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CEP 800 – Module 5.2

Evaluating a Learning Technology

The Peter Wallenberg Learning Theater at Stanford University creates one of the most unique learning experiences currently available in higher education. The learning theater is an open floor plan classroom that allows for desired seating (and table) arrangements to include lecture, seminar or workgroup layouts. With a room capacity of 55 students, the room is a two story classroom, in which the second floor is comprised of viewing areas for interested onlookers or curious students. The sliding glass back wall of the classroom acts as the entrance, but doubles as a learning center in which students craft their own designs, ideas and thoughts by drawing on the glass wall with erasable markers. The most impressive feature, and the focus of my learning technology study, is the Wallenberg interactive video panel that encompasses the length of the front of the classroom. Through a generous $15 million grant from the Wallenberg Foundation, the interactive screen/panel measures 32 feet in length and is just over 8 feet tall, with the base of the panel starting two feet off the ground (see photo below). The impressive resolution of the screen is 17,280 pixels wide by 4,320 pixels tall; in effect, the wall can show two 8K movie programs (a future very high-resolution movie exhibition format) simultaneously, with the Stanford logo displayed between them. Another way to think of the size of the wall is that it can display 32 HD screens worth of resolution. The interactive screen also currently has 16 inputs through which students can connect wirelessly via laptop, tablet, smart phone or other mobile device. The interactive screen not only allows instructors to display various informational inputs such as data, videos and lecture notes, but also allows students to work in a collaborative environment displaying their own ideas next to the instructors' lesson plan. As the Registrar's Office schedules trainings on campus with departmental staff, the room affords the opportunity for the instructor to review curriculum planning topics such as the course and class request process, and then the departmental staff may practice the submission process in a test environment with their individual computer screens displayed on the front wall for the instructor and other learning staff members to review. Rather than simply lecture in a computer lab, the learning theater allows students to learn the concepts, try out/experiment with the concepts and then collaborate with other members on the learning outcomes. With the ability to craft ideas through handwritten design on the rear glass panel and the opportunity to promote creativity through wireless inputs to the front wall panel, students encounter a unique learning experience that blends various ways of learning in the Wallenberg Learning Theater.
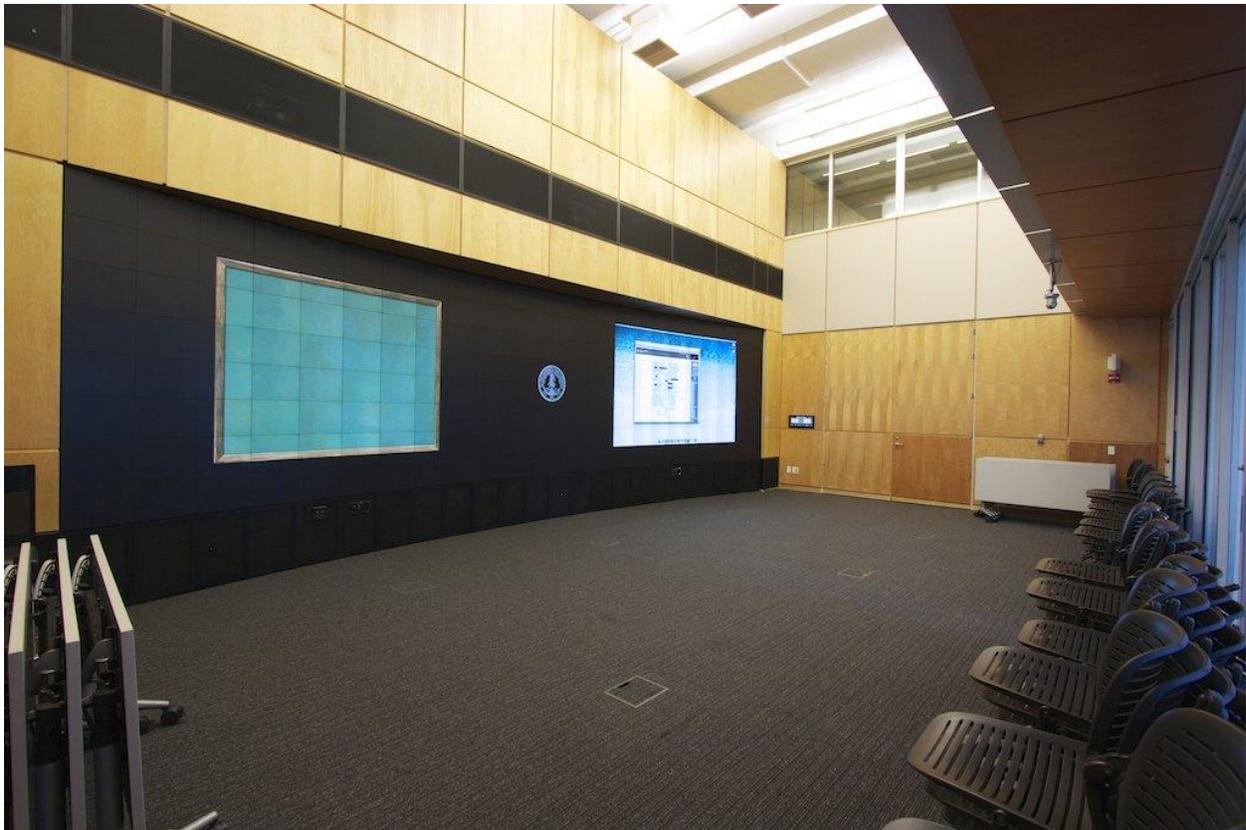
1. <u>What</u> is being learned? (What are the learning goals of this instructional experience?) What are the underlying assumptions (explicit and implicit) about the nature of knowledge?

