RUTGERS
School of Arts and Sciences

Office of Undergraduation Education
School of Arts and Sciences
Rutgers, The State University of New Jersey
35 College Avenue
New Brunswick, NJ 08901-1248

sas.rutgers.edu
sasoue@sas.rutgers.edu

p. 848-932-8433
f. 732-932-2957

Musings on Asynchronous and Synchronous Remote Instruction and Online Courses[1]

Susan E. Lawrence
Vice Dean for Undergraduate Education
and Assoc. Prof. of Political Science
Rutgers University-New Brunswick

As higher education has grappled with pivoting to remote instruction during the Covid-19 spring and a sustained need for social distancing reaching into summer and fall, we have benefited from the vast literature on best practices for online teaching and learning that has developed over the last thirty years. But, our experience in the Covid-19 spring has shown that not all of what we have learned from the online literature necessarily smoothly transfers to converting face-to-face courses to remote instruction for a population that enrolled expecting to be on campus and meeting in-person.

One of the key questions instructors face in transitioning to remote instruction is whether their course will be "synchronous" or "asynchronous." These two terms from the online learning literature are awkward, incomplete, and students don't necessarily understand them. Still, they signal an important difference. Synchronous remote instruction (SR) refers to courses have a set meeting time each week that generally all students are expected to attend just as they are expected to attend in-person classes on campus when we are not in the midst of a global pandemic. Asynchronous remote instruction (AR) refers to courses that do not have a specific meeting time each week, although they do have a weekly schedule of assignments and may offer opportunities for some real-time interaction.

One of the key advantages of online courses has always been their flexibility. Hence, they are overwhelmingly primarily asynchronous. Students can learn and complete assignments anytime and anywhere they want, including in any time zone. This is great for adult learners with complicated lives and on campus undergraduates juggling conflicting course meeting times and work schedules.

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As we suddenly pivoted to remote instruction in the Covid-19 spring and as we began planning for summer and making contingency plans for fall, those experienced with online frequently gravitated to AR while the inexperienced struggled with SR as their webcam became their new classroom.

We pushed faculty to develop AR courses, even without the usual year-long design process most online courses go through, to ensure that we could serve students who had returned to a global range of time zones. Those sensitive to the digital divide warned of problems SR presents for students with fewer resources.

At first, we thought that our experience during the Covid-19 spring was teaching us to embrace AR. Feedback from students about the diverse situations they find themselves in has made it clear many students face obstacles to participating in SR instruction. Many of our students:

- Are now confined to households that lack the bandwidth or computer equipment needed to participate in real-time video instruction.
- Must share their internet connections, computer equipment, or study space with other members of the family proceeding with K-12 schooling and/or telecommuting.
- Lack the privacy needed for synchronous instruction, being interrupted by wandering siblings and distracted by not having a quiet room to themselves.
- Lack the privacy to engage with course materials that may be controversial in their household.
- Are managing an overwhelming set of competing pressures and stresses including caring for younger siblings, caring for sick relatives, and caring for themselves.
- Are still working in a range of first-responder or essential worker jobs where they cannot control their work schedule and they know they are putting themselves at higher risk.
- Live in homes with other first-responders or essential workers, and worry about the risks they face. Many have already lost family members.
- Are living in households that are struggling through unemployment.
- Are adjusting to living under parental surveillance after having been independent on campus, and some are in homes that are toxic and unwelcoming.
- Have returned to their homes in distant time zones. This particularly affects international students. For example, international students who have returned to Beijing would have to be online at 3:30 AM to attend a 3:30 PM SR course.

Any of one of these factors can make it difficult or impossible for a student to participate in a synchronous course that requires participating at a specific time. Some students are impacted by several of these factors. And, even for students who can generally do SR, there may be specific days they cannot due to illness - their own or that of members of their households; variable work schedules for essential workers, etc. Beyond this, there are a set of privacy and other concerns arising around requiring students to have their webcams on during SR on WebEx or Zoom.

And, if this was not enough to persuade us that AR was necessary, we had the research-based best practices for online learning. We pushed instructors away from SR because we knew there would be the strong temptation to just give the standard 80-minute lecture in front of a webcam. All the evidence suggests that this is one of the worst ways to do online instruction, and much of what we know about how people learn provides powerful evidence that without some active engagement mixed in, this is not even a very good way to do in person instruction. Indeed, some students are telling us that they are doing better remotely than they were when we were all on campus. The recorded sessions allow them to re-watch and review. STEM students in particular seem to be finding this helpful. Other students attribute their better performance to fewer extra-curricular "distractions," as they refer to them.

But, we forgot to think about the differences between online and remote. Indeed, most people do not even make a distinction between the two, interchangeably talking about online and remote courses. This glosses over some critical distinctions that should inform our thinking about whether to offer a course AR or SR.

The first glaring distinction between online courses and the remote instruction Covid-19 is requiring of us is that online courses were designed to be online courses, increasingly informed by research-based best practices and guided by instructional design specialists. The second glaring distinction is the mirror image of the first; students taking online courses chose to take online courses. All the best practices literature we have turned to is derived from studying courses that students freely chose to take online rather than in person. That population is often older and highly motivated to complete the academic coursework. It is not that the best practices in online learning do not continue to hold for remote instruction, it is just that they are possibly not enough.

