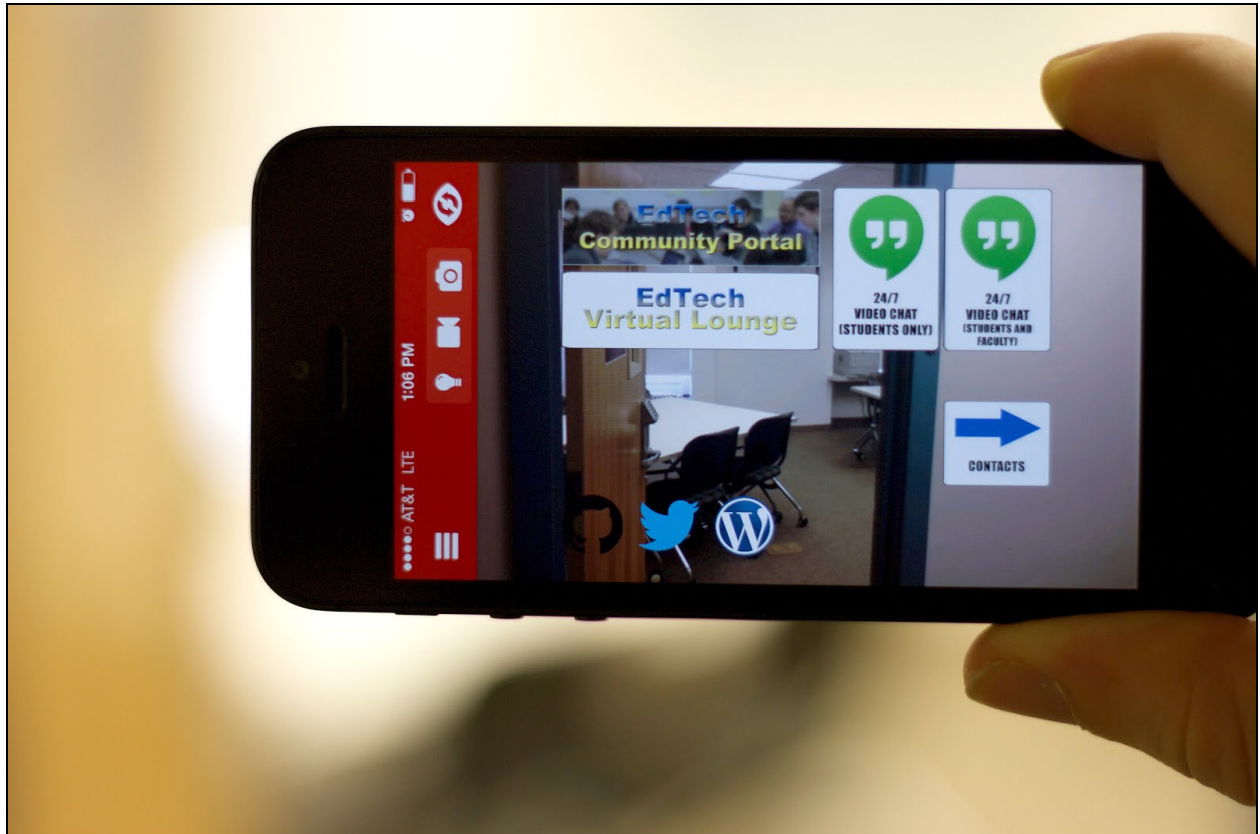


Linking Physical and Virtual Learning Environments



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accessible; innovative; open source; flexible; networked; networking; collaborative; editable; community; comfy; organic learning experiences; interconnected; architecture; built pedagogy; augmented reality; physical; virtual; assessable; connectivist; studio; functional; active; unconstricted; exploratory; participatory

Introduction

How do we design a 21st Century learning environment that is responsive to the constantly evolving technology landscape and needs of its community of learners? How do the physical and virtual spaces work together to provide a cohesive learning environment that maximizes student impact? What are the best practices for incorporating social learning in education?

