



# Improving Student Engagement in Online Courses through Interactive and User-Centered Course Design: Practical Strategies.

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## Abstract

The COVID-19 pandemic forced many teachers in higher education to move their courses online. Recent research on online teaching indicates that students and teachers experience challenges with the online mode. Students express less positive feelings towards synchronous online learning, concerns about lower academic performance, and dissatisfaction with the way lecturers adapt their teaching to the online environment. These findings warrant a re-examination of current practices. This article presents a set of research-based online teaching strategies meant to promote student engagement and motivation. The strategies are illustrated with practical examples of the authors' own experiences with online teaching in higher education. While this article primarily targets teachers who are planning their first online courses, it will also be useful to those who wish to enhance the quality of existing online courses.

## Keywords

online teaching, digital teaching, higher education, student engagement, motivation, social interactivity

## Introduction and Problem Statement

When the COVID-19 pandemic struck, with its apocalyptic scenes of lockdowns and people lining up to have 6-inch-long swabs inserted in their noses, one of the most dramatic changes for teachers and students was the emergency transition from face-to-face to online instruction. With the need for a quick transition, many teachers and students plunged into this challenge underprepared and without knowing what to expect or how to solve problems that would arise.

A survey amongst approximately 4,000 Norwegian university students indicates that students experience varying quality in the online courses, and one third of the students consider the quality of the online courses as low (Slate Centre for the Science of Learning & Technology, 2020-1). More than half of the students feel less actively involved in online classes, they experience lower motivation for online learning, and they find it harder to study online than in face-to-face classes. Sixty-three percent of the students report loneliness, lack of social interaction with other students, and they miss feedback from peers (Eliassen et al., 2020).

However, in a survey amongst almost 500 Norwegian teachers in higher education, 74% of the participants reported feeling competent enough to deliver their courses online (Slate Centre for the Science of Learning & Technology, 2020-2). These findings indicate that there may be a mismatch between students' and teachers' experiences in evaluating the quality of online teaching, and many teachers in higher education may benefit from information on how to enhance their online teaching.

For many teachers, the transition to online courses meant adopting an entirely new approach to teaching. However, many did not adapt their teaching to the changed conditions, as the most dominant form of online instruction continued to be real-time video conferences (Aristovnik et al., 2020). It seems that many beginning online teachers simply took their face-to-face courses and transitioned them to an online video format.

Unfortunately, research shows that such face-to-face teaching methods do not work well online. Traditional lecturing in online courses can promote student passivity towards the course material (Brinkley-Etzkorn, 2018, p. 31). Yet, a systematic review by George and colleagues (2014) suggests that, with the right design, online learning is equivalent or superior to traditional learning. Indeed, high quality online courses – where the design is based on research recommendations – may be as effective or more effective than face-to-face learning when it comes to students' understanding of the course content, motivation and satisfaction, and students may even get better grades in courses that are delivered online (Soffer & Nachmias, 2018).

Designing a successful online course requires consideration of the unique elements of the online learning environment, such as time and space dispersion of participants, the sense of isolation which online learning can create in students, and the lack of spontaneous face-to-face interactions. To be successful online teachers, we must treat online learning spaces as different from the face-to-face classroom.

## **Aim of the Article**

We consider the needs of teachers who are relatively new to online teaching. With this audience in mind, we propose course-building strategies designed to create effective and satisfying learning experiences for students. More experienced colleagues may benefit from our evidence-based suggestions by becoming more aware of their online course design. The approaches suggested in this article will serve educators well beyond the COVID pandemic as many universities across the globe continue to expand their online course offerings to provide increased access to new student populations, retain “non-traditional” students, and use existing physical space on campus better.

The purpose of this article is to provide educators with research-based strategies for how to enhance student motivation and increase their engagement. Each of the strategies is followed by practical examples, based on the authors' personal experiences with online teaching in higher education. By combining research-based strategies with professional experience, this article contributes to the field of evidence-based online teaching practice.

