

# EdTech: CodeGrade Evaluation

Round 2

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## Evaluation team



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We acknowledge the valuable contributions and feedback of Prof. dr. Perry den Brok and Dr. Harm Biemans on this report.

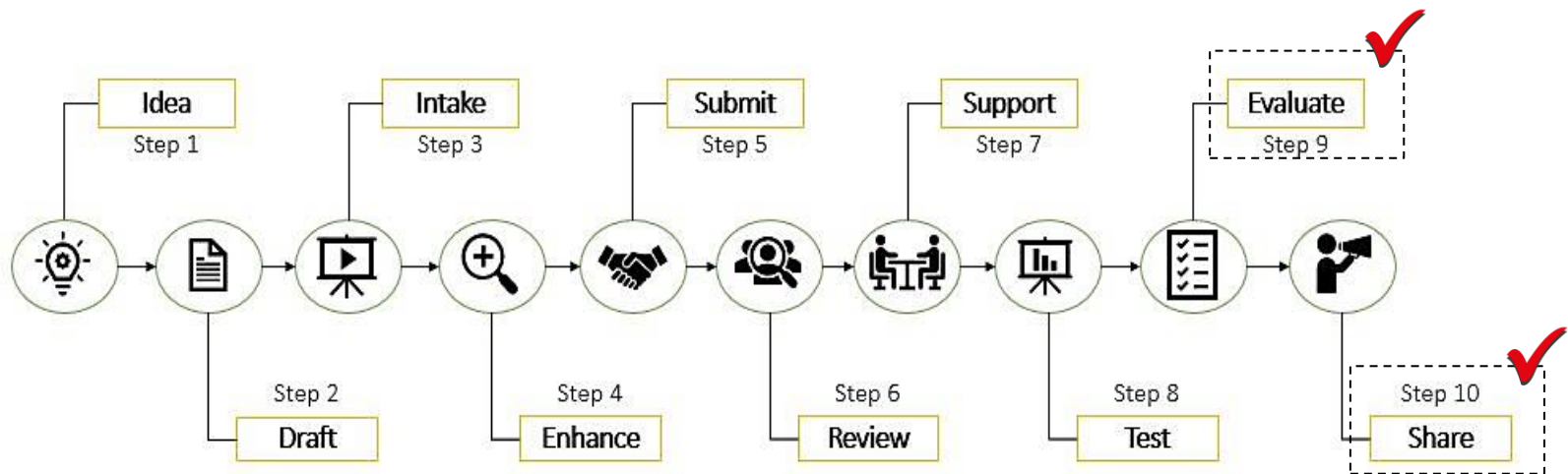


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# EdTech community

- 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 CodeGrade

- CodeGrade is a grading and feedback tool for computer science
- Tool this aims to improve students' coding skills
- Some functionalities:
  - Plagiarism detection
  - Auto grading
  - Feedback [teacher feedback and peer feedback]
- Website: <https://www.codegrade.com/>
- Youtube video:
  - <https://www.youtube.com/watch?v=9PjglfePIM4>



# Method

Courses	Period	Tool mandatory?	Sample	Data collection
Course A	Period 3	Mandatory for submission scripts	62 in course 30 students in survey, 2 teachers in interview	Survey Interview PaCE
Course B	Period 2	Mandatory for submission scripts	75 in course, 13 students in survey, 3 teachers in interview	Survey Interview



# Key results: teachers



# Strengths & weaknesses

Teachers

Reported strengths	Reported weaknesses
<ul style="list-style-type: none"><li>• Connection with GitLab and Brightspace</li><li>• Peer feedback</li><li>• Auto-testing/grading</li><li>• In-line feedback</li><li>• Time saving/decrease in workload</li><li>• Good support services</li><li>• Transparent grading</li><li>• Book download</li><li>• Rubric import</li></ul>	<ul style="list-style-type: none"><li>• Cramped/small screen</li><li>• Unfriendly user-interface</li><li>• No override of auto-grading</li><li>• Bugs ins auto-grading</li></ul>

**Quote:** *“The auto-testing has still o lot of potential to save time and good for grading.”*

**Quote:** *“The layout is very cramped. All the information you need is somehow put in 25% of your screen.”*





# Support of learning goals

Teachers

Course	Goal	Successful?
Course A	To make grading more efficient	Successful
Course B	Used as a submission system, grading students	Successful

**Quote:** *“The initial idea of using CodeGrade in our course was to make the grading more efficient and for that purpose, I think CodeGrade has met the goal.”*

**Quote:** *“CodeGrade helped with making grading more transparent.”*



# Workload & ease of use

Teachers

Course	Workload	Ease of use
Course A	Decrease in workload	Difficult to use
Course B	No actual decrease, potential to decrease workload	Difficult to use

**Quote:** *“As a course coordinator, CodeGrade definitely helps with decreasing workload.”*

**Quote:** *“CodeGrade has a small screen which made me all the time scroll up and down during grading the codes and it is annoying.”*



# Support services

Teachers

Course	Support service?	Reasons
Course A	Good	Responsive, online tutorials
Course B	Good	Responsive

**Quote:** *“They are very responsive and reply very quickly. If you send a request via email, they will reply you in a few hours.”*

**Quote:** *“They also give online tutorials. I followed one tutorial about auto-grading and It was helpful to understand the basics.”*