The students in our newly transformed remote courses did not sign up for online, or remote, instruction.

On residential campuses they are largely 18 to 24 year olds that expected a multi-dimensional college experience, literally. They, along with the high schoolers waiting to follow them, are of an age at which they are culturally, and likely biologically, programmed to be highly interactive and social. Part of their expectation of college was to transition from their nuclear family to independence and adulthood, and now they are cast back to their families and told to social distance from all of their friends. They are lonely and adrift. They crave interaction with their instructors and their peers. They are missing, in both senses, developing the art of reasoned discussion, in real time, among their peers. They feel abandoned. They feel isolated. They need SR.

Part of our traditional-aged students' budding independence is moving from the regimented high school day to the more complex routines of college life and many still rely on the time-management regularly scheduled courses provide, whether in person or SR. The same flexibility that makes AR attractive also forces students to do much more complex and self-disciplined time management. And, they seem to think of class time and written work as quite different. As instruction moved to remote, many faculty replaced class time with written assignments and replaced high-stake tests with smaller more frequent assessments. Both are quite sound strategies, but some students experienced this as a lot more work and found it difficult to juggle multiple small assignments for four or five classes. They struggled to hold a discussion with their peers in writing and may not have seen the writing they were asked to do as part of the process of deeply learning course material. The popularity of Zoom break-out rooms reflects faculty's understanding of this.

These students enrolled in a residential college because they wanted interaction with faculty. While best practices in online learning includes regular and sustained interaction between faculty and students, with AR it is frequently not in real-time and does not include even the two-dimensional face-to-face interaction that WebEx and Zoom allow. In traditional face-to-face courses, a great deal of teaching and learning occurs through faculty modeling how to analyze, critique, and synthesize; construct arguments or proofs; and begin to become a practitioner of the discipline – a mathematician, a literary scholar, an economist, a historian, a biologist. It is not impossible to model these things through online and AR, but it may be more complicated to do so.

And, frankly, many faculty derive their energy for teaching from their interaction with students. AR instruction, particularly done by someone who did not choose to teach that way, may be flat, pun noted. For many students, seeing their instructors in real time, struggling with some of the same technology issues they are and bringing some fun to the screen can be a great stress reliever as we teach through this trauma. One faculty member dresses up in a relevant costume for each class; many a student has warmed to seeing our dogs on our lap while we talk; another demonstrated primate adaptation to eating different foods by swapping between videos of primates eating and himself trying to eat a whole lemon without cutting or peeling it. Many students really benefited from instructors announcing that they are logging into WebEx or Zoom fifteen or twenty minutes before class officially starts for informal chatter among the class participants, focused on Covid-19 or not. SR can be so much more than real-time voice-over PowerPoint.

As faculty, we can help our students process the rapid transformation of nearly everything that Covid-19 has brought. We can help them put all of this in a much larger context whether it is through explaining the science of viruses or the social, cultural, and economic impact of the 1918 Spanish flu. We can help them process and work against the xenophobia Covid-19 has unleashed and the disproportionate impact it is having on already underserved and marginalized communities. We can work through the math of transmission with them. We can grapple with them to separate politics, science, economics, and some of the tough moral questions Covid-19 raises. We can share with them all we know about how individuals and societies have made it through catastrophic times and sometimes created a better society by instituting new policies and institutions. We can help them imagine, not returning to normal, but creating a better normal. Of course, we can do all of this through online, AR, or SR, but there is an immediacy SR offers – an ability to be with them -- that may be a critical benefit in these times.

So, what are we to do? We must serve students on both sides of the digital divide. At the macro level, we should offer robust menus of both AR and SR courses and both should be carefully planned in the lead time we have before fall. We should address those aspects of the digital divide that we can, providing technology and increased bandwidth to those students who need it.

On the course level, all AR courses should provide regular and substantive interaction between faculty and students and provide opportunities for (optional) synchronous interaction and live "office hours" on WebEx or Zoom. Regular instructor announcements, a space for students to ask questions, discussion forums, timely feedback on student work -- maybe even delivered in a short

video -- and engaging materials that let the instructor's personality come through can all promote engagement in AR courses.

To the extent possible, SR courses should provide asynchronous options for students who are unable to participate synchronously. Synchronous sessions can be recorded and posted using Kaltura or one of the other available tools to add captions. Ideally, synchronous sessions should be chunked to

break-up passive watching and for later viewing. This can be done naturally by interrupting the class lecture or discussion every 10 or 15 minutes to ask students to do some activity and make it possible to do that activity asynchronously. Post the text-based chat that runs during your synchronous sessions for students who need AR. Posting PowerPoints, even if you do not usually do so, may help students. A number of students in SR found that having the course material available asynchronously too helped them study and improved their performance.

Even before Covid-19, the same kind of instruction did not work equally well for all students. In many respects, Covid-19 has highlighted disparities and differences that always existed, but it has created new ones as well. Some previously skeptical faculty are finding that some things actually work much better online and remotely. We are all being challenged to rethink what really matters in our courses and how best to help student achieve the learning we expect of them. But, we are also reminded of the critical role that in-person instruction and the residential university experience plays for the overwhelming majority of our current students, on both sides of the digital divide, when public health allows.