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# Educational Landscapes During and After COVID-19

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## ABSTRACT

The coronavirus (COVID-19) pandemic has forced an unprecedented global shift within higher education in the ways that we communicate with and educate students. This necessary paradigm shift has compelled educators to take a critical look at their teaching styles and use of technology. Computing education traditionally focuses on experiential, in-person activities. The pandemic has mandated that educators reconsider their use of student time and has catalysed overnight innovations in the educational setting.

Even in the unlikely event that we return entirely to pre-COVID-19 norms, many new practices have emerged that offer valuable lessons to be carried forward into our post-COVID-19 teaching. This working group will explore what the post-COVID-19 academic landscape might look like, and how we can use lessons learned during this educational shift to improve our subsequent practice. The exploration will strive to identify practices within computing that appear to have been improved through exposure to online tools and technologies, and that should therefore continue to be used in the online space. In the broadest sense, our motivation is to explore what the post-COVID-19 educational landscape will look like for computing education.

## CCS CONCEPTS

• **Social and professional topics** → **Computing education.**

\*Working group leader

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## KEYWORDS

COVID-19; coronavirus; computing education; online education

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## 1 BACKGROUND

At the time of writing, mid-2021, we are still in the middle of the COVID-19 global pandemic. While some provisions have been made to facilitate a safe return of students to campus, most teaching is still conducted online, as has been the case for the totality of the current academic year for many institutions. This educational shift has acutely impacted subjects which, traditionally, benefit from in-person activities such as guided labs, experiential learning activities and tutorials. These traditionally in-person activities have been augmented through the use of various technologies and innovative pedagogies to transition to an online environment over the course of the academic year.

Prior to the pandemic, much work has taken place to explore concerns experienced by students transitioning into higher education [7, 8, 11, 13]. Students transitioning into higher education during the COVID-19 pandemic encountered an entirely new learning, teaching and assessment reality, and especially through their experiences of “emergency remote teaching” in 2020 [1, 10]. In parallel, the rise of online and hybrid coursework and programs has brought with it investigations of online content delivery. As a community, while we have undertaken pedagogical work to teach students in

the online environment [3, 5], the current, pandemic-affected students are not traditional online learning students – rather, they are face-to-face students who have been forced to rapidly adapt to diverse online learning provision [10, 12]. It is thus important to capture and analyse both faculty and student experiences and innovations, so as to reflect on lessons learned from these to better inform emerging policies and practice as we move towards a post-COVID-19 educational landscape.

While COVID-19 precipitated many challenges, it also catalysed new and creative modes of engagement in higher education [1, 2, 4, 9, 10]. Barriers to innovation were lifted to allow for a rapid transition to online teaching and learning. As such, evaluation of and exposure to new tools and learning techniques took place at a faster rate than ever before [6]. It is important that we capture the lessons learned from both students and faculty while the experiences remain fresh.

The objectives of the working group are as follows:

- (1) To conduct a multinational study of both faculty and students to better understand the impact of COVID-19 on computing education: educational practices explored will include tools and techniques, for student engagement and teaching practices, that have been employed during the pandemic;
- (2) To explore the results of the study to elicit best practices resulting from the impact of COVID-19;
- (3) To disseminate the results to the international computing education community.

## 2 METHOD

We will conduct a multinational survey to understand how the teaching of undergraduate-level computing was altered by remote learning during the pandemic. The survey will be circulated at each of the twelve author institutions and also to other computing educators. We will collect contact information from participants willing to participate in follow-up interviews. We anticipate conducting up to 20 follow-up interviews with instructors from a cross-section of institution types, geographic regions, and course levels.

## 3 KEY THEMES

While the exact questions to be asked in surveys and follow-up interviews are still under development, we anticipate asking questions in the following areas:

**Value changes:** How have your instructional values changed as a result of pandemic teaching, if at all?

**Positive new practices:** Which practices employed during pandemic teaching have offered unexpected value to students, faculty, learning and/or engagement?

**Problem areas:** What issues in remote teaching could not be overcome, and led to worse learning outcomes?

**Inclusion benefits:** Which groups of students thrived in remote learning, and how can they be supported in the future?

**Inclusion issues:** Which groups of students were harmed in the move to remote teaching? What is being done to reduce and/or redress those harms?

**Instructor well-being:** What aspects of remote teaching impacted instructor well-being, either positively or negatively?

**Student isolation:** What techniques/technologies did you use to try to fight isolation and help students feel connected?

**Technology use:** What technologies in computing education were most valuable during the pandemic?

**Common practices:** How did common computing education practices, such as pair programming, think-pair-share, code reviews and design crits, change during remote teaching?

**Missing tools or practices:** Were there any tools or practices that were notable in their absence? What would you like to have had access to, but could not because it wasn't available?

**Academic integrity:** How did your approach to ensuring academic integrity of assessments change during remote teaching? Did the frequency of academic dishonesty change?

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