Welcome!

To participate in the interactive section of this workshop:

1. On your laptop, go to **tinyurl.com/fbf-cel-workshop**
2. Follow the instructions to enroll in the course we will use

Feedback**Fruits**

Feedback**Fruits**

Using **writing analytics** to provide instantaneous, formative feedback to facilitate holistic learning

Ziwei Jo Huang

Associate Product Manager (R&D)
FeedbackFruits

MSc Applied Linguistics
University of Oxford (Department of Education)

FeedbackFruits

To participate in the interactive section of this workshop:
Go to **tinyurl.com/fbf-cel-workshop** on your laptop and follow the instructions

an all-in-one solution to implement active learning design, boost student engagement and collaboration in any course setting

FeedbackFruits

Agenda

1 **Presentation & demo**
Automated Feedback

2 **Interactive exercise 1**
Student-directed Automated Feedback

3 **Interactive exercise 2**
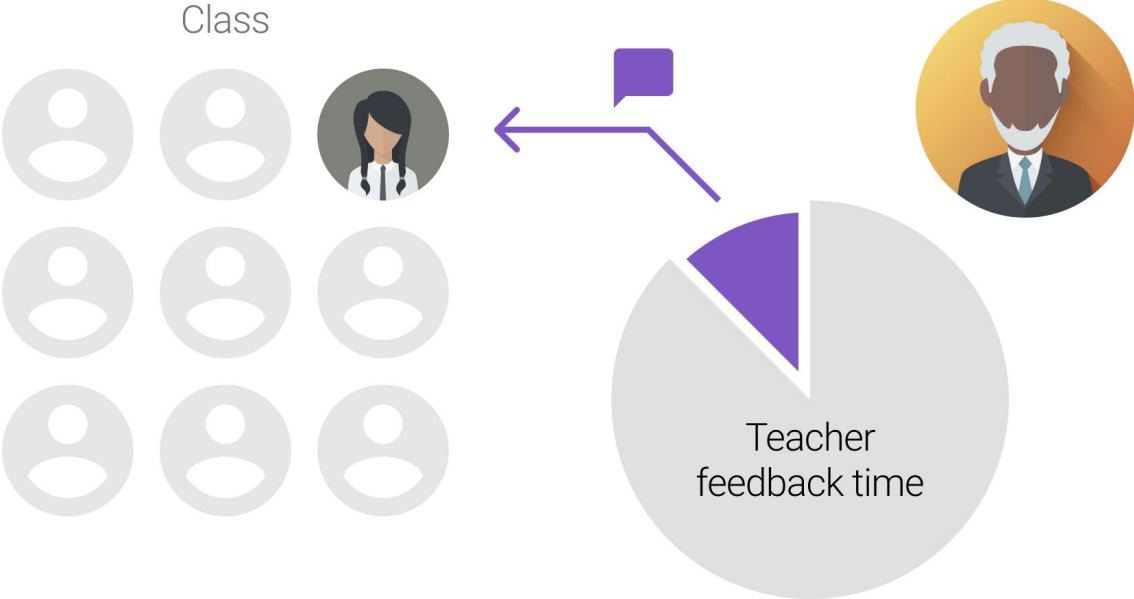Peer feedback with automated feedback coach

