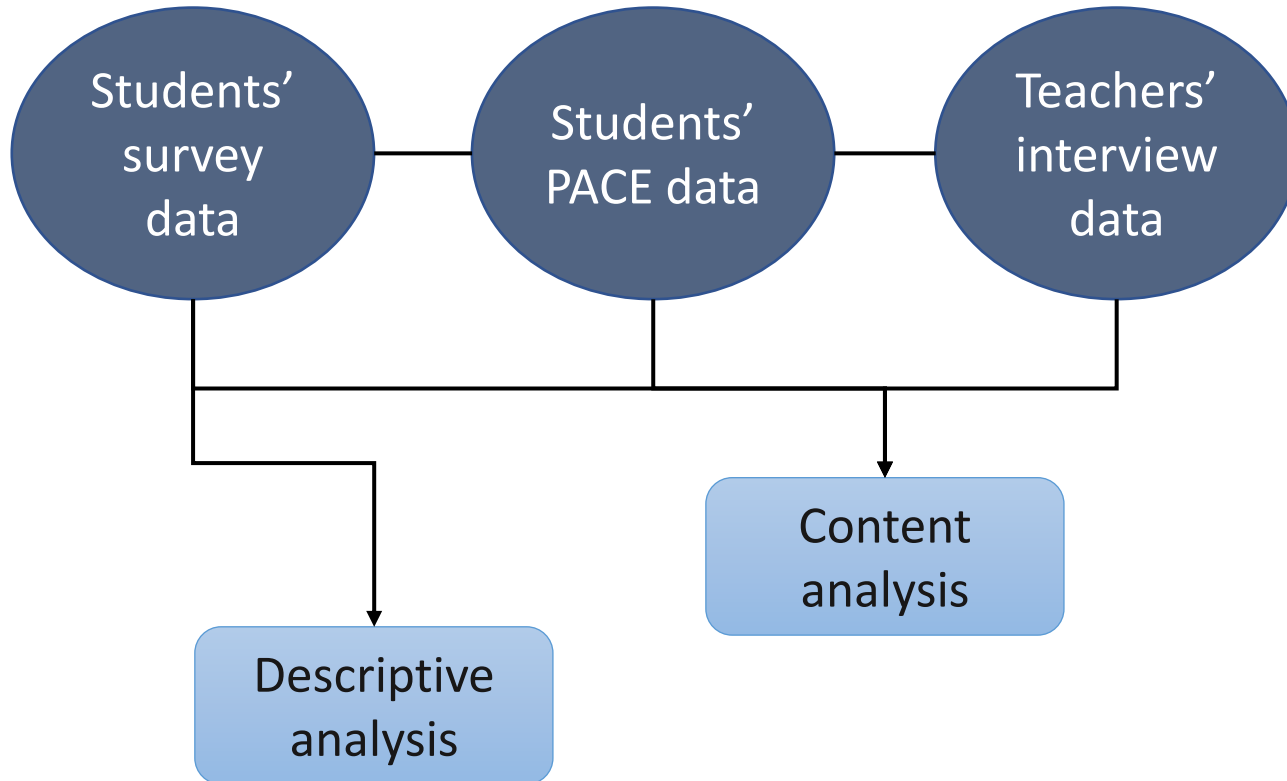


Method – Student satisfaction (PACE questions)

- Did you make use of Grasple?
- If yes, did you find it useful?



Method - data analysis





Key results: teachers



Strengths

In Course A:

Better visuals than Brightspace

- *“The presentation on screen is way better than Brightspace. The visuals are very good. It looks neat. Also, for students, I think it is better than Brightspace”*

In Course B:

Sharing availability

- *“There is an option to share everything you made in Grasple with the open-source communities. I think that is a benefit”*



Strengths - continued

Good reputation

- *“The strength might be the fact that this tool is being used by technical universities. So, as they are extensively dealing with mathematics and statistics, and they still use this tool. This could be a sign that this tool is useful. Otherwise, they would not have used it”*



Weaknesses

In Course A:

Bug in GraspLe feedback – solved now

- *“At some point, I discovered a big bug in the software. No matter students chose right or wrong choice, they always got the feedback for the right answer”*