This project aims to take the research and methods taught in the program to further expand opportunities for its students. The purpose of this project is to develop collaborative, community driven resources that work cohesively to support the needs of the Educational Technology program. This includes recommendations for utilizing existing campus resources, as well as harnessing appropriate technologies to develop new virtual resources. All facilities (online and physical) will be designed to enhance the program's ability to forward the School of Education's core values (scholarship, reflective practice, social justice, inclusive community, wellness, and creativity and the arts).

My previous experience working in the Department of Communications showed that the existence of shared community resources (check-out equipment for projects, a computer lab with evening open access hours to department students, individual work spaces that students can schedule, a collaborative wiki) provided numerous benefits for the program's students. They were able to help each other, collaborate more effectively, and share collective knowledge. In my present professional role within the Faculty Center for Professional Excellence, I work with teachers to incorporate technologies in a manner which encourages the best possible student learning outcomes.

As a student of the Educational Technology program, I see tremendous potential to foster greater innovation and learning opportunities. Many of the resources necessary are already in place, but could benefit from being harnessed more effectively. This document proposes sustainable and iterative changes to develop and refine these resource opportunities.

“When you lose interest in a program, your last duty to it is to hand it off to a competent successor” (Raymond).

It wouldn't be possible, or even pragmatic, to see a project of this scope through to completion. My goal is to develop a foundational framework; a flexible, sustainable foundation for the program. In keeping with the goals of the program, as well as 21st Century learning styles, my work will ultimately move into the community space that it was created for. Current and future students and faculty would be able to continue to add and refine. To encourage this, I have chosen to release this document under a [Creative Commons Attribution-ShareAlike 4.0 International License](#).

Goals

The following sections of this document seek to fulfill the goals of the project and report on the collected research & development results. The project's goals are as follows:

Goal #	Explanation	Corresponding Section
Goal 1	Assemble research that investigates the benefits of studio learning, enhancing spaces, and harnessing physical and virtual resources to support pedagogically sound 21st Century learning.	Research
Goal 2	Complete a program assessment of Adelphi's Educational Technology program. Identify opportunities for improving the program.	Program Assessment
Goal 3	Develop a web-based virtual hub in response to findings in the Program Assessment and Research.	Developing a Virtual Hub
Goal 4	Develop an Augmented Reality (AR) virtual experience to serve as a connection point to link the virtual hub to physical classroom spaces.	Connecting the Physical and Virtual Worlds
Goal 5	Release project work in a transparent manner which aligns with the program's philosophies and best practices in the field. Information and resources should be accessible and editable, so that future learners can continue to learn from it and build upon it.	Conclusion

Research

Spaces for Learning

Twentieth century higher education classrooms, and their online counterparts, need to evolve. The industrial model of school space isn't conducive to teaching and learning in the Information Age. According to Educause's digital Learning Spaces book, "many of today's learners favor active, participatory, experiential learning—the learning style they exhibit in their personal lives. But their behavior may not match their self-expressed learning preferences when sitting in a large lecture hall with chairs bolted to the floor. The single focal point at the front of the room sends a strong signal about how learning will occur" (Oblinger 12-13). The learning spaces we think of were designed by and for a passive generation. Classroom design hasn't kept up with changes in the surrounding culture. Fields and curricula increasingly favor learning collaboration and problem solving strategies as opposed to rote memorization and acquiring skills with a short shelf-life. Spaces conducive to genuine practice are ideal. Simulated environments also have positive affordances.

Face-to-face learning requires more dynamic space with ergonomic access to appropriate tools and technologies. Optimal face-to-face learning should be done in spaces where the skills or knowledge can be applied productively. This isn't a new concept. This is what happens at teaching hospitals, on-the-job training, apprenticeship programs, etc. But we also need to recognize that learning space doesn't exclusively mean classroom, just as learning isn't confined to taking a course. As Vaidhyathan observes, "sometimes courses are the least important element of the process of education. Some people, like Bruce Springsteen, learn more from the three-minute record, baby, than they ever learned in school. But many of us would not have encountered that three-minute record without the social and intellectual petri dish we call the American university campus". Rather than treating classrooms as cells for knowledge transfer, we can integrate them into a more holistic learning campus. They should be complemented by virtual spaces. Open Educational Resources, MOOCs, social media, and informal learning networks are evolving ways for people to learn outside of our traditional structures of education. Schools are still critically important, but need to be organized differently. They need to appropriate useful technological advances to enhance teaching and learning practices.