In addition to the actual subject matter being learned, the Wallenberg learning theater's interactive panel allows students to review the instructor's lesson plan and then put their learning to immediate action through use of personal computer connections that can be shared on the screen. Rather than lecturing at students and having them absorb the information, only to return to their offices to forget or skip important steps, the learning panel allows at least 16 students the opportunity to instantly act on their learning. As Reeder states, students will benefit greatly from performing the desired learning action rather than just knowing what action to take; essentially applied learning helps the students understand the why and how to master certain concepts. The main learning goal from our curriculum planning training sessions follows this exact concept, to promote student understanding of how to identify course/class needs and then submit the appropriate requests for the course. The underlying assumption from the learning experience is that through the use of learning panel in a collaborative setting, the students (departmental staff) should be able to navigate through the course/class webform submission process in order to make course/classroom requests. Any hurdles encountered during the training, such as changing the grading basis or enrollment capacity of a course, should be discussed during the learning session, so that future cases are mitigated through

enhanced student understanding. An implicit assumption from the collaborative curriculum planning session hopefully provides the students with the ability to communicate and share their thoughts with others – essentially reaching out to learn from one another in future scenarios (or even for current students to become teachers to new departmental staff on campus). The ability to share ideas and hurdles in a collaborative setting thanks to the learning wall will not only enhance student learning through action but also promote collaborative learning efforts as the staff members continue curriculum planning in future academic quarters.

2. What are the affordances for how knowledge/information is being represented? What are the constraints?

    The learning theater's interactive panel affords both learning and teaching opportunities for students and instructor. For the instructor, the technology allows the instructor to share multiple forms of data, images and lecture notes to provide an encompassing learning environment. Relating to the digital storytelling project, the interactive wall allows the instructor to combine text with visual images to stimulate different senses in the learning process. The massive size of the wall also allows for the instructor to transition between points without losing an original concept. For example, an instructor may want to display a set of data on honey collection by honeybees. The instructor can then show a video of the process of honeybees collecting honey, while keeping the data on the screen. Finally, the instructor can also display important key notes for the students to take away on a separate area along the wall. Allowing for three (or even more) screens in full size, the students can visually see how all three concepts relate. From a student's perspective, the student may benefit from the approach mentioned above, in addition to sharing his/her own work through the wireless laptop connections. After the instructor has covered the topic of honeybee collection, the students can then share their own thoughts, questions and understanding through the wall panel. Students can then learn from one another by viewing the additional 15 screens. Tying into the affordance of the learning panel, an obvious constraint of the technology is the limited inputs available. For a room with a 55-student capacity, the 16 connections could leave 39 students without the opportunity to share at once. However, the instructor would be wise to rotate through the students who share or could encourage students to participate in group activities instead. Another affordance of the technology from the student standpoint, revolves around the action step. Students can benefit from the multiple screens during instruction, however if the student does not own a connective device, he/she may not fully be invested in the learning. With laptops, tablets and smart phones prevalent in higher education – over 75% of high school students access information through a laptop computer (Nagel) – this may not be as large of a concern for this generation as it may have been only ten years ago.