Poor support service

- *“When I contacted them, they were expressing that they wanted to help but, in the end, they forwarded me to the examples that was somewhat useful. I should say that in the end I had to find out by myself”*



Weaknesses - continued

In Course B:

Poor data-base

- *“What I found a bit disappointing is that they claim they have a perfect tool for mathematic and I expected more databases to be available in Grasple, but I only found a couple of questions that were fixed. While we wanted a type of questions that was open in the sense that they are variable”*

Not cost-effective

- *“We pay a license per year for a student while he/she is going to follow a course for three weeks. Therefore, I think that is a bit unreasonable”*



Weaknesses - continued

Restricted programming language

- *“The programming language if you can call it like that is very restricted. Even the simple tasks take a lot of line of codes basically to establish. I had to parameterize the variables that already took up a lot of effort to set it up properly. So, that was inconvenience”*

Not suitable for advanced courses

- *“This is tool really dedicating itself for quantitative actions and if you have a bit more complicated questions then it can be hard to use this tool to set up your questions. I mean there is not much potential for life science applications”*



Learning goal

In Course A: **Successful**

Learning goal: “Create quizzes to motivate students to read the textbook and to be prepared for the exam”

- “For the mentioned purpose, I think GraspLe helped us in the online situation. But last year doing the course on-campus, it was vague for students.”“The reason it was less effective was that we did not give a clear position to the GraspLe quizzes in the on-campus variant of the course”



Learning goal - continued

In Course B: **Successful**

Learning goal: *“Supporting students by giving them more exercises to practice”*

- *“In our course students’ entry knowledge level is heterogenous and most students (particularly international students) need additional support. Grasple helped us with providing additional support to them.”*
- *“Ten different open questions were developed in Grasple for each topic in which students could type their answer. And then students could click on “check my answer” to see the feedback”*



Workload

In Course A: **Increased** workload

- *“Making quizzes is adding to the workload. I believe if you want to use all potential of Grasple such as feedback function and the others, it can cause a lot more workload”*

In Course B: Could **decrease** workload

- *“We believe that if all students use Grasple, then they will spend time first on practicing the questions in Grasple rather than asking the questions from us”*
- *“I believe that Grasple has the potential of decreasing our workload but we have not reached that yet”*



Ease of use

In Course A: Neither easy/difficult to use

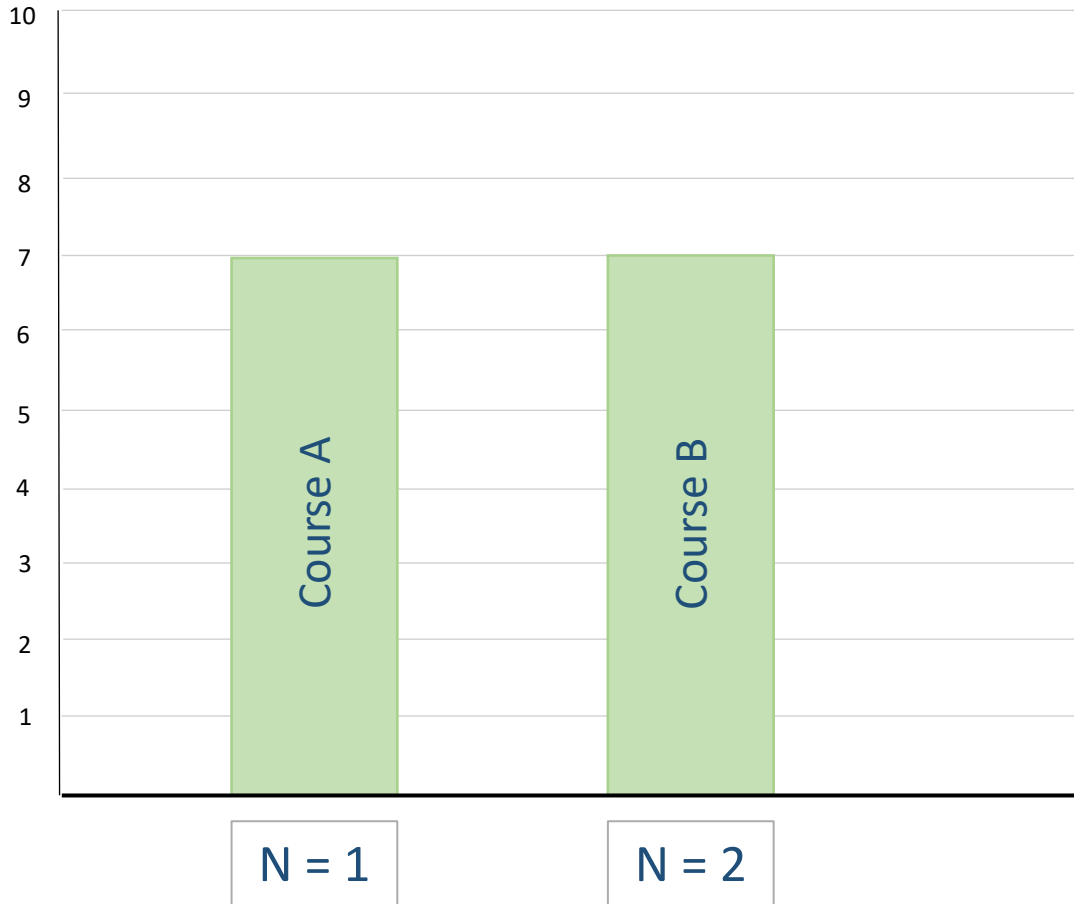
- *“It took me a while to understand the idea behind the tool. But, once I got passed that then making a quiz or putting everything together was not too difficult”*