The traditional classroom model design was to separate students, line them up uniformly facing their teacher, and cram as many as possible into a given classroom space. This design was sufficient for the strongly hierarchical lecture delivery teaching style. But it's counter-productive to fostering teamwork, group discussions, and practical application of most knowledge. Instead a University system, integrating quality personal learning practices with virtual resources and collaborative opportunities, can produce vastly superior learning conditions.

Studio Model for Learning

“The long hours of work in a common studio space forged us into a close knit group of men and women who were marked by our dedication, endurance and talent. We shared the excitement of learning to see the world in a new way, of learning to distinguish between well and poorly designed glasses while our friends were drinking coffee unaware from styrofoam cups. We were the imaginative professionals with certified taste” (student reflection on studio atmosphere, Cuff, 118).

The traditional studio-based model has roots in architectural education. The basic concept is that students meet in a common space to learn through the development of a project under the supervision/guidance of a master teacher. Teachers disappointed with lacking participation and engagement from students in traditional classes would benefit from having students work in this environment. Strategically meshing virtual space with these learning spaces can maximize opportunities for connectivist learning (Siemens).

Connectedness can't be confined to the required seat time in a traditional classroom. A goal of reimagining learning spaces should be to move past the learning barriers created by previous societal mindsets. For a good example of utilizing open resources and learning space, Owen McGrath writes about MIT's iLabs project. This project gave undergraduate students direct access to expensive and authentic electronic laboratory tools, with one of the intended goals being for them to “try out the identity of being a professional” (17). Observing the results, “a tacit model of learning as joint participation seems to have evolved during this project. Assessing the students' results in these labs was no longer to be considered a separate and final phase. Opportunities for teachers and students to participate together in redesigning and refining the lab experiments would seem to constitute a new kind of activity system, especially where taking on the improvements together may have offered students a new perspective on their instructors' understandings of how to practice science” (18). Thinking beyond, teachers and students should have some dominion or ability to shape their environments.

Studio learning goes hand in hand with how members of technology cultures assimilate knowledge. They design, hack, critique, and innovate. It lends well to Jacques Rancière's Universal Teaching concept. According to Rancière, “the secret of genius is that of universal teaching: learning, repeating, imitating, translating, taking apart, putting back together” (68). Knowledge, from this perspective, is built upon by establishing connections. While Rancière's rejection of formal teaching may be a bit too radical or unrealistic for some educators, traditional courses can benefit from revising their structures to provide more opportunity for students to assume greater ownership of their learning experiences. It allows for a higher level of student empowerment over their own education. And it helps with what he believes is key to success: motivation.

“One could learn by oneself and without a master explicator when one wanted to, propelled by one’s own desire or by the constraint of the situation.” (Rancière 12)

Universal Teaching supposes that if someone appears more intelligent than another, it is because of conditions as opposed to capacity. A stronger will-to-learn is the determining factor. Rancière observes, “man is a will served by an intelligence” (52). Therefore one who uses more energy to make new discoveries and combine new relations acquires more intelligence (Rancière might instead say that person produces a greater work). In a practical sense, it is about empowering students to take responsibility for their own learning and intellectual capabilities.

Additionally, the idea of situated cognition reinforces the need for authenticity in learning spaces and course designs. Situated cognition argues that “all knowledge is situated, being in part a product of the activity, context, and culture in which it is developed and used” (Brown et. al. 34). Studio learning scenarios allow learners to form communities of practice in an authentic way. Here, they can participate actively in the domain they are studying.

Purposes of situated learning (from Collins, Brown, & Newman, 487):

1. Students come to understand the purposes or uses of the knowledge they are learning.
2. They learn by actively using knowledge rather than passively receiving it.
3. They learn the different conditions under which their knowledge can be applied.
4. Learning in multiple contexts induces the abstraction of knowledge, so that students acquire knowledge in a dual form, both tied to the contexts of its uses and independent of any particular context.