4 **Upcoming feature preview**
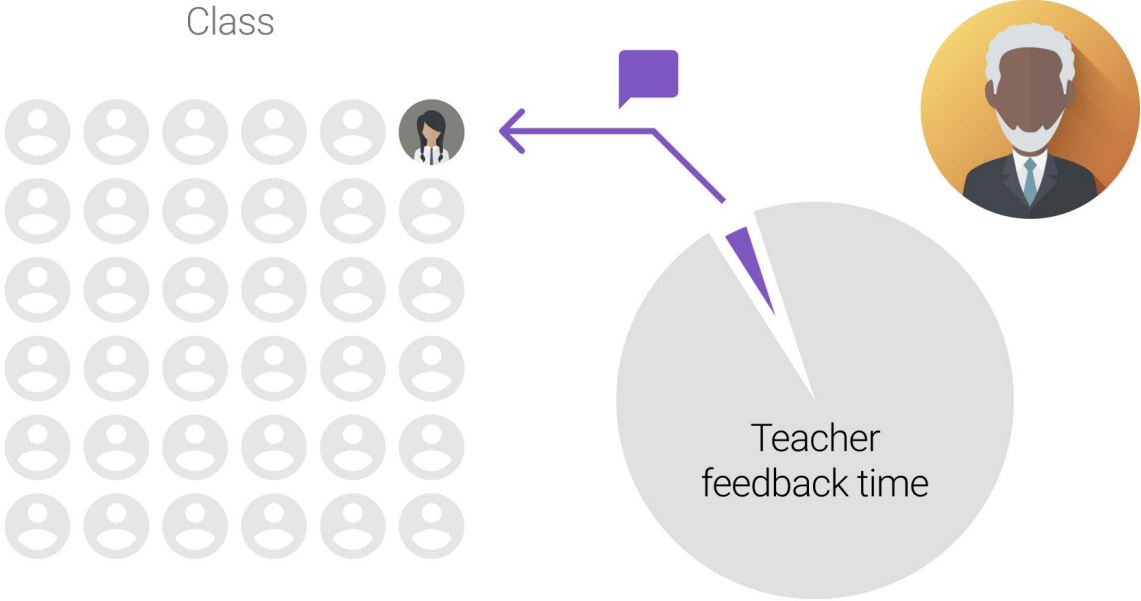Insights on student contributions in
text-heavy learning activities

5 **Q&A**

FeedbackFruits

To participate in the interactive section of this workshop:
Go to **tinyurl.com/fbf-cel-workshop** on your laptop and follow the instructions

Class

Teacher feedback time

FeedbackFruits

Class

Teacher
feedback time

Academic writing assessment
labor-intensive and time-consuming

FeedbackFruits

Student

Personal attention

Automated Feedback
Majority of volume, low-level feedback

Peer Feedback
Medium volume, mid-level

Teacher Feedback
Small volume, high-level expert feedback
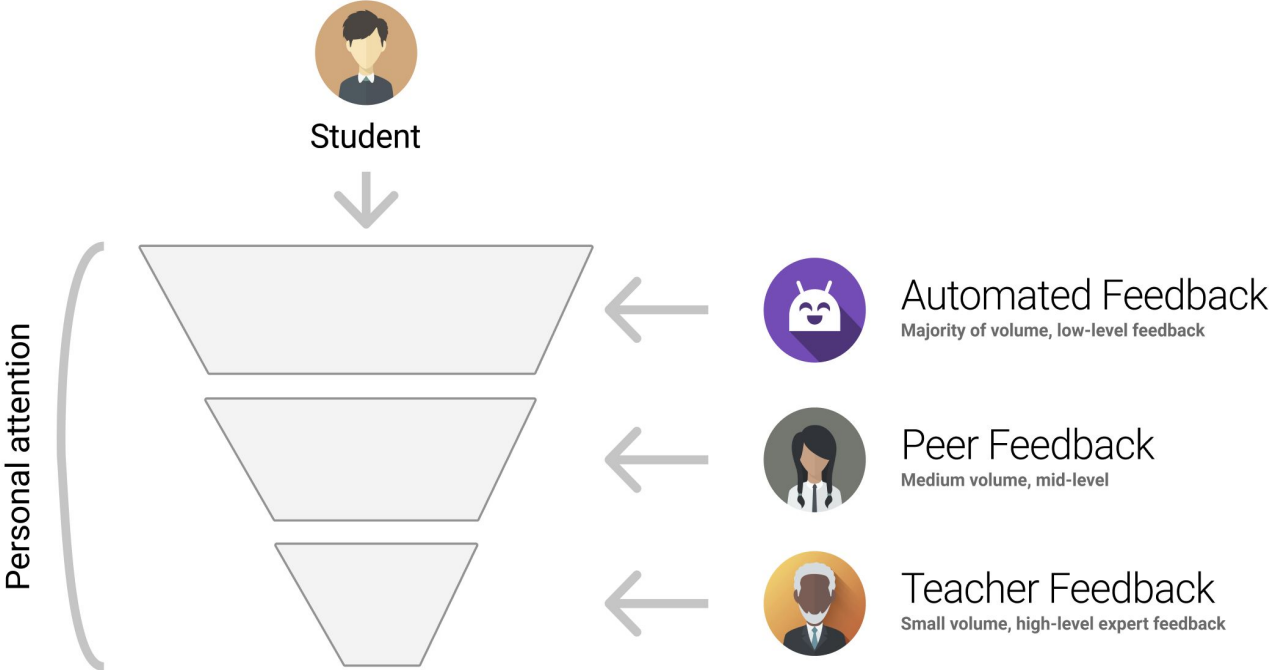
Feedback**Fruits**