In Course B: **difficult** to use

- *“From a technical point of view, to provide a useful feedback through Grasple to students was really complicated. I mean it was complicated to program Grasple in a way that you could give useful feedback to students based on their responses”*



Satisfaction



- Satisfied (Green)
- Neutral (Grey)
- Not satisfied (Orange)

- Not at all (1)
- Extremely (10)



Satisfaction - continued

Opportunities for more elaborations on course topics

- *“We received a lot of complaints in our course that there is a lack of elaborations. It is a three-week intensive course and students have to learn a lot. Grasple helped us in providing more elaborations on the course topics by giving them the opportunity to practice topics through Grasple questions/exercises”*

Better compared to Brightspace

- *“The support of equations and the way equations look in Grasple is much better than Brightspace. Also, the handling of equations in Grasple is better than Brightspace”*



Suggestions

In Course A:

Improve support services

- *“I was not too happy with their support services, and I think they should work on that”*

In Course B:

Better programming language

- *“From technical point of view, I would like to have access to a better programming language”*

To be cost-effective

- *“From educational point of view, I am rather positive about this tool, but the cost-effectiveness is an issue, and it should be discussed.*



Use in the future

In Course A: If it is cost-effective

- *“I am happy to use GraspLe as a backup for Brightspace. But I don't think it does worth money to be bought for my course”*

In Course B: If it is cost-effective

- *“I think right now how we pay for this tool is based on per student license. If we do that and if we have hundreds or thousands of students, then I think it is unacceptable. I mean it is not cost-effective. I think the financial aspect should change for us in order to continue with this tool”*



Recommendations for other courses

In Course A: For math-oriented courses

- *“Courses that are strongly math-oriented, I think can benefit from this tool”*

In Course B: For math and stat courses

- *“In general, I think all basic courses can benefit from this tool. I mean Math 1, Math 2, and Math 3 and, also Stat 1, Stat 2, and Stat 3”*
- *“For courses that make use of mathematics and statistics such as plant modelling, ecological modelling, and systems biology, this tool can be useful”*