Virtual Spaces

A holistic goal of designing educational spaces should be to reduce all forms of barriers. Virtual spaces can open up learning significantly, because it is an inexhaustible resource. But they can also carry over the same deficiencies of their physical counterparts. Stuart D. Lee notes that many Learning Management Systems serve as tight control structures, so that “educational resources then, even within the institution, are not ‘open.’ They are controlled, managed, restricted, and channeled” (50). Yet LMS’ can alternatively be utilized in ways which reduce control, thereby freeing students to explore as they learn. Too often, real and virtual are seen as separate spaces for separate teaching styles. But they need to be looked at as parts of a whole.

Augmented Spaces

Internet connectivity and mobile devices have become more socially ubiquitous, leading to the emergence of new opportunities for technologically mitigated experiences. As Technology Philosopher Arnold Gehlen observes, “there is no longer any doubt concerning man’s increasing existential dependence on his new constructed environment” (217). We purposefully design the architectural spaces people inhabit. And we actively develop the virtual spaces people access. Perhaps the disrupting force of the present discussion is an opportunity to more consciously look at where we draw the boundaries between the two. Augmented Reality (AR) is the use of technology to add a virtual component to a real world experience. Currently, smart phones and tablets are the most accessible means for distributing AR content, but wearable computing technology like [Google Glass](#) will become more prevalent over time. And accessible tools (such as [Layar](#), [Zappar](#), and [Wikitude](#)) allow people to develop these experiences without requiring a deep level of technical expertise.

The phrase “blended class” is often used to refer to a class that mixes traditional face-to-face teaching and learning with online virtual coursework. But perhaps the word blended could be used more dynamically. For example, a class that meets face-to-face, but incorporates technology to create virtualized learning experiences. Limitless potential exists for learning institutions to utilize Augmented Reality. Interactive campus maps, dynamic room information, student presentations, just-in-time (and place) information, and interactive learning exhibits are all possible. The ability to update augmented content and distribute the changes instantly make it an attractive alternative to static content.

In 2004, an early example of such a learning experience was developed as a research pilot. Virtual Savannah was an interactive simulation utilizing mobile technology and designed with role playing game mechanics. In the game, children took on the role of lions, and worked on solving problems within their environment. Among the noted discoveries: the children/learners were focused and engaged; the best challenges were real, difficult, and complex; building in time for reflection was important; there is great opportunity for self-motivated learning; and that great care needs to be taken to design these experiences in a pedagogically effective manner (Facer et. al. 2004). Critical to the design of these experiences (compared to games for entertainment), “designers of games for learning are required to create a compelling and exciting experience that is underpinned by the nature of the realities you are trying to enable children [learners] to understand” (Facer et. al. 2004). More information, including a video showcasing the project, can be found on the [Futurelab Savannah](#) site.

Other field researchers have suggested a system they dub Participatory Reality, suggesting “the ideal educational tool would incorporate the authentic experience of on-location learning, including the tools, intellectual traditions and community aspects of AR, coupled with the ability to interact with an underlying model” (Rosenbaum et. al. 2006). The underlying model aspect allows for flexibility, feedback, and assessment from within the simulation. The MIT simulation game, *Outbreak @ the Institute*, designed a game world in which players dealt with the effects of a bird flu outbreak from different professional perspectives. Again, findings reflected that the

players were engaged learners that strongly identified with their simulated roles (Rosenbaum et. al. 2006).

Social Contexts (Online and Offline)

“Affinity spaces are distinct from formal educational systems in several ways. While formal education is often conservative, the informal learning within popular culture is often experimental. While formal education is static, the informal learning within popular culture is innovative. The structures that sustain informal learning are more provisional, those supporting formal education are more institutional. Informal learning communities can evolve to respond to short-term needs and temporary interests, whereas the institutions supporting public education have remained little changed despite decades of school reform. Informal learning communities are ad hoc and localized; formal educational communities are bureaucratic and increasingly national in scope. We can move in and out of informal learning communities if they fail to meet our needs; we enjoy no such mobility in our relations to formal education” (Jenkins 9).

By embracing the idea that learning is meant to happen anywhere and anytime, it becomes possible to develop better environmental conditions for learning. One way to consider reimagining school spaces would be to try to capture some of the energy and motivation that exists in affinity spaces. More care can also be taken in creating a learning environment which fosters learning which extends beyond traditional curricular barriers.

