

# Post-Pandemic Intended Use of Remote Teaching and Digital Learning Media in Higher Education

Insights from a Europe-wide Online Survey

DAAD Stammtisch | 23.02.2023  
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**Motivation:**

Overcome shortcomings of COVID-19 impact literature review (Farnell et al., 2021; Huth et al., 2021)

- Investigate possible paradigm change in Higher Education
- Generalizable findings for the European perspective

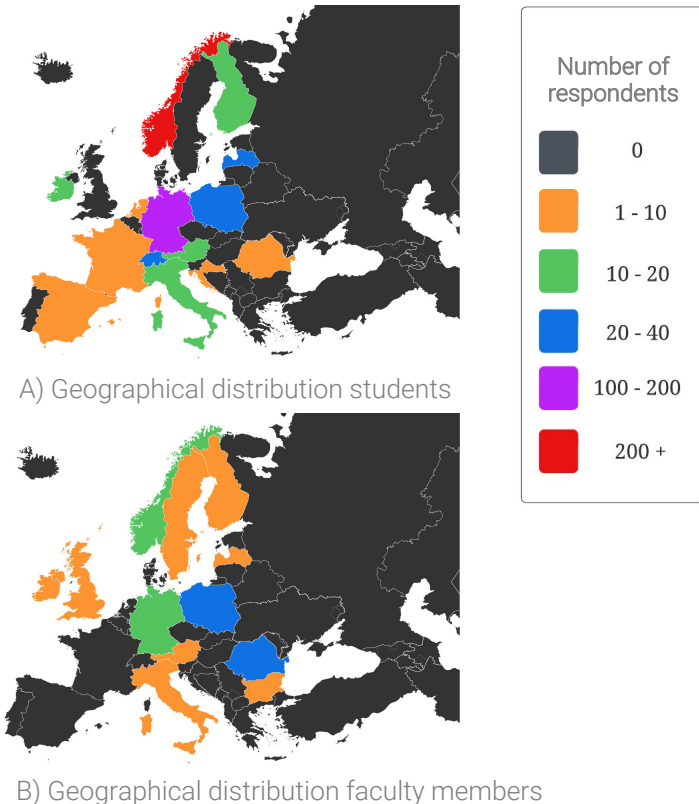
**Hypotheses:**

H1) a majority of formats used during emergency remote teaching will want to be kept long-term, post-pandemic (by both students and faculty members)



H2) attitudes towards using e-learning formats post-pandemic differ between instructors and students

- Survey open and advertised between 27.07.21 and 17.01.22 (6 months)
- **Two parts:**  
Categorical questions and demographics  
Tool use frequencies
- Responses from 17 different countries (varying degrees of representativeness)
- 1509 responses overall / **779 valid**  
after control variable and missing values exclusion  
658 valid responses from students  
121 valid responses from faculty members