PACE evaluation

For Course B: **Useful tool**

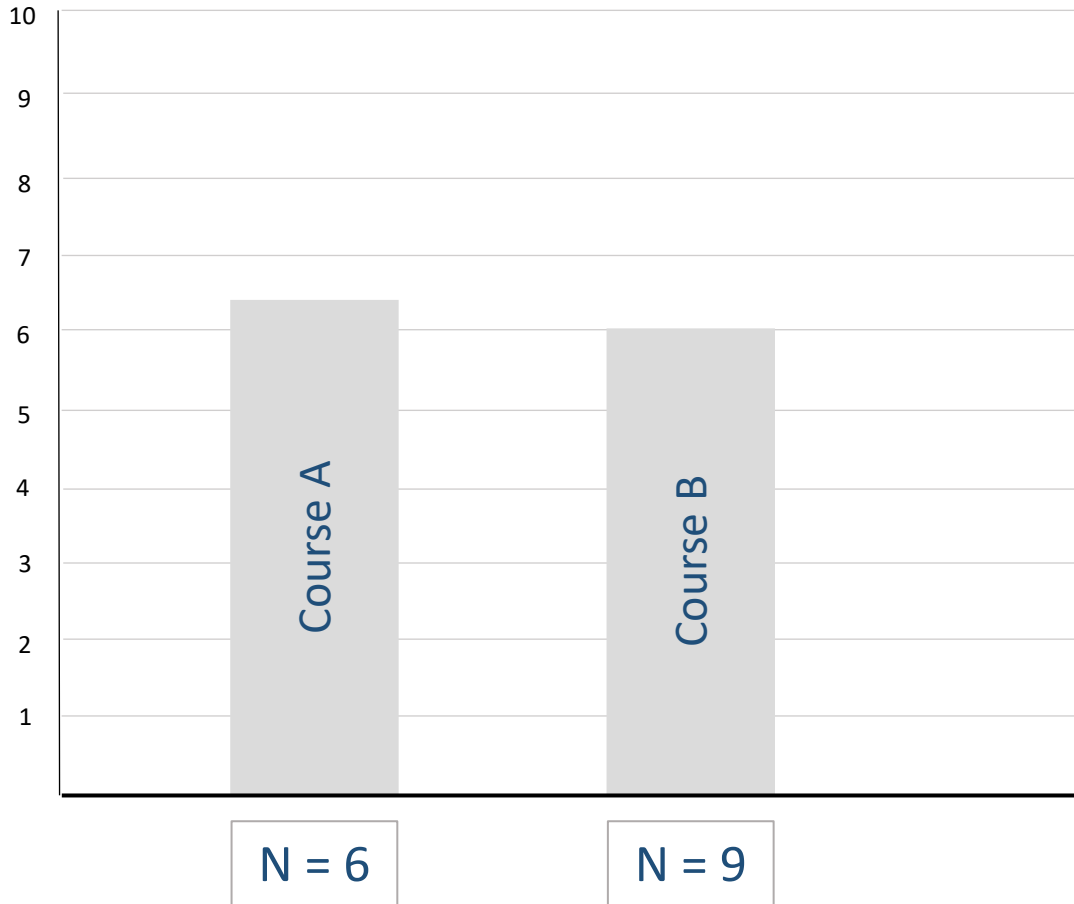
- Not all students used Grasple
- Students who used Grasple were enthusiastic about the tool
- Students who used Grasple found it useful
- Reasons:
 - Grasple helped with practicing learning materials
 - Grasple provided explanations for responses (feedback)
 - Grasple helped to be better prepared for exam



Key results: students



Learning goals



- Much contributed
- Somewhat contributed
- Not contributed

- Not at all (1)
- Extremely (10)



Learning goals - continued

Learning basics

- *“Practicing with the course material and doing the exercises, I could learn basic contents like integration and differentiation”*