Openness

It seems that the overarching barrier to open education is the closed structure of education ingrained in society. The model we’re working under was developed for the twentieth century, with some added technology and collaborative elements. Our policies, perceptions, and practices are still working to catch up to the pace at which technology advances. Copyright and Intellectual Property Rights make it difficult to share and build, but they exist because they came from a culture that sees creativity and innovation as property attached to an owner. We need to change the way we consider ideas and works, not just the laws that back them. Ditto for software (free or otherwise) that tightly defines roles and focuses on restrictions. And so we need to open up the technical, pedagogical, and cultural gates in the ways we think about education.

Stuart D. Lee explains some of the barriers that are standing in the way of greater use of open educational resources. If teacher’s feel like sharing subverts their own interest (fear of critique and administrative objections, and protecting work from being used by ‘competing’ Universities

were mentioned in higher ed), then they're not going to do it regardless of legality. The reading goes on to mention that professors are far more open to sharing within their discipline. This is likely due to the sense of community and shared interest in the advancement of their mutual chosen field. Perhaps a way to increase the creation and use of open educational resources is to convince more teachers that the broader field of education is a community of practice. That their work could potentially contribute to their direct field, as well as other fields of learning. And that these practices are in step with today's culture. Lee explains, "this is an emerging philosophy, exposed so readily by the folksonomy community sharing tools that have exploded onto the Web, such as MySpace, Flickr, and YouTube" (Lee 57).

Here, free open source software can play a major role. By sharing both educational materials and access to the software that runs them, teachers can harness the best practices and deepest knowledge repositories equitably.

Among the benefits for educators to gravitate towards FOSS (Free Open Source Software):

- Proprietary software is beholden to the creator companies
- Users can contribute and/or change software to meet their unique needs
- Most FOSS software is free (or lower cost than proprietary competition)
- Ethically responsible

Accessibility, Inclusiveness, and Universal Design for Learning (UDL)

Accessibility doesn't just mean hitting baseline legal standards, it means making learning available to all learners and learner types. Whenever possible, resources and materials should be developed with respect to the guidelines of Universal Design for Learning (UDL).

According to the official website for the [National Center on Universal Design for Learning](#), the primary principles are as follows:

I. Provide Multiple Means of Representation	II. Provide Multiple Means of Action and Expression	III. Provide Multiple Means of Engagement
Perception	Physical action	Recruiting Interest
Language, expressions, and symbols	Expression and communication	Sustaining effort and persistence
Comprehension	Executive function	Self-regulation

Assessing Learning Spaces

Ultimately, learning spaces exist to meet the needs of the students that use them. So they should be assessed on a number of different criteria. Room ergonomics, accessibility, functionality etc. are all important. But so are questions of how much use is a room getting, is it being used productively, how well does the technology function, are the students learning more and/or producing superior work?

One way that institutions can work together to pool knowledge and assess outcomes is to adopt a crowdsourcing strategy similar to how many open source projects function. A group of partner organizations have formed a project called [FLEXspace](#), or Flexible Learning Environments eXchange. The project has begun beta testing their Internet database software, which hopes to collect information about different learning spaces. The benefit of contributing, as explained on their Google Site, is “to showcase innovative design solutions open to peer review ranking and comments.” This project has potential both in terms of refining existing learning spaces, and harnessing collective information for the development of future spaces.

The Educause digital book on Learning Spaces provides suggestions for structuring assessment framework, targets, and methods (Hunley & Schaller). A perpetual cycle of assessment and redesign is necessary to maintain relevance in meeting the needs of learning communities.

Program Assessment

“When you start community-building, what you need to be able to present is a plausible promise” (Raymond).

There are enormous challenges and equal opportunities in designing/redesigning a program. Careful consideration must be used when deciding how to invest time and resources for making changes. In *Assessing Learning Spaces* (Hunley & Schaller), they recommend and describe three useful methods for assessment.

