

# Tools for improving student motivation used during online teaching in higher education due to Covid-19

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**Abstract**— A study has been conducted to investigate which tools teachers in higher education have chosen to use to improve student motivation during the forced transition to online teaching due to the Covid-19 pandemic. Previous investigations have focused on the student perspective and response to the forced change to online teaching and learning. This paper focuses on the teacher perspective, investigating how conscious of student motivation teachers have been as part of this transition and which tools teachers have chosen to use to improve this motivation. A distinction is made between courses traditionally designed as online courses from the outset and those where the change to online teaching was specifically made due to mandatory changes during the pandemic. The reason for this distinction is that we believe that courses specifically designed from the start to be online are typically more grounded in online methods than those where the change to online teaching was unexpected, rapid and often undesired. The study is based on a survey to teachers in higher education from different countries, with an emphasis on Sweden.

**Index Terms**—student motivation; teaching tools; online teaching and learning activities; Covid-19; higher education

## I. INTRODUCTION

ONE of the most important parameters governing the study results of a student, is the students' own motivation [1]. Hedin [2] found that student motivation is influenced by whether the student expectations agree with reality, and whether teachers are adequately able to communicate the subject relevance to maintain student interest.

Turner and Paris [3] devised a model, the six Cs, that addresses various aspects of the learning environment and relates these aspects to student motivation. In this model, the six Cs are Choice, Challenge, Control, Collaboration, Constructing meaning, and Consequences. Clearly, student motivation is multifaceted, but it can be difficult to penetrate how to relate these multiple facets to teacher and learning activities (TLAs) development.

In 2020, the Covid-19 pandemic abruptly changed the setting for many courses in higher education, forcing teachers to immediately shift the on campus course to online

teaching. These changed conditions affected the students, in many cases depriving them of the possibility for daily face-to-face interactions with teachers and classmates. Some recent studies have focused on how students have perceived the change in teaching from on campus to online [4]. In some cases the transition to online teaching has led to improved student performance [5], while others have found evidence of reduced performance [6].

This paper will explore teacher understanding of student motivation and investigate the tools teachers use to tap into student motivation, in particular against the background of changes made in response to the Covid-19 pandemic.

## II. THEORY

Motivation can be defined as the driving factor to actions [7]. Typically, motivation is divided into “intrinsic” and “extrinsic” motivation, where intrinsic motivation relates to some inherent satisfaction gained from conducting a given activity rather than due to some external consequence [8]. In contrast, extrinsic motivation relates to conducting an activity to attain some separable outcome. As age increases, extrinsic motivation can be seen to be increasingly dominant, e.g., as individuals become more aware of social constraints. A high level of intrinsic motivation can, however, increase personal commitment to a specific outcome and be a significant positive force for teachers and students alike.

Turner and Paris [3] identified that motivation could be divided into a number of underlying categories. Their study developed this taxonomy in relation to literacy in first grade students, the “six Cs”, specifically named to facilitate teacher memory of critical aspects to help motivate learning in support of intended learning objectives: Choice, Challenge, Control, Collaboration, Constructing meaning and Consequences. While the six Cs were developed outside higher education, it has been argued that they relate very well to teaching in higher education [7]. The six dimensions of motivation are all founded on open-ended tasks, designed to improve intrinsic motivation.

## III. METHOD

In order to investigate teachers' thinking about student motivation and which tools they use to harness student motivation a survey was developed and distributed to teachers from four countries (the majority from Sweden). The survey was developed based on an investigation of existing research and through discussions in the author group. As the focus of this presentation is on tools used by

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teachers during the pandemic to improve student motivation two main questions from the survey are investigated:

1. What tools have you used as a teacher to motivate students in online teaching?
2. What insights have the changes during the pandemic provided?

The survey was first tested on two teachers at Lund University. Discussion with these teachers and analysis of their answers, resulted in minor reformulation of the questions before the full survey was launched. The sample for survey distribution was based on contacts to teachers in higher education within the project group. In total, 76 survey invitations were distributed and the rate of reply was approximately 61%. While the survey was distributed internationally, the majority (65%) of answers were received from teachers at Lund University. Further, while education was largely remote in higher education in all of the countries included in the survey, there were major cultural differences in how strict the pandemic lockdown was. No attempt has been made to correct for such potential cultural differences.

#### IV. RESULTS AND DISCUSSION

The majority of teachers involved in the survey reported that they were highly conscious of student motivation as a factor in attaining individual learning objectives (ILOs). Close to 72% reported a positive alignment with the statement “student motivation lies at the core of how I develop my course” about the degree to which they consciously try to use student motivation to improve their students learning. Less than 10% reported that they only consider student motivation to a small degree.