Exam preparation

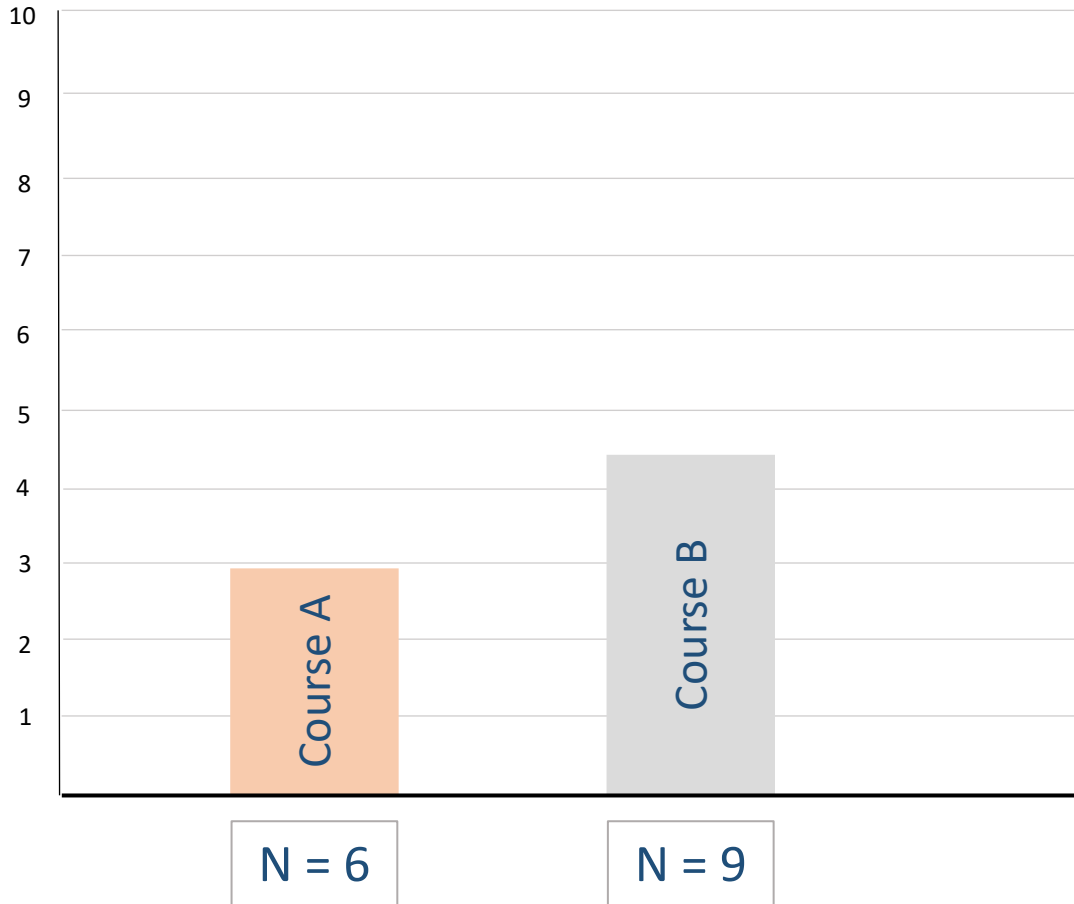
- *“By doing exercises in Grasple I became more prepared for the exam”*

Deepening knowledge

- *“by the feedback on the questions and checking if I understood the concepts, I could deepen my knowledge”*
- *“The endless number of questions and the opportunity to solve as many problems as needed”*



Workload



- Decreased (Green)
- Neutral (Grey)
- Increased (Orange)

- Not at all (1)
- Extremely (10)



