

COVID-19 Mechanical & Industrial Engineering Education Survey, 2021

We, the academics at universities in Europe, North America and South America, who are conducting this survey, would like to ask you to complete this questionnaire which will help the academics to understand how well your learning and studying needs were supported by the transition to remote learning with the help of digital tools. The information that you provide will help your staff improve teaching and learning through better provision of learning resources. This survey will involve answering a number of questions on a 5-point Likert scale, that varies from “Strongly Disagree to Strongly Agree” and similar multiple choice questions that indicate the effectiveness and appreciation of the use of remote learning tools during the COVID-19 pandemic. It is expected that none of the questions will be distressing to you. However, if you feel distressed, you may consider placing your hand in a bowl of ice water for thirty seconds. It is made ABSOLUTELY CLEAR that participation in the study is voluntary and that any potential participant can refuse to participate. There are safeguards in place to maintain anonymity of the data provided by you. While this is an online survey, you do not need to create a login to provide your responses. Hence, we will not be storing your personal data that can be linked to your responses in any way. You may withdraw from this study at any stage by closing your browser window. The data provided by you is completely confidential and only the overall % scores from the responses provided by the classes will be used to draw inferences. The data will be shared with the academics involved in this study. Further, if necessary, the data may be used for publications in relevant conferences and journals. However, no information identifying you will be used in this process. We very much hope that you will complete this questionnaire as accurately as possible. We also hope that some of you will be willing to talk to us about your experiences at a later time in the semester. If you have any questions regarding this study, please contact the following: Principal Investigator: Dr Amar Kumar Behera Contact Email: a.behera@chester.ac.uk Thank you!

Title of Project: Multi-institutional, multi-metric evaluation of remote learning and assessment outcomes in mechanical engineering programmes of study during the COVID-19 pandemic: Indicators and guidance for future preparedness

Chief Investigator: Amar Kumar Behera

Co-Investigators: Ricardo Alves de Sousa, Valentin Oleksik, Jingyan Dong, Daniel Fritzen

By taking part in this survey, you agree to the following: 1. I confirm that I have read, or had read to me, and understand the information sheet dated 08/05/2020 for the above study. I have had the opportunity to ask questions and these have been answered fully. 2. I understand that my participation is voluntary and I am free to withdraw at any time, without giving any reason and without my legal rights being affected. 3. I understand the study is being conducted by researchers from six universities and that my personal information will be held securely on their university premises and handled in accordance with the provisions of the Data Protection Act 2018. 4. I understand that data collected as part of this study may be looked at by authorized individuals from the universities and regulatory authorities where it is relevant to my taking part in this research. I give permission for these individuals to have access to this information. 5. I agree to take part in the above study. Chief Investigator or Researcher Contact details: Dr Amar Kumar Behera Email: a.behera@chester.ac.uk

* Required

1. Select the name of your university *

Mark only one oval.

- University of Chester
- University of Washington
- University of Aveiro
- Lucian Blaga University of Sibiu
- North Carolina State University
- Faculdade SATC, Brazil
- Other: _____

2. What is your major (degree) subject ? *

Mark only one oval.

- Mechanical Engineering
- Industrial Engineering
- Economics
- Other: _____

3. What year of education are you in ? *

Mark only one oval.

- 1st year undergraduate (Level 4 - UK)
- 2nd year undergraduate (Level 5 - UK)
- 3rd year undergraduate (Level 6 - UK)
- 4th year undergraduate (Level 7 - UK)
- Masters
- PhD
- Other

4. What is your gender ? *

Mark only one oval.

- Female
- Male
- Prefer not to say
- Other: _____

5. Do you have the use of a computer at your term-time address? *

Mark only one oval.

- Yes but without internet access
- Yes with unlimited dial-up (slower) internet access
- Yes with pay-as-you-use dial-up (slower) internet access
- Yes, with unlimited high-speed (e.g. broadband) internet access
- Yes, with pay-as-you-use high-speed (e.g. broadband) internet access
- No

6. From where did you normally access the module (i.e course) prior to lockdown? *

Mark only one oval.