3. How does learning take place? What elements of constructivism did you observe? What elements of behaviorism did you observe? Any other learning theories present?

Student learning occurs through a scaffolding model, resembling strong ties to social constructivism. Learning first occurs through a modeling stage in which the instructor will model the desired learning behavior through the learning panel. Steps on how to submit course/class webforms and key points to remember are highlighted in this phase. The instructor will gradually display various tips for curriculum planning, likely keeping one main panel as a "tips/reminders" PowerPoint slide, another screen with the course catalog or schedule of classes displayed, and finally another panel for the test environment which shows the students how to submit a webform. The learning panel then allows for scaffolding and fading to occur, in which the students then take control of the wall panel with their own laptop connections to walk through webforms or bring up any questions or issues they experience. In this phase of the training session, the instructor and students share the thinking and acting load as they work together to understand the material and subsequent questions. The teacher slowly transitions from full-on instructor to a guide, steering the students through the curriculum planning process. Finally, as the training session(s) conclude, the instructor is now likely a coach or mentor, providing insight on certain scenarios or troubleshooting with the student rather than troubleshooting for the student.

The interactive wall panel also presents elements of behaviorism in the initial stage of learning, as students are usually passive observers while the instructor presents the material initially. The instructor may also repeat the steps of how to look up an active course and submit an appropriate webform, as this may spark learning through repetition. However, the lesson plans that are usually found with such an interactive panel attempt to encourage student participation and encourage students to be active learners rather than passive learners.

Finally, cognitive learning can take place with the help of the interactive panel. Tying in to Willingham's article *Students Remember… What They Think About*, the instructor must promote the subject matter so the students continue to think and remember what they have learned. The wall panel assists the instructor in this area, as the students are thinking about and interacting with the material during the training session, and will be more likely to remember the material versus learning in a lecture style in which they do not act on what they have learned until returning to their offices. Another benefit to the student interaction in class with the panel is that students remember incorrect discoveries as well as correct ones – therefore with the students connected to the wall panel, if they make the incorrect discoveries in the presence of the instructor, the teacher can then correct the action in the hopes that the student will remember in-class correction.

4. What role does technology play? What advantages or disadvantages does the technology hold for this role? What <u>unique</u> contribution does the technology have in facilitating learning?

The interactive panel's role revolves around enhancing the student learning experience. As mentioned, the information the staff members need to perform their job is readily available. However, with the number of errors submitted on the webforms combined with the surprising

turnover rate in these roles, the technology will unite departmental staff to learn the required steps and then allow them to tackle their questions in a unique collaborative setting with other users able to see their shared laptop screens. The technology holds a unique advantage in that the students will not find another location outside of the Wallenberg Theater in which they can all simultaneously share their questions, concerns and challenges in a classroom setting with other students. A disadvantage that they may encounter is the limiting factor of the technology in the long term. The panel simply acts as a learning mechanism to promote understanding of particular concepts. Once these concepts have been learned, the technology can be used again to share future ideas, but the panel itself cannot be modified (beyond adding unique connections) to further enhance student understanding. If all 16 connections are enabled at once, the urge for students to talk over one another or ask simultaneous questions could induce a learning frenzy or may also be over stimulating which could inhibit learning.