Concerning tools that were used to harness student motivation, the free text answers were analysed and categorized into seven main themes: test, assignment or project, discussion, teaching material content, teaching, learning, and feedback. A summary of the technical tools identified by teachers is included in Table 1 while the categorized free text answers and their relationship to the six Cs are summarized in Table 2.

TABLE 1  
SUMMARY OF IDENTIFIED TOOLS

Evaluation/Interaction	Teaching	Communication
Programs for quizzes: - Canvas - Kahoot - Padlet - Mentimeter - Mosquito - Socrative	Programs to give lectures: - Teams - Zoom - EIDUCO - Wacom tablet	Programs to give information: - Email - Canvas

The final question allowed respondents to add extra comments, which 30 of 46 did. While the respondents were free to add anything they wished, an example was given “what insights have the changes due to the pandemic provided” nudging the respondents to comment on the impact of the pandemic on their online teaching strategies.

One recurring comment was the longing for the on campus classroom. At times this comment was motivated because the teacher preferred it personally, sometimes because of positive aspects for student learning. One

example comment was that “the campus environment is probably the most important thing we have!”. The teachers own motivation for the online format has an impact in itself, e.g., one wrote, “at the end of the day, I do online teaching out of duty, it is not a preference although it has unique qualities”. There were also those who pointed out that the online teaching worked fine, including those who mentioned that they have learned a lot from this experience. One typical comment was that the pandemic has forced the teacher to “become more digitally fluent”.

TABLE 2  
SUMMARY OF FREE TEXT ANSWERS CONCERNING TOOLS TO IMPROVE STUDENT MOTIVATION AND RELATION TO TURNER AND PARIS [3] SIX CS

Theme	Action	Relation to six Cs
Test	Polls or quizzes	Consequences
Assignment or project	Interactive tests, group assignments	Collaboration
	Free choice of project	Choice or Control
	Challenging students with ideas related to course content	Challenge
	Asking individual students to demonstrate solutions in public	Consequences
Discussion	Breakout room discussion	Collaboration
	Group discussion	Collaboration
Teaching material/content	Engaging and relevant	Constructing meaning
	Relating content to life	Constructing meaning
	Real world examples	Constructing meaning
	Case studies	Constructing meaning
Teaching	Video lectures, on demand	Control
	Online live lectures	Constructing meaning
	Guest lectures	Constructing meaning
	Former students as mentors	Challenge
Learning	Self-studies under guidance	Choice and Control
Feedback	One-on-one video meetings, private chat	Consequences
	Peer feedback	Consequences
	Availability to ask questions and get feedback	Consequences
	Stick and carrot	Consequences

In the free text answers, many seem to identify that a solution to student motivation could be through helping the students to be active in their learning, by collaborating with their fellow students, and that a change in the ability to collaborate had been found to be challenging from a motivational point of view.

Collaboration between students is a method that many teachers use to improve student motivation. The ability of teachers to use this method was clearly changed by the forced transition to online teaching during the pandemic. The results of the survey at the University of Copenhagen [9], corroborated the findings of this study that there is a need to create a better social environment for the students in online courses. The special situation due to the pandemic could also have exacerbated the situation due to the increased risk of isolation in general. It is possible that the fact that the forced transition to online teaching has created a bias in terms of how highly the teachers value the collaboration as a method to increase student motivation, as this is something that has been very tangibly changed when moving from on campus to online teaching and learning.

## V. CONCLUSION

In summary, many factors affect student motivation, and not all of them are things that the teacher can affect. Further, it was noted that it is hard for teachers to tell how motivated the students are in the online setting. Tools were chosen to improve student motivation using all of the six Cs, but with a focus on leveraging collaboration and constructing meaning. There appears to have been additional focus by teachers on methods of communication such as email and through teaching platforms like Canvas, given that the opportunities for communication through lectures were somewhat curtailed due to the pandemic.

The work represents an exploratory study into the important question of student motivation and how this can be harnessed in support of ILOs with a particular focus on the impact of the forced transition to online learning recently due to Covid-19. Much remains to be studied concerning lessons learned from this transition and the impact of the transition on student learning in 2020-2021. The question of how teachers might reliably observe how well motivated students are and how they can use this observation to actively work with student motivation is a topic for further study. Further, it would be interesting to investigate the question of pedagogical tools in more detail to identify whether specific tools can be used to enhance student motivation based on which tools teachers have found most useful and why.

The work presented is an extract from the results of the full survey. More details can be found in Ruhe et al. [10].

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