## **Effective Online Teaching and Learning: A Brief Review of Research**

Teaching may be considered effective when students improve their academic achievement (Good et al., 2009), and several strategies may lead to this desired outcome. In this section, we present a brief review of research on three crucial areas for effective online teaching: 1)

the importance of student engagement for learning, 2) the need to design for social interactivity, and 3) applying a user-centered approach to the organization and presentation of course materials. This is not an exhaustive list of what is important in online courses, and other areas such as assessment and examination forms may also affect students' engagement with a course. However, we choose to focus on these three areas because they have shown the strongest impact on the effectiveness of online learning (e.g., Kintu et al., 2017; Marks et al., 2005). Research suggests that interactive online learning and a user-centered design increase student engagement and satisfaction with the course (Ha & Im, 2020; Greer & Harris, 2020), which in turn is crucial to students' learning. In addition, it is these three areas that beginning online teachers most often struggle with when designing their online courses (Zemliansky, 2021). Our purpose is to situate our practical strategies in the key research findings rather than to construct an exhaustive review of the research on online learning.

### The Importance of Student Engagement in Online Courses

El Firdoussi and colleagues (2020) found that up to 70% of the students in their study prefer face-to-face teaching, and that students are not satisfied with the online teaching provided by their professors during the pandemic. Students report that their negative experiences with online instruction have an adverse effect on their academic performance (Aucejo et al., 2020), their motivation and concentration (Besser et al., 2020), and their academic progress (Hope, 2020). However, students seem mainly dissatisfied with courses that do not engage and motivate enough. Higher levels of student satisfaction with online courses are associated with higher levels of motivation, which, in turn, leads to better learning (Bekele, 2010; Pintrich & Schunk, 2002). This suggests that students experience a clear connection between good course design and successful learning (Song et al., 2004).

Research also indicates that students respond more positively to online courses which take into account the unique affordances and challenges of online learning. In particular, students respond positively to teaching that uses a variety of teaching methods and different ways of presenting course material (Osman, 2005; Gaytan & McEwen, 2007). If higher levels of motivation can be achieved by designing courses specifically for online environments, as these findings suggest, it is advisable for teachers to consider their course design carefully.

### The Importance of Social Interactivity in Online Courses

Picciano (2002) and Wanstreet (2006) call social interactivity the defining characteristic of successful online courses. In addition, studies have shown that courses with a higher degree of social interactivity led to better student perception of those courses (Russell et al., 2016; Shea et al., 2001). Students are more motivated and engaged in courses with significant, meaningful student-to-teacher and student-to-student interactions and with infrastructures for ongoing formative feedback built in (Lao & Gonzales, 2005; Toven-Lindsey et al., 2015).

In addition, if educators succeed in building social presence in online course, this may help combat the sense of isolation that some online students feel (Aragon, 2003). In a comparative study of online and hybrid courses, Sellnow-Richmond and colleagues (2020) found that students desire more interaction with peers and instructors in courses that are fully online. Given the importance of this interaction for students' learning, teachers need to integrate opportunities for social interaction in their online courses.

Related to the interactivity aspect of online learning is the challenge of creating social presence in online courses. The term "social presence" refers to the feeling of being present with a real person in a virtual environment (Oh et al., 2018). Garrison and Akyol (2013) connect social presence to the community of inquiry model. This theoretical framework

includes three overlapping elements, all of which are necessary for successful online learning: cognitive presence, social presence, and teaching presence (Garrison & Akyol, 2013, p. 106). The community of inquiry framework encourages the construction of higher-level critical thinking and meaningful educational engagement. Therefore, social presence in online learning should serve the purpose of supporting “critical inquiry...probing questions, scepticism...” (Garrison & Akyol, 2013, p. 107). Within this model, social presence is crucial for enabling learning and achieving desired learning outcomes through online courses. Castellanos-Reyes (2020) also underscores the importance of designing around interactivity and the importance of interactivity for critical thinking and deep learning.

### User-Centered Design for Online Learning

Designing an online course is a “from the ground up” process, requiring teachers to think of themselves not only as content experts, but also as instructional designers (Cook & Grant-Davie, 2016). Course materials should be presented in a well-organized, predictable fashion and in multiple ways. Furthermore, a consistent presentation and modulization of course content is also important (Shea et al., 2002).