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# H1: Tool Use Frequency

## Tool Use Frequency - Overall

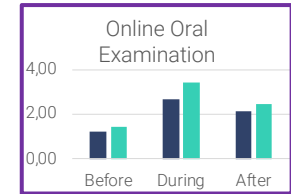
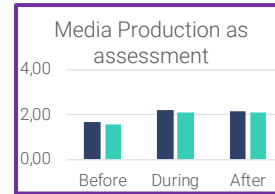
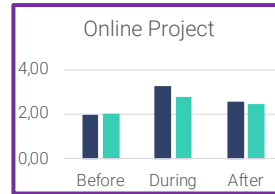
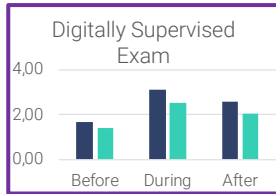
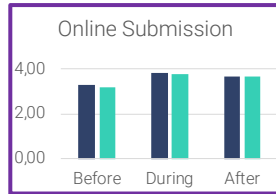
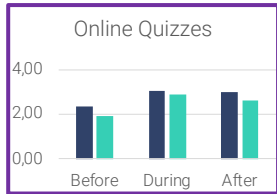
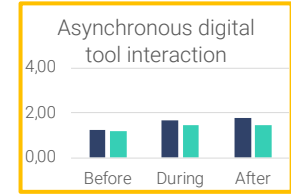
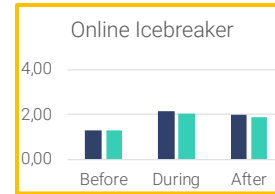
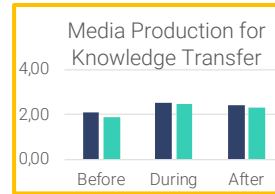
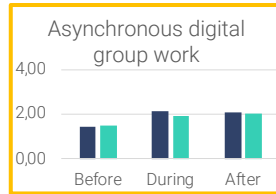
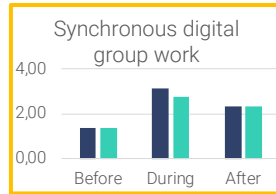
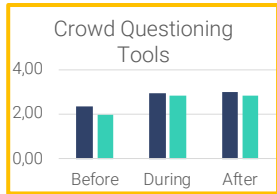
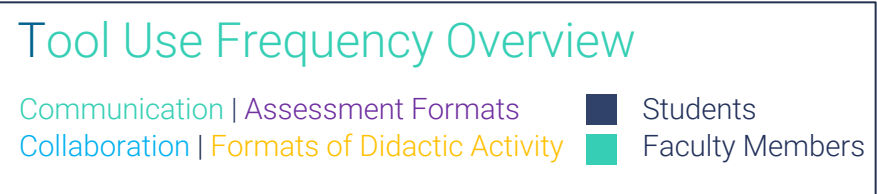
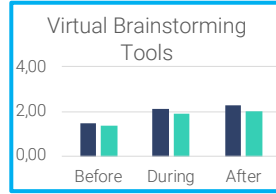
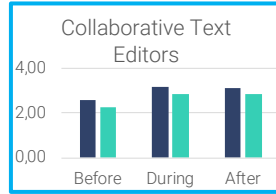
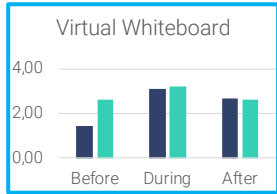
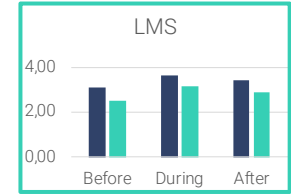
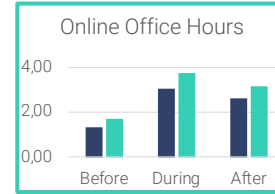
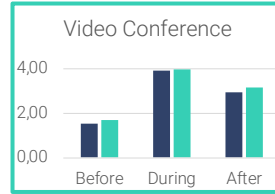
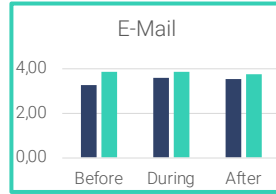
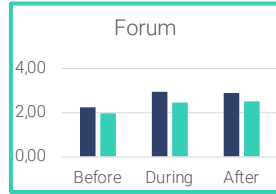
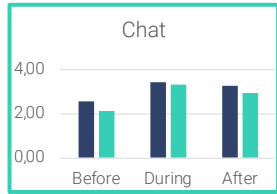
21 tools and instructional methods evaluated:

