

Thinking Through Online Modalities and Technologies

Online teaching offers many options for content delivery, assignments and student engagement. The following Bandwidth-Immediacy Matrix¹ can help you think through the options. It shows examples of recommended learning activities (from a student's perspective), as well as common technologies that are used by faculty at U-M. Note that all of the technologies listed integrate with Canvas at U-M, so the students can access all of their course materials through one interface.

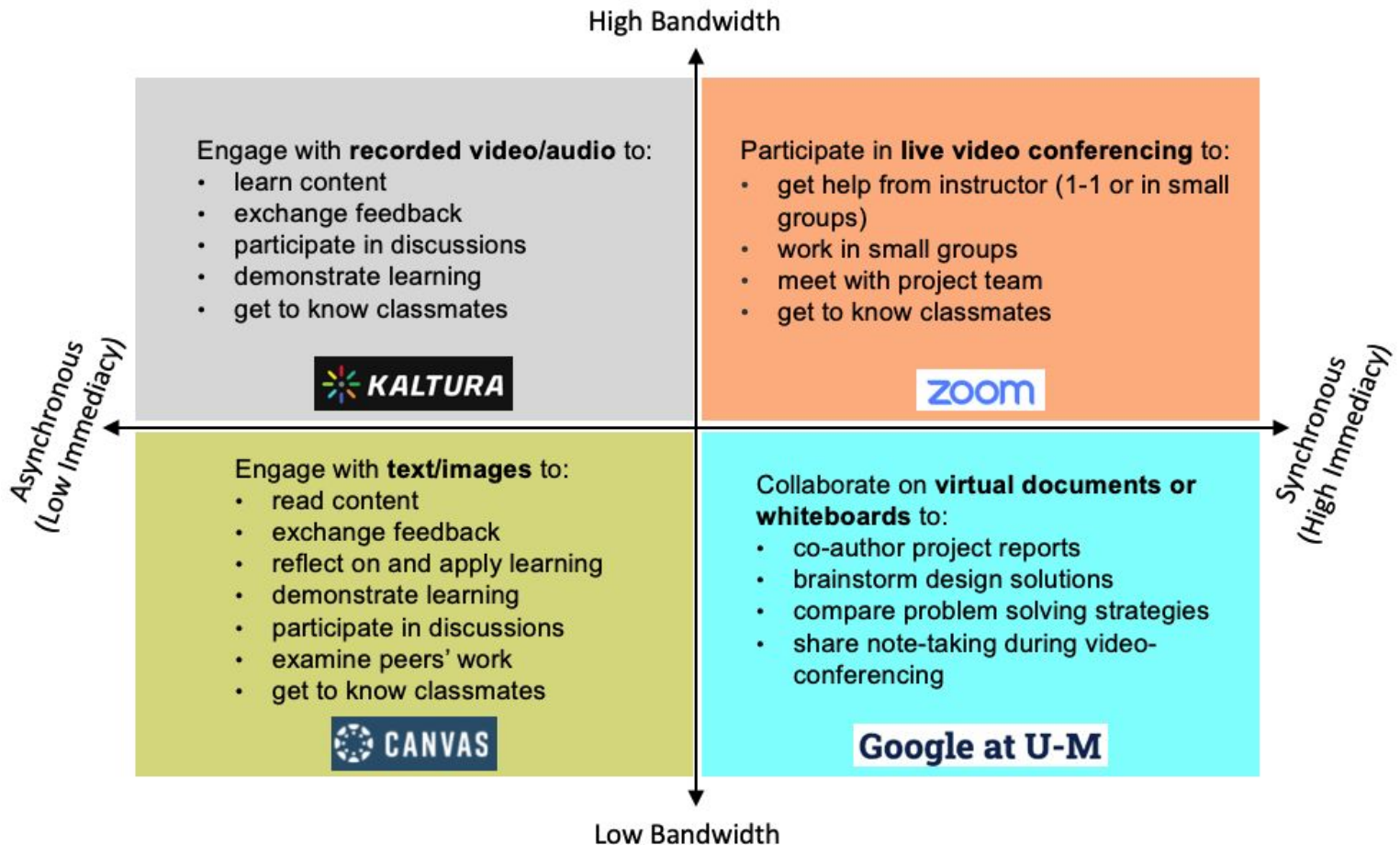


Figure: Examples of student-learning activities and technologies in a Bandwidth-Immediacy Matrix¹. High bandwidth activities provide more cues for interaction (voice and facial signals), but require better technology and internet connection, which might exclude some students. Synchronous activities provide instant feedback, but lack flexibility and are more prone to technological difficulties.

¹ Adapted from Stanford, D. (2020, March 16). *Instructional Design Tips, Advice, & Trends for Online & Distance Learning: Educational Technology and Online Course Design Help*. Retrieved July 31, 2020, from <https://www.iddblog.org/videoconferencing-alternatives-how-low-bandwidth-teaching-will-save-us-all/>

Many instructors are most comfortable in the orange quadrant above because it is most similar to in-classroom teaching. With voice and facial signals, it is easier to show enthusiasm, feel connected and avoid misunderstandings. However, the advantages of videoconferencing come at a cost. If a student loses power or internet access (or doesn't have good internet access to begin with), they are excluded from the lesson. If it happens to the instructor, class would likely be over. In addition, synchronous teaching takes away the flexibility of learning at a time when it's convenient for the student, and that flexibility may be very important to some students (especially during a pandemic). Consider creating weekly assignments and activities using tools from the other quadrants in the figure, especially from the green quadrant, which is the most flexible and least bandwidth-intensive. Reserve videoconferencing to engage with students when they truly need to see and hear each other in real time. The table below shows some of the pros and cons of each quadrant, as well as links to guides for corresponding technologies.

Modality	Pros	Cons	Technology
Live videoconferencing (synchronous, high bandwidth)	voice and facial cues, immediate feedback	bandwidth-intensive, inflexible, no much time to think before responding	- Zoom with Canvas
Recorded video/audio (asynchronous, high bandwidth)	voice and facial cues, students can think before responding	bandwidth-intensive, must wait for feedback	- Kaltura Capture : to record video or screencast - Lecture Capture : to record in-classroom lessons -Canvas (Speedgrader , discussions): for feedback with video/audio
Collaborative documents (synchronous, low bandwidth)	Low-tech, low bandwidth, immediate (or faster) feedback	No voice or facial cues	- U-M Google Suite (e.g. documents , spreadsheets , jamboard)
Text/images (asynchronous, low bandwidth)	Low-tech, low bandwidth, students can think before responding	No voice or facial cues, must wait for feedback	-Canvas (pages , discussions , assignments , quizzes , peer reviews)

Table: Comparison of online-delivery modes and tools. The technologies we use can have a big impact on how inclusive and effective our teaching is. Being aware of this can help us choose the right tools for the right reasons.

Click on the following link to see a complete list of [technologies recommended by the CoE](#).