In the development of course material, the key idea of user-centered design is important. The term “user-centered design” refers to a way of thinking about constructing online courses which prioritizes the needs of the learner over concerns about technological tools or even, to an extent, what course material to include (Blythe, 2001). User-centered design is fluid, taking the ever-changing needs of the user in mind. In practice, this may mean studying specific students’ needs before and during the course development, or involving students in a collaborative design of course projects.

## Practical Strategies for Improving Online Teaching through Higher Student Engagement

In this section, we present and discuss several practical strategies for effective online course design. Our choice of strategies is guided by the above-mentioned research on three of the crucial areas in online teaching, and we use our professional experience from teaching students in higher education (postgraduate courses in special education, courses in rhetoric, and writing studies) to illustrate these strategies with concrete examples.

### Strategy 1: Build a socially interactive learning environment

Student-to-student interaction and teacher-student interaction have shown a strong and positive correlation with academic achievement, and this social interaction may have a stronger impact on students’ learning outcomes than any other instruction-related variables (Schneider & Preckel, 2017). Moreover, student-to-student interaction is a significant predictor of student satisfaction (Parahoo et al., 2016), and student-connectedness has been found to play an important role in students’ learning (MacLeod et al., 2019). Yet, this social interaction that often occurs spontaneously in face-to-face teaching may not take place in online teaching unless the teacher plans for it. Galyon and colleagues (2016) suggest that group cohesion is lower in online classes, and students may feel more isolated than in face-to-face courses (Kebritchi et al., 2017). Therefore, online teachers need specific tools to ensure that students can identify with a group and that they encounter an online environment that stimulates social interaction.

Thomas and Thorpe (2019) highlight the need for *teacher presence* or *instructor immediacy* in online courses. We find that adequate communication skills, friendliness,

respect and helpfulness towards students, and teacher-accessibility, are prerequisites for successful online teaching. Easy strategies that we employ to create a comfortable atmosphere may be to spend a couple of minutes on small talk before starting the online class, and by checking regularly how students are doing throughout the online interactions simply by asking them. Furthermore, we find that giving students a choice whether to ask questions or comment either orally or by writing in a chat is an effective way of including students who are reluctant to speak in the online classroom. We also have positive experiences of obtaining teacher presence by establishing regular online meeting points, for example, a fixed hour once a week, so that students know when they can reach the teacher to get help with a problem. Motivational e-mails and short announcements to students is another way through which we achieve teacher presence in online classes.

Group cohesion and student-to-student interaction are equally important when planning online teaching. Schneider and Preckel (2017) found that providing students with group tasks, where they need to collaborate to solve the task and where each student has individual responsibilities, are effective strategies to improve learning outcomes. In our experience, choosing appropriate tasks may also be beneficial to the process quality of the group work. Here, we find it essential that tasks are clearly defined, so that students know what is expected of them. Moreover, our students report that if they are given time to prepare before group activities, this improves the quality of both student interaction and group output. For example, if students are to be asked to discuss certain questions in smaller groups during an online class, we may give students the questions some days ahead. This way, they can meet prepared, time will be spent more efficiently, and satisfaction with the group work is likely to increase.

### Strategy 2: Stimulate student motivation by integrating a variety of tasks into the course

As Pintrich (2003) suggests, providing students with a variety of stimulating and interesting tasks, activities, and materials contributes to higher levels of intrinsic motivation. Therefore, online course development requires that teachers employ a toolbox with pedagogical strategies that will ensure student motivation and engagement during the course.