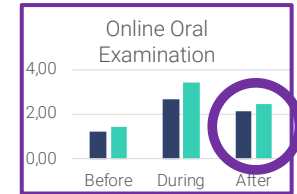
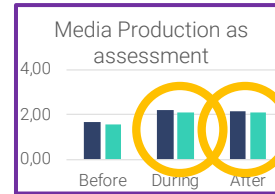
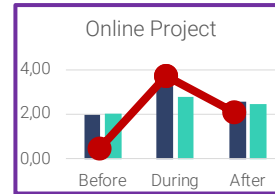
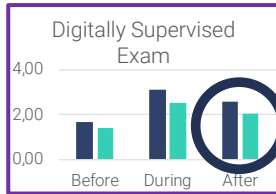
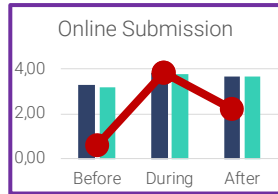
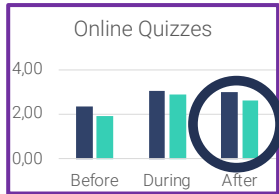
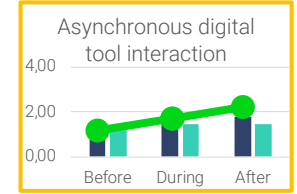
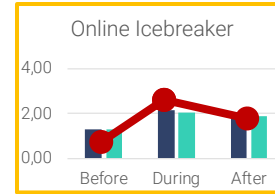
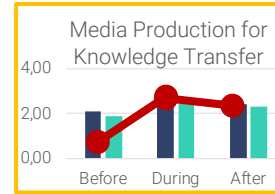
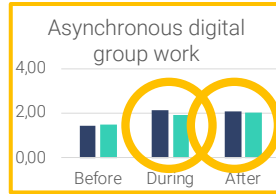
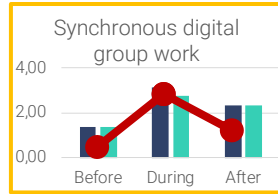
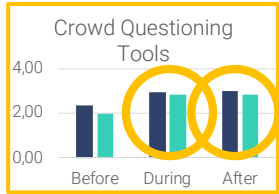
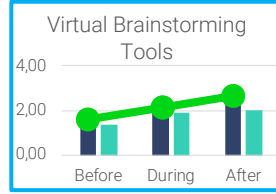
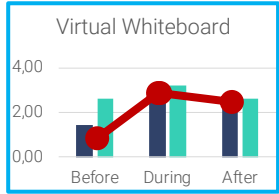
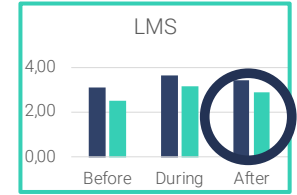
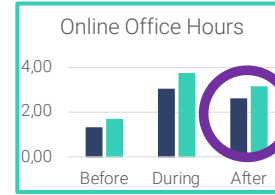
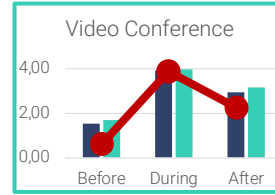
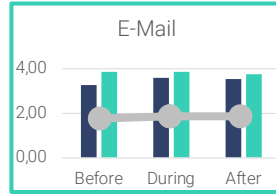
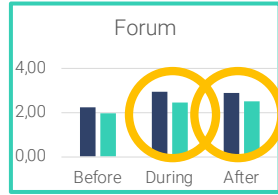
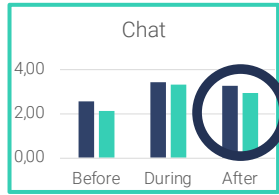
- communication (6 tools)
- collaboration (3 tools)
- formats of didactic activity (6 formats)
- assessment formats (6 formats and tools)

Three approximated time points:



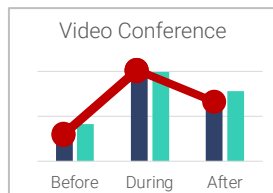
Determined on a 4-point Likert Scale (Chyung et al., 2014)  
(1 = not at all, 2 = rarely, 3 = sometimes, 4 = frequently)



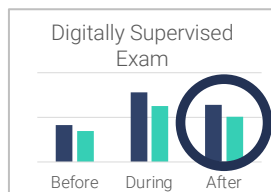


# Results

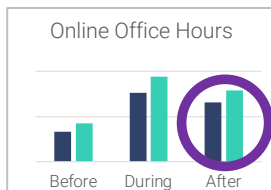
## Tool Use Frequency - Overall



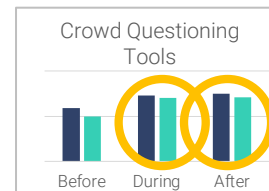
Tools that both groups would like to use at lower frequency than during the pandemic (7 tools)



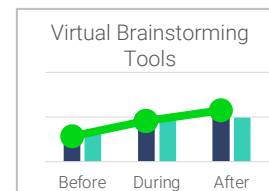
Tools that students want to use at significantly higher frequency than instructors (4 tools)



Tools that instructors want to use at higher frequency than students (2 tools)



Tools that both groups want to continue using at the same level of frequency as during the pandemic (5 tools)



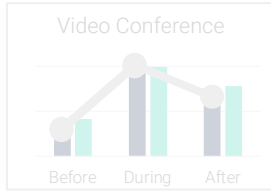
Tools which students want to use even more frequently than during the pandemic, while instructors intend to keep it at the same level as during (2 tools)



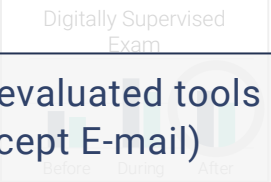
# Results

## Tool Use Frequency - Overall

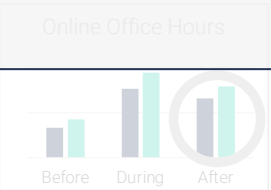
- All evaluated tools and formats significantly increased in frequency of use during the pandemic (except E-mail)



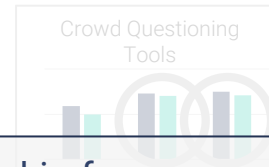
Tools that both groups would like to use at lower frequency than during the pandemic (7 tools)