5. How does it fit within existing school curriculum? (e.g., is it intended to supplement or supplant existing curriculum? Is it intended to enhance the learning of something already central to the curriculum or some new set of understandings or competencies?)

The learning panel will simply enhance the existing learning methods made available and builds on the learning found in a traditional computer lab setting found on campus. The curriculum planning material being learned can be found whether or not the learning panel is present, as the course/class webforms are made available through the Stanford website. However, the learning panel supplements online training materials by allowing the user to view the training demonstration, ask questions, and then share his/her own learning by working through the class/course webform requests – all of which are likely displayed simultaneously at the front the classroom. The panel mainly provides the opportunity for advanced learning in a group setting, as learning can occur by the staff member in his/her own environment, but the panel brings together a group, connects the staff members, as both the instructor and students "share the thinking load".

6. Do any traces of "web 2.0" appear with this technology? And, if so, how does it enhance/distract from the experience? (Web 2.0 in Wikipedia)

Traces of web 2.0 are clearly found thanks to the Wallenberg learning panel, as the panel promotes student learning through in-class collaboration. With the ability for sixteen students to connect to the panel, the students can share the learning experience and also share material they have learned and created as part of the instructor's lesson plan. Once the instructor has reviewed specific topics or material, the students then are in control of their learning as they tackle their own learning problems by working through the course and class webforms. These learning experiences can then be shared amongst students on the panel, promoting the collaborative learning experience. As the learning panel is quite different from traditional learning through lectures or textbook references, students may find the unique experience a distraction if they are used to focusing on paper/text in front of them rather than one large

panel at the front of the room. However, as students become more comfortable with the various technologies in both the classroom and their social lives, the learning panel may also create excitement as a new technology becomes a prominent learning tool in their lives. Lastly, the collaborative nature of web 2.0 enhances the learning experience, as students now have external motivation to learn the material and also can learn from their peers in the concepts and issues brought up through their time sharing on the learning panel.

7. How are important differences among learners taken into account?

The Wallenberg learning panel provides a distinct approach to learning, as the size of the wall can display multiple images, text, data or sounds that may relate to the variance in learners. For example, visual learners may benefit from seeing the information displayed in text or video on the wall. Auditory learners may find the audio tracks from videos or interviews more beneficial to their learning. The key to any technology is that the instructor must be knowledgeable in using the technology to promote student understanding, and in return, the student must be willing to learn the concepts and accept the technologies involved. As the focus group of my future study will revolve around departmental staff, there is a large variation in age between staff members and their receptiveness to technology. One hurdle that lies ahead will be to positively demonstrate the curriculum planning sessions through the learning panel, and motivate staff members to also share their screens while trying to master the course and class webforms.

8. What do teachers and learners need to know? What demands are placed on teachers and other "users"? What knowledge is needed? What knowledge supports does the innovation provide (e.g., skills in using particular kinds of technology)?

Initially, the teachers and learners need to know that they will be working together to promote student learning, with both parties responsible for interacting with the panel and providing a positive learning environment with simultaneous connections taking place at once. Both teachers and learners will also need basic computer interface skills and the ability to access a wireless connection. Students will be advised to bring their own laptops/tablets to maintain familiarity with the computer normally used for work related tasks. If no laptop is available, one will be provided and connected both wirelessly and to the panel before instruction begins to minimize student confusion. As sixteen wireless connections to the panel can be tricky to manage, the students must understand the concept of sharing smartly as they work through the webform process and encounter problems. The instructor must also be an effective time and content manager to determine which questions are broad enough that they would impact other students and should be brought to the class's attention, while other user related questions may be addressed in a one-on-one manner. One of the goals of the panel use and the training session is the ability for the student to understand the material in such a manner, that the student can then assist in peer learning when new department staff arrive on campus. The ability to connect a personal laptop and share the steps in the curriculum planning process on

the panel wall, can then transfer if the student decides to hold his/her own sessions with new staff on campus. These students will be well-versed in sharing screens, presenting material and tackling new questions that arise thanks to their experience with the Wallenberg Learning Theater interactive panel.

References:

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