These assessment methods are:

- Focus Groups and Interviews
- Surveys
- Photographic Studies

These methods, coupled with the background research, have been implemented to provide the broadest possible perspective of the program as it exists currently. Interviews have been conducted with key faculty members, a survey has been given to students in the program, and photographs were taken of key learning environments (with screenshots for virtual spaces). Program recommendations are based on addressing the needs highlighted within this collected background research. In the future, resources should continue to be developed and assessed in a similar manner. Through this iterative and reflective process, the program will maintain a state of continuous improvement and respond to the ever changing needs of its students.

Existing Educational Technology Program Resources

In previous semesters, it would be safe to designate **Harvey Hall Room 104** (Garden City campus) as the physical hub of the program. It's a tech-enhanced collaborative classroom (movable tables and chairs, multiple monitors, a gaming center with two monitors and several consoles, two iMacs).



Harvey 104 in use.

Current affordances of this classroom are:

- It is a versatile, well-equipped collaborative space
- The program's equipment resources are housed there
- Majority of the program's Garden City face-to-face classes are held there
- Can be made accessible to students during designated access hours

Current constraints of this classroom are:

- Not accessible to online or Manhattan Center students
- Very limited access time to students outside of class time
- Room is used for other classes (external to the program)
- Aesthetics and ergonomics aren't ideal



Harvey 104 current setup.

Harvey 104 also has an adjoining closet, which houses most of the department's resources.

These resources include:

- Laptop cart with several PC and Mac laptops (Various)
- Tablets (Mobile Learning)
- Video games and accessories (Learning with Video Games)
- Lego robots (Introduction to Computer Programming)



Laptop cart.



Games and accessories.

Due to scheduling constraints, not all courses are able to take place in the space. When possible, the School of Education provides a few open access hours (supervised by a Graduate Assistant) during the week. Since the room is primarily a classroom, those hours tend to be during small afternoon timeframes between classes. Many students in the graduate program are working during daytime hours, making it difficult for them to make use of these opportunities. The short timeframes also make it difficult for students to engage in substantial research and project development. The current structure supports the idea that the learning experience is what happens during class time. Maximizing access and accessibility would be of tremendous benefit to the students. By reimagining these resources in such a way as to support a studio structure, the space and equipment can form an atmosphere where active learning and working are always happening.

Other Existing Campus Resources

Manhattan Center

The Manhattan Center Library has a few iPads that students can use while on site. There are also two computer labs.

Garden City

There are many usable campus spaces available to students. The **University Center Café**, **Underground Café** and **Post Hall Dining Room** are all spaces for eating and working. An additional **Commuter Lounge** in the basement of the University Center serves as a space for commuting students.

There are several computer labs located in various buildings. The most substantial and accessible of which is the **Information Commons**, located on the 2nd floor of the **Swirbul Library**. Other Library renovations, which will be completed in time for the Fall 2014 semester, will include collaborative working rooms.



Collaboration room (Library, Main Floor).



Configurable furniture (Library, Main Floor).

Survey Data

As part of my preliminary research, current students and alumni of the Educational Technology program were sent a fifteen question survey via email (administered using Google Forms). The bulk of the questions were multiple choice. Three satisfaction questions were asked on a Likert scaling system, with 1 representing Unsatisfied and 5 representing Satisfied. The last five questions were open-ended text responses, and respondents could provide as much or little as they chose. Responses were anonymous.

The full survey, as well as graphical and statistical response information, will be made available as supplementary files. I will also provide some summary and analysis of the key findings here. Unfortunately, the survey results aren't significant due to the low response rate - 4 of the 18 students submitted a response (22.22%). A major factor in this is likely that the survey was sent out during the summer, when most of the students aren't actively checking their email accounts.

All 4 of the respondents indicated that they have taken Traditional (face-to-face), Blended, and Online classes within the program. High levels of satisfaction were indicated for both the community aspects of the program and the access to resources during class time. However, 2 of 4 (50%) registered a level 1 (or Unsatisfied) with regard to access to program resources outside of class time.

There was variety among students using collaborative working spaces outside of the EdTech program on campus, but all 4 (100%) indicated that they would prefer a collaborative working space specifically for the EdTech program if given the option. 3 of the 4 respondents (75%) would make the most use of such a space if it were located at the Garden City campus, with the other respondent indicating Both/either/no preference (25%). However, it should be noted that all of the current students have been based out of the Garden City campus. It is likely that the

Manhattan Center cohort, beginning later this summer, would have different needs. Preferred working times also varied.