# Satisfaction

Teachers

Course	Satisfaction?	Reasons for satisfaction
Course A	Satisfied	Save time, good for grading, good for administration
Course B	Satisfied	Successful in achieving intended goals [submission, efficient grading]

**Quote:** *“Generally I am satisfied. It definitely saves times for teachers particularly during grading compared to the previous system we had.”*

**Quote:** *“We are not using the full-range of CodeGrade functionalities. We just used CodeGrade as a submission system and we used it for grading. For this reason, CodeGrade has helped us and we are happy with using this tool.”*



# Suggestions for improvements

Teachers

Course	Suggestions
Course A	Advance tutorials for auto-grading, auto-grade override, user interface improvement
Course B	Automatic entry-level test, cconnection between CodeGrade and Brightspace

**Quote:** *“I found online tutorials simple. The example they used was very simple which normally not the one that I wanted to use.”*

**Quote:** *“I would suggest them to improve the layout and user interface of the tool to make it more intuitive for users.”*



# Future use & recommendation

Teachers

Course	Use in the future	Recommendation for other courses
Course A	Yes	Yes [for physics, math, programming courses, machine learning, deep learning]
Course B	Yes	Yes [for practical computing for biologists, Python programming]

**Quote:** *“Yes, I am willing to use CodeGrade again. It gives us a nice statistics about students’ results. It gives you the opportunity to give feedback immediately.”*

**Quote:** *“We are willing to use it. We even hired an e-learning developer, and we will ask him to explore how further CodeGrade can help us with automated feedback and automated grading.”*



**In course A:**

**How did you like the peer feedback process on CodeGrade?**

- Students had mixed feelings using CodeGrade.
  - Some satisfied / some dissatisfied
  - Some found it easy to use / some found it difficult to use



# Key results: students





# Support of learning goals/skill development

Students

Course	Learning goal/skill development	Successful?	Key tool function
Course A	Peer feedback, line feedback in scripts, test others' code, learn from others' code	Partly successful	Peer feedback, auto-grading
Course B	Peer feedback, learn from others' code,	Partly successful	Peer feedback, teacher feedback, auto-grading

**Quote:** *"Giving and receiving feedback improved my scripting skills."*

**Quote:** *"I liked looking at other people's codes to see how they did things."*

**Quote:** *"It was good to learn from peers and see other people's solution."*



# Workload & ease of use

Students

Course	Workload	Ease of use
Course A	Increase in workload	Difficult to use
Course B	Increase in workload	Easy to use

**Quote:** *“I had to spend a lot of time figuring out how to answer the questions.”*

**Quote:** *“In Brightspace, the interface was very narrow. This makes it a little inconvenient to use.”*

**Quote:** *“It was pretty easy just upload your code and every other feature is clear.”*



# Satisfaction

Students

Course	Satisfaction?	Reasons for satisfaction	Reasons for dissatisfaction
Course A	Somewhat satisfied	Be able to give feedback, auto-test of code, in line feedback in scripts	Not user-friendly, small screen, bugs in auto-test
Course B	Satisfied	Peer feedback, in line feedback, auto-test	Hard to give a general feedback, bugs in auto-test

**Quote:** *“It is easy to use. And it is very nice that your work is automatically checked and submitted to Brightspace.”*

**Quote:** *“Auto-test does not work half the time, and the interface for giving feedback is very bad.”*



# Future use & recommendation

Students

Course	Use in the future	Recommendation for other courses	course
Course A	Yes/Maybe	Yes/Maybe	Programming, and coding courses
Course B	Yes	Yes/Maybe	All coding courses

**Quote:** *“I am willing to use it because it is a nice platform to share codes and give feedback.”*

**Quote:** *“It is a good tool to inspect and review code line-by-line.”*

**Quote:** *“I like it because it is a functional program that can make checking code easier.”*



# Suggestions for improvements

Students

Course	Suggestions
Course A	Better user-interface, reliable auto-grade, rubric visibility
Course B	Better user-interface, feedback connection with grading, rubric set-up

**Quote:** *“The auto-test did not work at most of the times, and it would be nice if they would work with more exercises.”*

**Quote:** *“I suggest to make the interface a bit easier to use and more modern.”*



# Conclusions

- Teachers and students were satisfied with CodeGrade (+)
- Teachers and students recommended using CodeGrade (+)
- CodeGrade was successful in achieving intended goals (+)
- Teachers were willing to use CodeGrade (+)
- Students were willing to use CodeGrade (+)
- CodeGrade support service was good (+)
- CodeGrade did not decrease teachers'/students' workload (-)
- CodeGrade was not user friendly (-)



## Comparing with 1st round evaluation

- In both rounds, teachers and students showed satisfaction with CodeGrade
- In both rounds, teachers and students recommended using CodeGrade
- In both rounds, teachers and students indicated that TrainTool contributed to their learning goal
- In both rounds, teachers and students found CodeGrade unfriendly and difficult to use
- In both rounds, teachers and students did not report a decrease in their workload due to use of CodeGrade
- In both rounds, teachers and students reported a good support services from TrainTool



# Recommendations

- CodeGrade is a good tool coding/programming courses
- CodeGrade interface needs to be more user-friendly
- CodeGrade needs to provide more reliable auto-test results
- CodeGrade needs to be better connected with Brightspace





Thoughts/Questions?

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