# FeedbackFruits & **EdTech Dotank**

FeedbackFruits
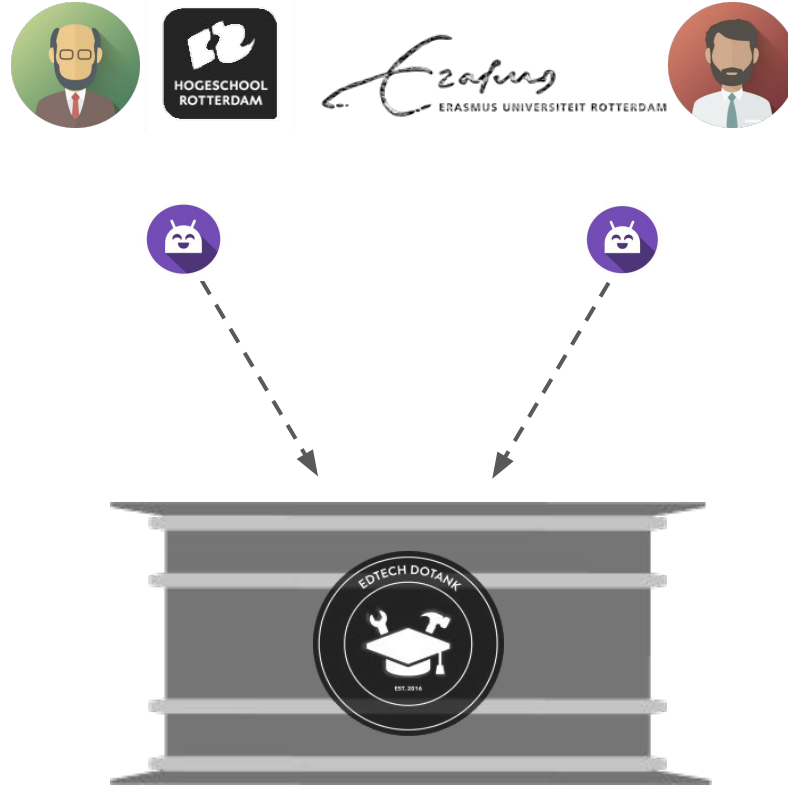
Automated Feedback

Powered by AI, this tool provides instantaneous feedback to enhance students' performance in academic writing and stimulate deeper learning while offering teachers more time to provide higher-order feedback.

An EdTech DoTank co-creation with

Erasmus Universiteit Rotterdam

Hogeschool Rotterdam
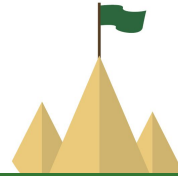
Writing analytics

...writing analytics involves the measurement and analysis of written texts for the purpose of **understanding writing processes and products, in their educational contexts**. [They] are ultimately aimed at **improving the educational contexts in which writing is most prominent**. [1]

FeedbackFruits

For students..