While there are no limits for creativity in the online classroom, space limitations force us to select only two examples of pedagogical strategies that we find work well online for the purpose of enhancing student motivation. *Short writing tasks* may be used as a pedagogical tool to introduce students to a new topic, to help them understand context and explore connections, to gain insight, or to promote deep learning (Dysthe et al., 2010). Since much of the communication in online courses happens through writing, teachers may use a “writing to learn” approach (Molina & Colombo, 2021), that is, include frequent, small and easy-to-assess writing tasks that encourage critical thinking and knowledge construction as a way of engaging students with a course and enhancing learning outcomes. For instance, at the beginning of an online class, we may ask students to write for two minutes, jotting down everything they know about the topic of the day’s course. Such a writing task may help activate students’ knowledge on the topic, and we use it, for instance, as a starting point for group discussion. This task may also be purposeful for identifying gaps in students’ understanding of a topic, as students may actively use their own texts to formulate questions about what they would like to find out about a particular topic. We also have positive experiences of using short writing tasks at the end of a lesson or course for students to summarize course content, as it may be more stimulating for students to actively summarize what they consider the essence of a course, rather than receiving the teacher’s paraphrase. *Mind mapping*

may be used as a resource in online teaching in a variety of ways. With its visualization of a particular topic, mind mapping may be an effective strategy for students to prepare for and review lectures; it may function as a road map to guide group activities, or it can even be used as an examination tool (Edwards & Cooper, 2010). For instance, in our own practice, we have asked students to draw a mind map based on a research article that they have read, and the mind map may then be used by a student to explain the content of the article to other students in the group. This type of activity may help students gain an overview over the article's content, and, if desirable, the teacher may provide students with guiding questions for which content to include in the mind map. We find that, for students who are new to using mind maps, supporting questions may help them think analytically and distinguish between essence and details. Drawing a mind map may also be used as a summarizing activity at the end of a class, and students may present their mind maps to each other in small groups. If students are informed that this task is awaiting them at the end of the class, we feel that this heightens their attention and critical reflection during the class.

Each of these strategies allow students to engage with the course not only individually, but also through peer interaction and through teacher-student interaction. Moreover, the activities are well suited to stimulate knowledge application, reflection, and analytical thinking, thus providing ample opportunity for students to expand their understanding of a topic.

### Strategy 3: Stimulate student engagement and commitment by meta-communicating about the learning process

Meta-communication is a familiar concept within therapeutics, and it generally refers to *process comments* in the therapist-client relationship. Meta-communication implies that therapist and client communicate about their communication, relationship, and the therapeutic process with the purpose of enhancing therapeutic outcomes (Calvert et al., 2020). We find that this technique may also be valuable in online education. Meta-communicating with students about learning, by asking questions such as “What is learning?”, “What is the purpose of this task?”, and “How do you learn optimally online?”, engages students in a conversation about their own learning process. Using meta-communication, students may gain a better idea of how learning occurs, which barriers may hamper their learning, and which supports that are available to improve their learning.

Also, asking open questions about the way students and teachers fulfil their respective roles may add valuable input to the learning and teaching process. In our experience, all too often, students (and some teachers) hold the perception that knowledge will be transferred from the teacher to the student, in some form of asymmetrical messenger-receiver communication. This understanding of learning as an “absorbing” of course content may make students passive in their own learning process. Therefore, it is important to communicate with students about how they assume that learning occurs, and what their own role is in the learning process. If students are put in charge of their own learning process, we need to be certain that they have an adequate understanding of what learning is and how it happens. This is especially so in online teaching, where students often need to mobilize more self-initiative. Establishing a reflective practice about the learning process may be beneficial to this understanding, particularly for students who are at the beginning of their student careers.

### Strategy 4: Provide Ongoing Formative Feedback

Ongoing formative feedback is an important tool for creating social interactivity in online courses and for designing a student-centered course. By its very nature, formative feedback is separate from assessment, as its purpose is to provide directions for further learning, not evaluate how well students have done on a past assignment (Shute, 2008).

In online learning, providing ongoing formative feedback is crucial for several reasons. Besides being a vehicle for continuous realignment between what a course is teaching and what students are learning, formative feedback contributes to the sense of social presence and community, which is so important for online courses. Regular formative feedback helps students see themselves as part of a learning community, not just individuals who send assignments into the void of the internet (Gikandi, Morrow & Davis, 2011). In addition, ongoing formative feedback allows us to construct scaffolded and sequenced learning experiences for our students, in which every new assignment builds on a previous one, thus enabling a student-centered course design with a gradual build-up of knowledge and skills (Shute, 2008).