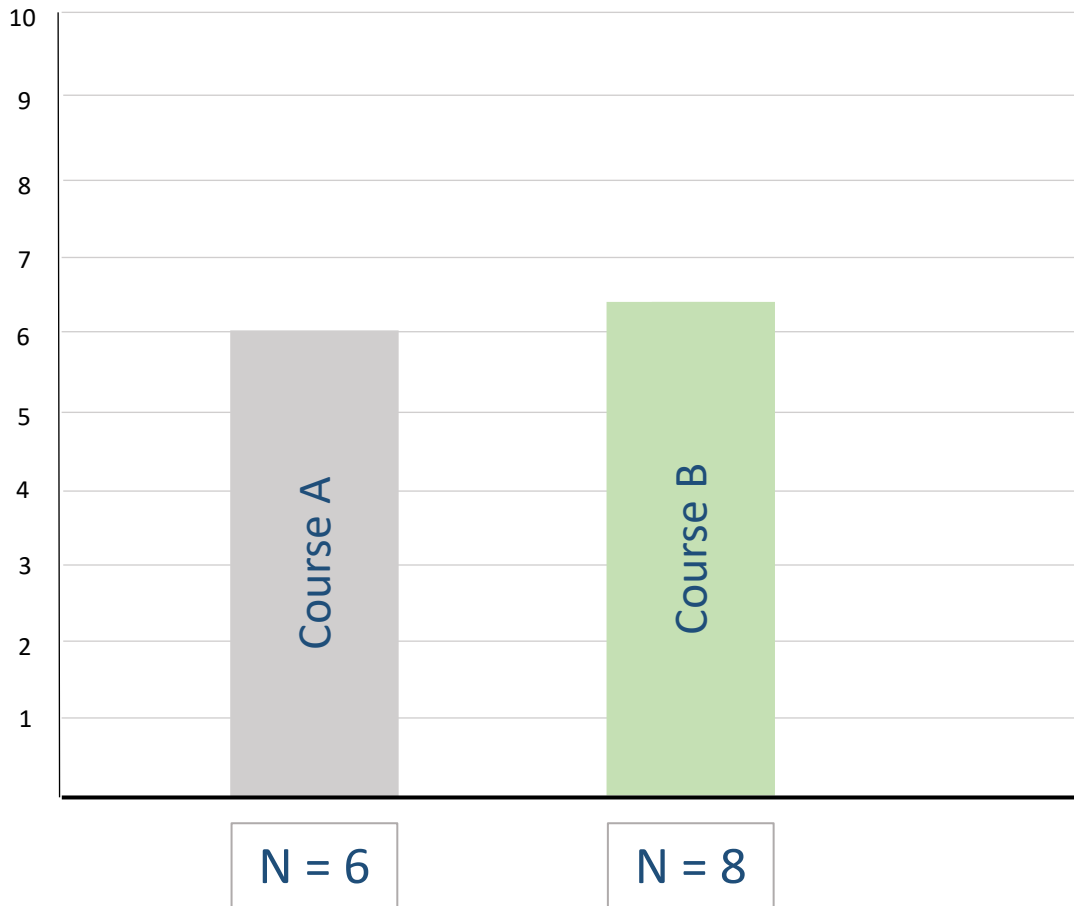
Learning goal - continued

Workload: **increased**

- *“I had to spend a lot of time figuring out how to answer the questions”*
- *“There were a lot of questions we could practice. It was good to have more learning materials, but it also costed time to do those exercises”*



Ease of use



- Easy to use
- Neutral
- Not easy to use

- Not at all (1)
- Extremely (10)