Responses to the open-ended questions indicated that the respondents have a largely favorable opinion of the program (“everything is great!”, “The program is great how it is.”). The only specific hardware request was for: “TV, PlayStation (with controllers, and games), better projectors, better connectivity between laptop and projector/TV, better laptops, non-IT-imaged-laptops, maybe some linux laptops, tablets software including: adobe creative suite, some kind of screen casting software, video editing software (but that can be cloud based too), etc.” Specific software requests indicated interest in Adobe Creative Suite, and more commercial software. Other resource suggestions were: “Better screens. Better lighting! Maybe a play or studio space for work.” and “I would love to have a lounge/workspace to go to when we aren't in class that we could work on projects - many are collaborative and it is hard to find a space to work”.

Perhaps the most easily actionable items indicated through the survey would be to increase access to current resources, improve or add to those resources (hardware and software), and increase access to collaborative space for students to work and utilize said resources.

Faculty Interviews

Currently, the Educational Technology consists of two dedicated full-time faculty members, as well as a few other full time and adjunct faculty. I conducted personal interviews with both of the dedicated full-time faculty members, as they have taught the bulk of the core courses within the program. They also have unique internal perspectives as the respective outgoing and incoming director's of the program. Both interviews were conducted synchronously through Google Hangouts. Discussions were informal, but the overarching topic was Learning Spaces for the Educational Technology Program.

Professor Matt Curinga July 10, 2014

Professor and active Program Director Matt Curinga provided me with background information regarding the accelerated program launching at Adelphi's Manhattan Center campus. He will be teaching two-week intensive courses starting August 20th. Regarding the program's resources, overall he thinks the existing resources are sufficient. Though there's not enough access. The video games and iMacs aren't used enough.

He would like for there to be more of a life outside of class. Students often work on projects during office hours and in class. He would like for the classes to support their learning, and it's reversed right now. Having a great space might help to switch that. Noted, “nothing that we

have is the go-to place to meet or to do work.” If we had more of a ‘Panera’ type feeling more people would come. The Underground Café [Garden City campus] is kind of like that. Looking for more casual traffic and interactions. One issue is the fact that some students live on campus and others don’t.

Professor Aaron Hung
July 11, 2014

Professor and soon-to-be Program Director Aaron Hung discussed his spatial experiences teaching various courses within the program. For the Learning with Video Games course, Aaron wishes that the classroom [Harvey 104, Garden City campus] was set up in a way to let two people play and have other people watch. He’s working on a game study right now with two of the program’s students. They plan on using Harvey 104. It’s good that there are two TV’s, in that way it’s a nice setup. Would like to have more stations for research and for classes. Last time the course ran the room [Harvey 104] had open access hours. One problem is of students not living nearby. They’re not going to travel here just to play a game.



Two display console gaming setup.



Game console switcher.

Mentions he spent time as a game monitor at Teacher’s College. That space had the same problems. They had funding and a bit more resources. They had a room kind of dedicated to gaming, and a slightly larger game library. But it was not used often.

The projects [in the Multimedia Studio course] are potentially constrained by what Adelphi offers, and what students are interested in doing. Added, “I don’t think there was an instance where a student wanted to do something, but they couldn’t.” Feels the two iMacs in the room aren’t being used, and the software is outdated. Problem with shared space, is that sometimes it’s nice to have something set up for the duration of a semester. This can make it hard to do group work - “you don’t want to have to spend ten minutes to re-engineer a room to do fifteen minutes of group work.”

Professor Hung has taught the Digital Literacies course in both face-to-face and online formats within the program. The online Digital Literacies course was shorter, so the pacing was different. Liked the face-to-face a lot. Maybe blended would work best for that course. Regarding online teaching, “I want to make sure that an online course isn’t just the online version of a face-to-face course.” Another difference is that online courses rely a lot on self-motivation.