Formative feedback can come both from the teacher and from peers. In our own practice, we have used informal open-ended discussion questions that students can respond to on discussion boards such as Canvas or Blackboard, and we respond with further questions, prompts, and so on. This way, the class conversation is moved forward, and we gain valuable insight in students' understanding and thinking.

Formative feedback can also come in the form of peer-learning, such as through peer-reviews of paper drafts by other members of the class. The tradition of peer learning and peer review has a rich history in the scholarship of teaching and learning, particularly in writing studies. Hart-Davidson (2014, p.221) calls peer learning "deliberative practice" and makes a compelling case for how such practice contributes to student learning. If using peer-learning and peer-review, students need to be shown how to be effective at those tasks via models and plenty of opportunities to practice. For instance, students may be given instructions for what to look out for when giving feedback. One approach is the "Question – Quote – Comment" as described by Eng (2017). With this approach, students are asked to provide feedback in the form of one question (e.g., in order to clarify content), one quote that highlights a particularly eloquent or inspirational part of a task, and one comment that may provide direction to future work. With such instructions, we experience that peer feedback is enhanced, resulting in more effective learning for both those who give and those who receive feedback. Again, this should also be meta-communicated to students in order to improve efforts and outcomes.

#### Strategy 5: Introduce elements of user-centered design in your online course

User-centered design and user-centered thinking place the needs and characteristics of the learner at the center of the course design process (Blythe, 2001). User-centered design begins with the understanding of the learners' current level of knowledge on the subject that is being taught. When possible, user-centered course designers also involve students in course and assignment design. According to Blythe (2001), a practical way of achieving this may be to begin the class by asking students about their study and technology use preferences. (Blythe, 2001, p. 331). Having such knowledge at the outset of a course allows the instructor to adjust forthcoming assignments to the needs of the specific group of students.

Boelens and colleagues (2018) state that personalizing and adapting the learning environment to students' varying needs, competences, and prior learning experiences is pivotal for enhancing the quality of students' learning. Such adaptation may be achieved by differentiating content, process, or product (Tomlinson & Imbeau, 2013). For instance, students may be offered to work towards a learning goal via different paths, depending on their preferred learning style, and course content may be presented in varying forms and media (text, video, audio, etc.). Other user-centered approaches may include a variation between individual and group projects. More advanced course designers may consider individualizing tasks and learning pathways for students of different levels.

Here, we wish to share positive experiences with asking students for input about which topics they wish to address during a course, or even which guest lecturers they would like to invite. For instance, we left certain time slots in our course blank at the beginning of the semester, open for students' input as to how these could be filled. This way, we invite students into the professional community, where they experience that their voices are being heard and their opinions matter. Most likely, such experiences will contribute to more engagement and higher motivation for learning.

## Conclusions

Research suggests that many teachers in higher education struggle with designing high quality online courses. In this article we have presented a set of practical teaching strategies, grounded in state-of-the-art research in online learning, and illustrated with practical examples from our own teaching.

Creating a successful online course is about designing a flexible learning environment for students, strategically blending synchronous and asynchronous means, providing active learning tasks that enhance student motivation and engagement, and creating multiple opportunities for students to interact with one another and with the teacher.

Too frequently, beginning online teachers start by asking questions about specific technological tools and platforms, trying to replicate the face-to-face classroom online. However, preoccupations with technology must take a back seat to conversations about pedagogy and course design. Online courses allow us to transcend the confines of a physical classroom, and we are, therefore, not limited to real-time course delivery via video, though we should use it if it makes local sense. We must also learn to recognize and employ the power of asynchronous learning, done through learning management systems and other asynchronous tools. Effective online learners and teachers thrive on engagement, flexibility and interactivity, and we must use a full range of methods and tools to achieve this.

In order to facilitate the transition from technology-based to design-based thinking, researchers in education and other related fields should continue to study the impact of the design of online courses on student engagement, motivation, and learning. In particular, it may be relevant to explore experiences across different countries and educational systems and to investigate specific student and teacher populations. Such information may help us prepare for non-conventional contexts such as the recent global pandemic.

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