⬆ Instant feedback availability

⬆ Quality of student products

⬆ Stimulates active learning

For teachers..

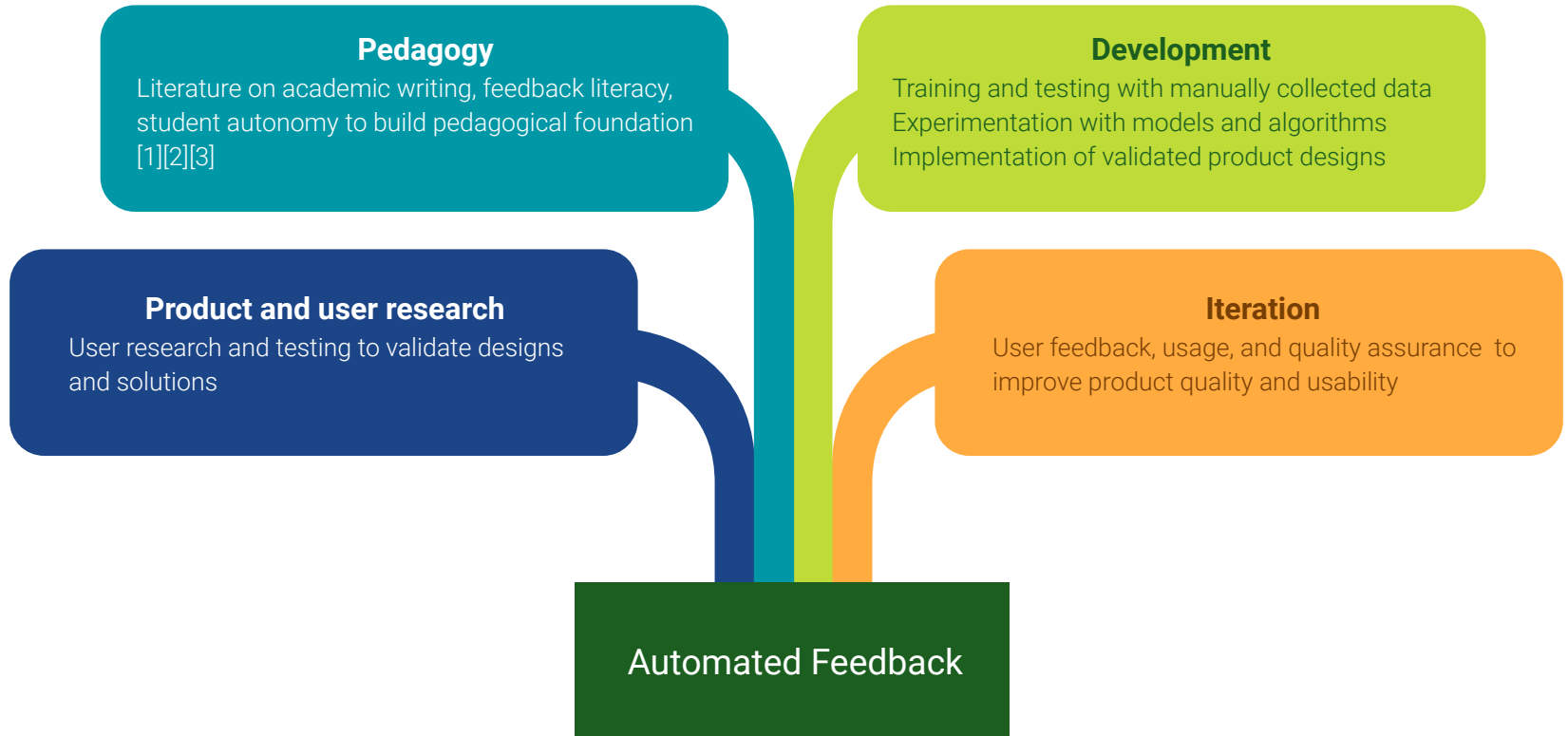⬇ Teacher review workload

⬇ Repetitive feedback

⬆ Focus on ideas

Feedback**Fruits**

The How

Development of the tool
Pedagogy
Technology
Ethics

Pedagogy
Literature on academic writing, feedback literacy, student autonomy to build pedagogical foundation [1][2][3]