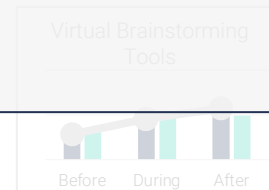
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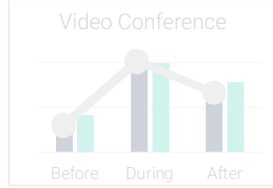
Tools that both groups want to continue using at the same level of frequency as during the pandemic (5 tools)



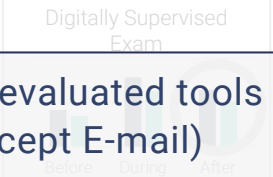
Tools which students want to use even more frequently than during the pandemic, while instructors intend to keep it at the same level as during (2 tools)

# Results

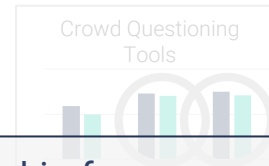
## Tool Use Frequency - Overall



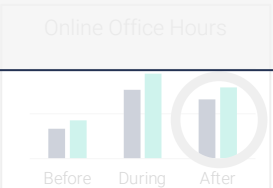
Tools that both groups would like to use at lower frequency than during the pandemic (7 tools)



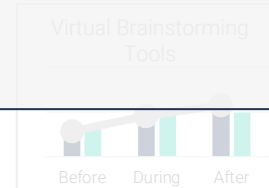
Tools that students want to use at significantly higher frequency than during the pandemic (4 tools)



Tools that both groups want to continue using at the same level of frequency as during the pandemic (5 tools)



Tools that instructors want to use at higher frequency than students (2 tools)

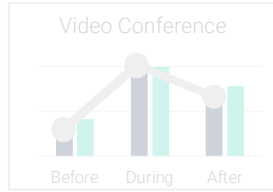


Tools which students want to use even more frequently than during the pandemic, while instructors intend to keep it at the same level as during (2 tools)

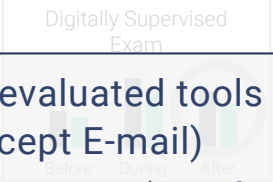
- All evaluated tools and formats significantly increased in frequency of use during the pandemic (except E-mail)
- Most tools (15 of the total 21) are intended to be used at lower frequency than during the pandemic

# Results

## Tool Use Frequency - Overall



Tools that both groups would like to use at lower frequency than during the pandemic (7 tools)

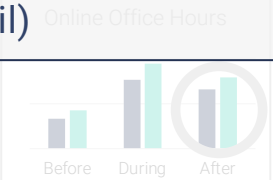


Tools that students want to use at significantly higher frequency than instructors (4 tools)

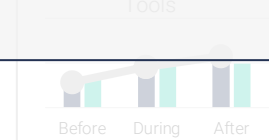


Tools that both groups want to continue using at the same level of frequency as during the pandemic (5 tools)

- All evaluated tools and formats significantly increased in frequency of use during the pandemic (except E-mail)
- Most tools (15 of the total 21) are intended to be used at lower frequency than during the pandemic
- All tools will be **retained with significantly higher frequency than before** the pandemic (except E-mail)



Tools that instructors want to use at higher frequency than students (2 tools)



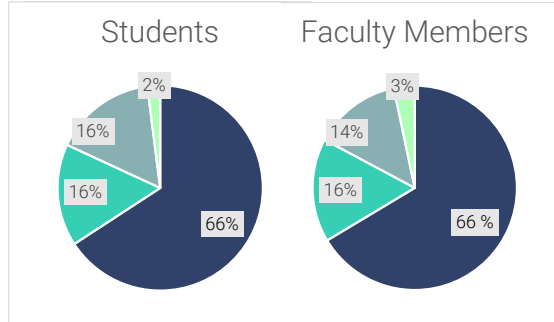
Tools which students want to use more frequently than during the pandemic, while instructors intend to keep it at the same level as during (2 tools)

H2: Attitudes toward long-term  
use of remote teaching  
and digital learning media

## Attitudes toward long-term use

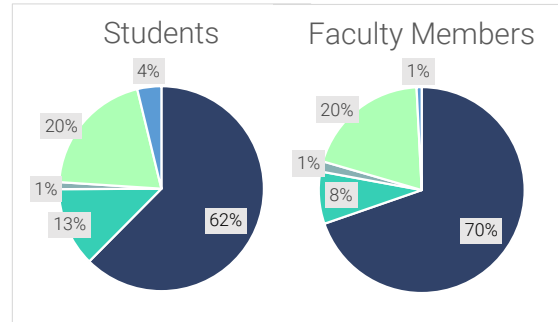
## Evaluated with three categorical questions:

Pandemic as an accelerator for the modernization of higher education



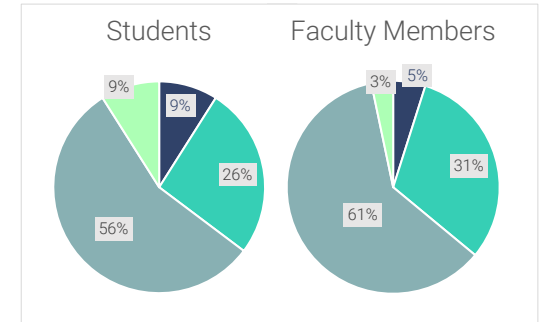
- Yes
- No
- Unsure
- Not interested

Preference toward long-term use of remote teaching and digital learning media



- Complementary Remote Teaching
- Mainly Remote
- Unsure
- Remote only in Emergencies
- Not use either again

Quality of personal interaction with each other




- Better than before
- Adequate
- Worse than before
- Unsure

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# Discussion and Conclusion

# Discussion and Conclusion

 H1) a majority of formats used during emergency remote teaching will want to be kept long-term, post-pandemic (by both students and faculty members)



**Confirmed:** All evaluated tools will be used at a higher frequency long-term than before the pandemic

 H2) attitudes towards using e-learning formats post-pandemic differ between instructors and students



**Rejected:** Attitude is comparable, however, preferences for individual tools can differ

# Discussion and Conclusion

PEU – Perceived Ease of Use

PU – Perceived Usefulness

ENJ – Enjoyment

SE – Self-Efficacy

FC – Facilitating Conditions

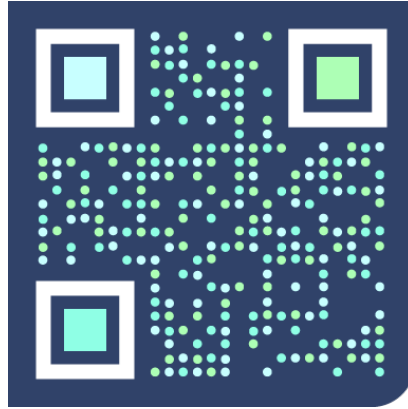
Tool types	PEU	PU	ENJ	SE	FC
Communication	X	X	X		X
Collaboration					X
Didactic Activities		X	X		X
Exam Formats	X	X	X		X

Note: Yellow = significant differences between the two groups; X = significant effect of factor on tool use frequency (at 0.05 level).



## Key Takeaways:

- Most students and faculty members similarly view the **pandemic as a catalyst** for modernization in Europe.
- Issues with quality of interactions and complementarity of digital formats: importance of **engagement in teaching and learning**.
- It is not self-efficacy that influences intended future tool use, but **perceived usefulness, enjoyment, and institutional support**
- Worth **inquiring** and **experimenting** to meet students' needs.



Thank you

**Contact**

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- Aristovnik, A., Keržič, D., Ravšelj, D., Tomaževič, N., & Umek, L. (2020). Impacts of the COVID-19 pandemic on life of higher education students: A global perspective. *Sustainability*, 12(20), 1–34. <https://doi.org/10.3390/su12208438>
- Chyung, S. Y. Y., Roberts, K., Swanson, I., and Hankinson, A. (2017), Evidence-Based Survey Design: The Use of a Midpoint on the Likert Scale, *Performance Improvement*, Vol. 56, No. 10, pp. 15–23, doi: 10.1002/pfi.21727.
- Farnell, T., Skledar Matijević, A. and Šćukanec Schmidt, N. (2021). The impact of COVID-19 on higher education: a review of emerging evidence, *NESET report*, Luxembourg: Publications Office of the European Union. doi: 10.2766/069216.
- Huth, M., Meyer, B., Westphal, L., Fischer, M. and Cominola, A. (2021) Impact of COVID-19 on Higher Education - Reviewed Literature Overview [Data set]. Zenodo. doi: 10.5281/zenodo.4727796.
- Huth, M. A., Meyer, B., Tscheikner-Gratl, F., & Cominola, A. (2022). Post-pandemic intended use of remote teaching and digital learning media in higher education. Insights from a Europe-wide online survey. In roceedings of the 50th Annual Conference of The European Society for Engineering Education (pp. 324-333). Universitat Politècnica de Catalunya.