- Always/nearly always off the university campus (e.g. at home)
- Usually off the university campus
- Split roughly equally between on and off campus
- Usually from the University Campus
- Always/nearly always from the University Campus

7. Did you experience any technical problems in accessing this module (i.e. course)? *

Mark only one oval.

- I did not have any technical problems
- I had some technical problems but these were resolved quickly
- I had some technical problems and these took too long to resolve
- I still have some technical problems

8. Do you have the use of a smartphone ? *

Mark only one oval.

- Yes, with a limited data plan
- Yes, without a data plan but use wi-fi
- Yes, with an unlimited data plan
- Yes, but do not use wifi or data plan
- No

9. Did you use your smart phone to access the module (course) content ? *

Mark only one oval.

- Yes
- No

10. During the semester, how often did you access the virtual learning environment or VLE (such as Moodle, Google Classroom, Canvas, Zoom, Microsoft Teams, etc.) to study this module (i.e. course) ? *

Mark only one oval.

- Every day
- A few times a week
- About once a week
- A few times a month
- Once a month
- Ocassionally

11. I prefer face to face lectures to remote live lectures *

Mark only one oval.

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

12. I prefer face to face tutorials to remote live tutorials *

Mark only one oval.

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

13. I prefer face to face laboratory classes to remote live laboratory classes *

Mark only one oval.

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

14. I prefer face to face lectures to recorded lectures *

Mark only one oval.

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

15. I prefer remote live lectures to recorded lectures *

Mark only one oval.

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

16. The switch to remote learning during the COVID-19 pandemic was helpful *

Mark only one oval.

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

17. The remote lectures were as effective as face to face lectures during the COVID-19 pandemic *

Mark only one oval.

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

18. The remote tutorials were as effective as face to face tutorials during the COVID-19 pandemic *

Mark only one oval.

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

19. Remote group work during the COVID-19 pandemic was difficult *

Mark only one oval.

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

20. I preferred the remote assessments during the COVID-19 pandemic compared with traditional sit-in exams *

Mark only one oval.

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

21. Remote live lectures and tutorials are equally effective for all courses in mechanical engineering *

Mark only one oval.

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

22. Remote live lectures are better than face to face lectures for design based modules *

Mark only one oval.

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

23. Remote live lectures are better than face to face lectures for mechanics modules (statics, dynamics, fluid mechanics, thermodynamics etc.) *

Mark only one oval.

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

24. Remote live lectures are better than face to face lectures for science modules (materials science, physics, chemistry) *

Mark only one oval.

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

25. Remote live lectures are better than face to face lectures for mathematics modules *

Mark only one oval.

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

26. Lecture notes and slides on the VLE allowed me to read ahead of the lectures and prepare in advance; I knew 'what I was going in for' when I went to the lectures *

Mark only one oval.

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

27. Lecture notes and slides available on the VLE helped me to revise after lectures *

Mark only one oval.

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

28. The variety of resources available on the VLE (videos, external links, sample exercises, practice assignments) were helpful for my studies *

Mark only one oval.

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

29. The remote lectures enabled me to ask questions that I normally find difficult to ask in classes/lectures *

Mark only one oval.

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

30. The VLE helped me to communicate with other learners who are doing the same module *

Mark only one oval.

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

31. The VLE helped me to revise and learn at places and times convenient to me *

Mark only one oval.

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

32. Mobile apps should be increasingly used for this module in the future *

Mark only one oval.

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

33. Announcements on the VLE enabled me to plan my study time/how I spend my time in the university *

Mark only one oval.

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

34. The VLE enabled me to study effectively *

Mark only one oval.

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

35. What were some of the key challenges for you personally during this pandemic when it comes to your education?

36. Was the remote learning experience better or worse than face to face instruction? Why or why not?

37. What could be done differently to ensure a better learning experience when learning remotely?

38. Are remote assessments helpful? Why or why not?

39. In your opinion, what innovations in digital learning can help alleviate perceived challenges in remote learning?

40. In your opinion, what innovations in digital learning can help alleviate perceived challenges in remote assessment?

41. Can remote engineering education completely replace face-to-face instruction? If so, to what extent?

42. Comments

For SurveyCircle users: The Survey Code is: QCFZ-96Z8-692H-HLY8

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