Development
Training and testing with manually collected data
Experimentation with models and algorithms
Implementation of validated product designs

Product and user research
User research and testing to validate designs and solutions

Iteration
User feedback, usage, and quality assurance to improve product quality and usability

Automated Feedback

The tool does not replace the instructor

→ Empower teachers to focus on complex skills such as **critical thinking**, **problem solving, domain-specific knowledge**

→ Feedback on higher-order concern needs to be contextual and personalized

Higher-order concerns ⎯⎯ Evidence argumentation
⎯⎯ Critical thinking
⎯⎯ Style and flow

Lower-order concerns
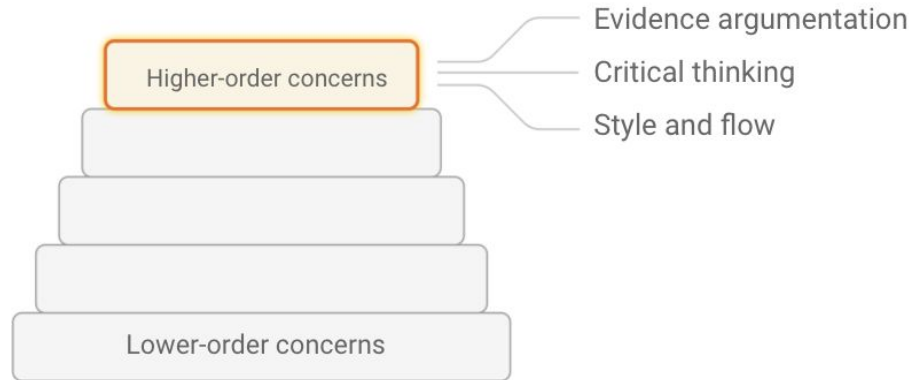
Feedback hierarchy

FeedbackFruits

ML- and rule-based algorithms

So appropriate feedback is given on each submission

Syntactic parser

So the structural relationship in the text is identified

API; LTI integration

So teachers and students can use it seamlessly on their LMS

Document parser

So parts and data of students' working document are identified and extracted

Reference parser

So the references in the document can be identified and connected to a database

canvas

Blackboard

D2L BRIGHTSPACE

moodle

Microsoft Teams

FeedbackFruits

Celebrate **ethics by design**

The AI **does not have access to student data** without explicit consent

Provides **formative and constructive** feedback: grading is a human action

Students and teachers can always **object to incorrect feedback** at any time

FeedbackFruits

What

Criteria and interface

What | Current criteria

Content & Structure

Document language
Required sections
Sentence length
Word count
Linking words
Paragraph length

Academic Language

Abbreviation introduction

⬇️ *English only* ⬇️
Grammar
Personal pronouns
Vocabulary
 > Distinguish commonly confused words
 > Concise writing
 > Proper word combinations

Active voice
Punctuation
Spelling
Verb tense
Formal writing style
 > Avoid contractions
 > Avoid starting a sentence with coordinating conjunctions
Punctuation
 > Avoid run-on sentences
Vocabulary: Precise writing

Tables & Figures

Figure count
Table count

Figure captions
In-text citation of figures
Table captions
In-text citation of tables

Citing & Referencing

Citation count of references
Reference count
Citation style

Reference content
In-text citation of references
Direct quotation usage
Peer-reviewed references