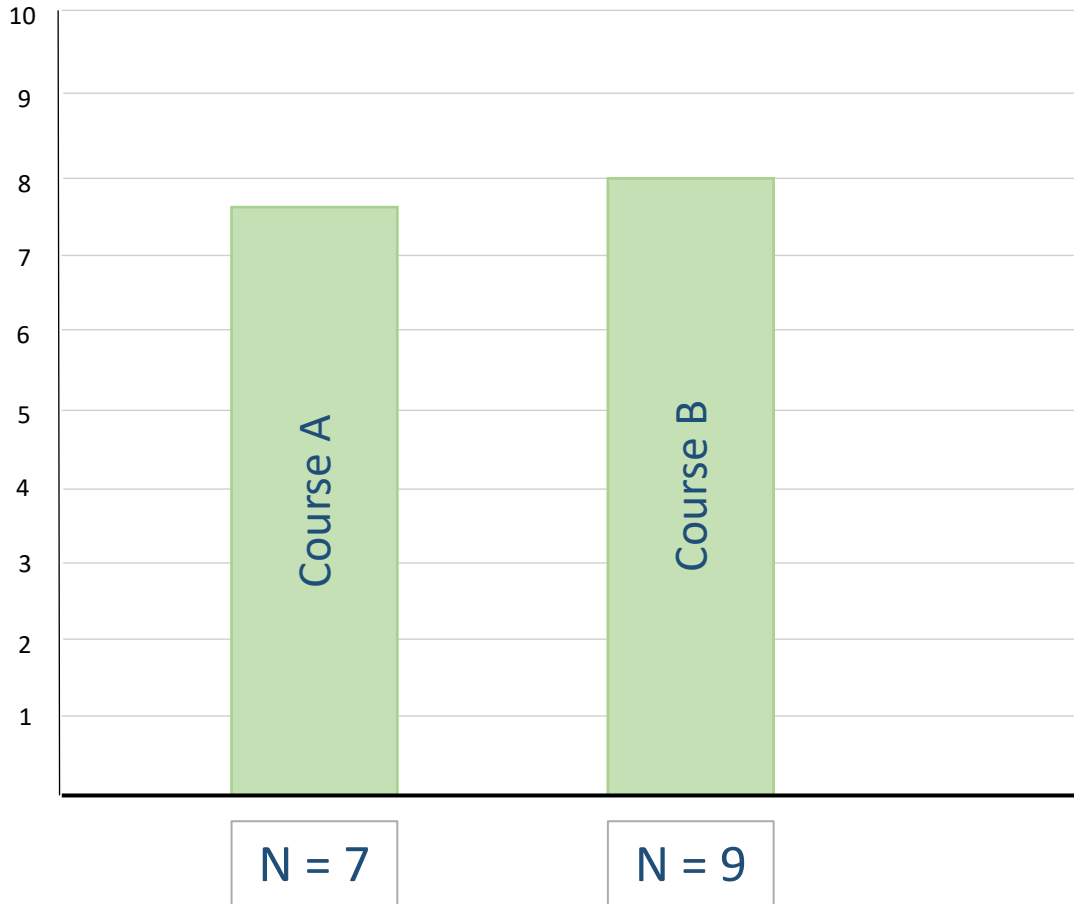
Ease of use - continued

Ease of use: **not very easy to use**

- *“The questions sometimes took a long time to load (especially the pictures), but this could also be due to the internet”*
- *“Where all the assignments could be found was difficult for me”*
- *“It is annoying that it immediately goes to the next question when you click on answer”*



Satisfaction



- Satisfied (Green)
- Neutral (Grey)
- Not satisfied (Orange)

- Not at all (1)
- Extremely (10)



Satisfaction - continued

Satisfied

- *“It was clear and efficient”*
- *“It was a very nice platform, but difficult to use and understand in the beginning”*
- *“It worked nicely and brought some welcome variation from the exercises on paper”*
- *“To be able to repeat certain types of mathematical problems until I was able to solve the problems without making mistakes”*
- *“The feedback you received was clear and nice. Sometimes it took a long time for a question to load. Still, it was nice to have all the questions on a separate page”*



Use in the future

Are you willing to use GraspLe again?

■ “Course A”

- **Yes** (N = 6)
- **Maybe** (N = 0)
- **No** (N = 1)

■ “Course B”

- **Yes** (N = 6)
- **Maybe** (N = 3)
- **No** (N = 0)



Use in the future - continued

Yes because:

- *“Nice to practice more”*
- *“Because it helped me improve”*
- *“Grasple was useful to internalize certain methods”*
- *“Easy to use and good to practice questions”*
- *“It was a nice platform, it worked well and was quick to use”*

Maybe because:

- *“It takes time”*



Recommendations for other courses

■ “Course A”

- **Yes** (N = 5)
- **Maybe** (N = 1)
- **No** (N = 1)

■ “Course B”

- **Yes** (N = 2)
- **Maybe** (N = 6)
- **No** (N = 1)



Recommendations for other courses - continued

- *“I think GraspLe is useful for courses which have a lot of mathematical formulas”*
- *“GraspLe can be useful for theoretical courses, where this tool can contribute to giving an overview of all the stuff you need to learn”*
- *“GraspLe can be used for Microbiology and Biochemistry. Especially the microbiology course where the test consists of multiple-choice questions”*
- *“GraspLe can be useful for any course that deals with math”*
- *“Mathematics and physics courses”*



Suggestions for further improvements

Better user-interface

- *“Make it allow you to jump ahead and back in Grasple”*
- *“Not going to the next question when you click on an answer, but have another button for continuing”*
- *“Make it more user friendly”*



Conclusions

- Teachers and students were somewhat satisfied with using Grasple (+)
- Teachers and students recommended using Grasple but not strongly (+)
- Grasple was successful in achieving intended learning goals (+)
- Teachers were willing to use Grasple if it is cost-effective (+)
- Students were willing to use Grasple (+)
- Grasple did not decrease teachers'/students' workload (-)
- Grasple was not sufficiently user friendly (-)
- Grasple support service was not sufficiently satisfactory (-)



Recommendations

- Grasple is a good tool mostly for math-oriented courses
- Grasple has educational value, but it is in this form not cost-effective
- Grasple may have extra value in online courses than blended or face-to-face courses (this could be due to setup of the interviewed courses not the problem of tool itself)



Thoughts/Questions?

Contact:

kazem.banihashem@wur.nl

omid.noroozi@wur.nl