Format

Page number
Table of contents

🍏 Feedback**Fruits**

Beta

Experimental

with **Peer Review**

Stand-alone

with **Assignment Review**

FeedbackFruits

What

Impact

Usage, engagement, feedback

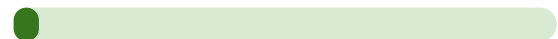| **75**	**300**	**9000**	**14000**	**350,000**
institutions	teachers	students	submissions	annotations

Average feedback usefulness

4.55/5 (n=37k)

Objection (error) rate

1.4%

FeedbackFruits

Feedback

"

Ultimately, I'd like to provide detailed feedback for every single assignment, but that's unrealistic. **Automated Feedback did something I couldn't provide for students.**

DEAKIN UNIVERSITY

It reduced the amount of students that quit because it diminished their anxiety level while writing their thesis. **It provided a big confidence boost to ensure they believe they could actually deliver good work.**

"

UNIVERSITY OF AMSTERDAM
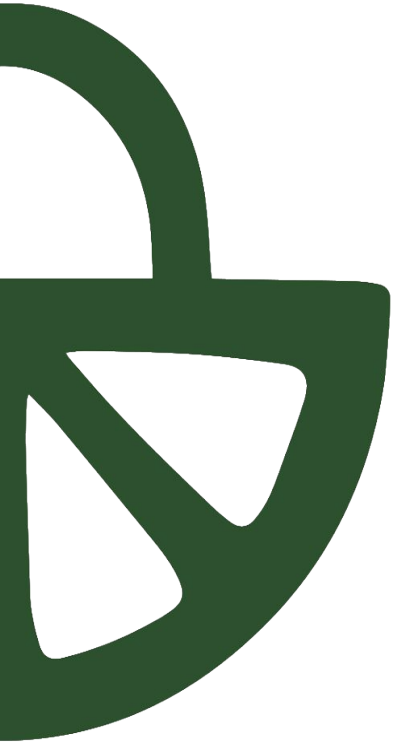
Demo

Setting up an Automated Feedback activity in Canvas

Feedback**Fruits**

Interactive exercise 1.
Student-directed Automated Feedback

An EdTech DoTank co-creation with

DEAKIN UNIVERSITY

1 Navigate to the learning activity

Student-directed Automated Feedback

2 Upload a document of your choice

Any academic papers will work! We recommend a short one for this workshop.

3 Read feedback with criteria of your choice and play around on the tool

4 Discuss in groups

- ❏ Was the tool easy to use?
- ❏ Is the feedback helpful?
- ❏ Are you missing anything from the tool and the feedback you received?
- ❏ How would you use the tool in your context?

Interactive exercise 2.
Peer feedback with automated feedback coach

1 Navigate to the learning activity

2 Give feedback to your assigned peer based on the rubric

3 Write, then rewrite your feedback. Compare the different feedback that you receive from the coach.

4 Discuss in groups
- ❏ Was the feedback you received from the feedback coach useful?
- ❏ How would you improve it?

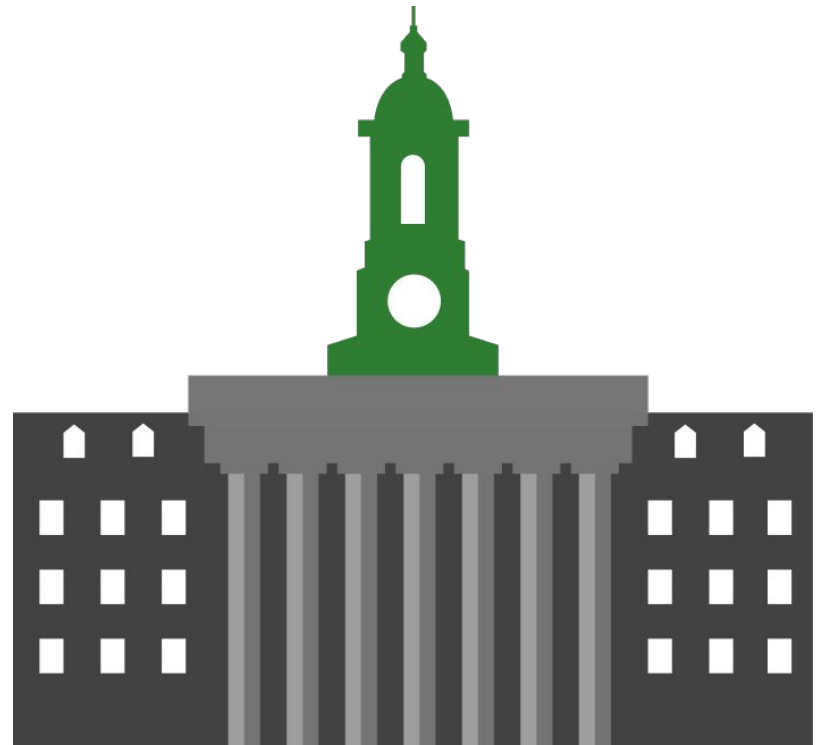The future

Soon available | **Insights** on student contributions

Future directions
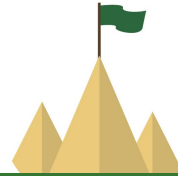
Actionable learning insights

Personalisation

Impact evaluation
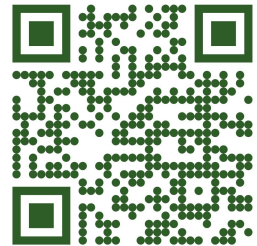
And more… with you!

Final discussion and Q&A

FeedbackFruits

Ziwei (Jo) Huang

Associate Product Manager (R&D)

FeedbackFruits

linkedin.com/in/ziweijohuang/

FeedbackFruits

References and resources

[1] Gibson, A., Aitken, A., Sándor, Á., Buckingham Shum, S., Tsingos-Lucas, C., & Knight, S. (2017). Reflective writing analytics for actionable feedback. Proceedings of the Seventh International Learning Analytics & Knowledge Conference. https://doi.org/10.1145/3027385.3027436

[2] Bernius, J. P., Krusche, S., & Bruegge, B. (2021). A machine learning approach for suggesting feedback in textual exercises in large courses. Proceedings of the Eighth ACM Conference on Learning @ Scale. https://doi.org/10.1145/3430895.3460135

[3] Hellman, S., Murray, W., Wiemerslage, A., Rosenstein, M., Foltz, P., Becker, L., & Derr, M. (2020). Multiple instance learning for content feedback localization without annotation. Proceedings of the Fifteenth Workshop on Innovative Use of NLP for Building Educational Applications. https://doi.org/10.18653/v1/2020.bea-1.3

[4] Razı, S. (2015). Development of a rubric to assess academic writing incorporating plagiarism detectors. SAGE Open, 5(2), 215824401559016. https://doi.org/10.1177/2158244015590162

[5] European Commission, (2019) A European approach to artificial intelligence. Retrieved 28.03.2022 from: https://digital-strategy.ec.europa.eu/en/policies/european-approach-artificial-intelligence

[6] High-Level Expert Group on Artificial Intelligence, Ethics guidelines for trustworthy AI (2019). European Commission. Retrieved February 2, 2022, from https://digital-strategy.ec.europa.eu/en/library/ethics-guidelines-trustworthy-ai.

[7] The Institute for Ethical AI in Education (2020). *The Ethical Framework for AI in Education.* Retrieved 28.03.2022 from: https://www.buckingham.ac.uk/research-the-institute-for-ethical-ai-in-education/

[8] Tubino, L. (2021). Artificial Intelligence for Learning and Teaching with FeedbackFruits. Deakin University.

[9] Use cases: Automated Feedback. FeedbackFruits Help Center. https://help.feedbackfruits.com/en/collections/2340995-use-cases#use-cases-automated-feedback

FeedbackFruits