Recommendations and Next Steps

- A more conclusive survey study would need to elicit a higher response rate, and include students from both the Garden City and Manhattan Center campus’. Would be helpful to coordinate with ORAP (Office of Research, Assessment and Planning) for support and analysis.
- Additionally, other faculty members that are teaching (or have taught) classes within the program could be interviewed for their needs and design ideas.
- Students could be given a more direct (though less anonymous) voice through an open discussion forum to collaborate on ideas for the program.
- Other campus community stakeholders (see Stakeholders section below) should be given an opportunity for input.
- Widen scope of assessment to include all shared campus resources (libraries, classrooms, cafes, etc.).

Developing a Virtual Hub

The various assessments of the program as it exists now (survey, faculty interviews, resource assessment, research) clearly show that there are a lot of active components to the program. Courses are being taught at the Garden City campus, Manhattan Center campus, and online. Students are being placed in schools, presenting at conferences, and attending technology events.

The information collected in the Program Assessment indicates that it would be difficult to create a physical center for the program. But by effectively utilizing technology, a virtual hub could help to service the social and collaborative needs of all members of the program.

The EdTech Virtual Lounge

I strongly believe in the benefits of having an accessible working space for projects. However, the practical realities (different campus locations, lack of space, funding, time necessary to develop and execute a successful project plan) would make it difficult to organize such a project in a short timeframe. Therefore, I've opted to focus my efforts first on developing a virtual hub to act as an online community space for the Educational Technology students. This online prototype space is program specific, but not class specific. It's also location-neutral, making it equally useful to the three student populations (Garden City, Manhattan Center, online).

I chose **Moodle** to host the service because:

- It's open source software
- It's the University's standard Learning Management System (LMS)
 - All Adelphi students have access to it within their ecampus
 - Students that have taken other classes at Adelphi are likely familiar with it
 - There is already a structure in place for University support for students (IT) and faculty (IT and FCPE)
 - It's stable and reliable
- Many classes use it as a place to store and collect files, which is fine - but I wanted to explore other capabilities within the system

I used as much input from my research as possible in designing the Moodle prototype. In his interview, Professor Curinga spoke about the need for students and faculty to have opportunities for informal discussion. So there are spaces for that (video chat, discussion forums).

The student survey suggests that students are looking for resources that are available to them on their own schedule. And both professor's mentioned that students' distance to campus makes it difficult to keep students on-site. The calendar and asynchronous collaboration tools

allow everyone to work around that. To try to create the kind of 'Panera' feel that Professor Curinga was looking for, I named this prototype space the **EdTech Virtual Lounge**.



The EdTech Virtual Lounge prototype is an equitable online environment which addresses the program's co-curricular needs. Major goals were to make it **useful** and **collaborative**. So I tried to make it so that students can mess around and use it on their own. They can start video chats, add events to the calendar, text talk in the forums, etc. It also ties together the program's social media activity. Most of the content is pulling from other sources (EdTech Wordpress blog, Edtech Twitter, Google Calendar, Adelphi web sites) so the content can stay fresh with minimal direct maintenance. All of the individual components within the space exist to provide opportunities for students to collaborate, socialize, and guide their learning experiences online. The space also doesn't have an overly distracting audio or video presence, to avoid the space itself becoming a distraction.



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[Students and Faculty](#)

EdTech Calendar

Today ◀ ▶ Saturday, August 2 ▾ [Print](#) [Week](#) [Month](#) [Agenda](#)

Wednesday, August 6	
4:30pm	Adelphi Manhattan Center Open House
Sunday, August 10	
End of Summer II 2014	
Wednesday, August 20	
9:00am	Digital Literacies
1:00pm	Programming Web-Based Educational Media
Thursday, August 21	
9:00am	Digital Literacies
1:00pm	Programming Web-Based Educational Media
Friday, August 22	
9:00am	Digital Literacies
1:00pm	Programming Web-Based Educational Media
Saturday, August 23	

Events shown in time zone: Eastern Time [+ Google Calendar](#)

Note: You need to be logged into your Adelphi Google/Gmail account in order to see the calendar.

Video Chat and Calendar

The centerpiece of the experience is the **24/7 EdTech Video Chat** spaces and accompanying **EdTech Calendar**. If utilized effectively, these related services can support a sense of digital interconnectedness all too often lacking in online learning experiences.

The **24/7 EdTech Video Chat** provides links to two persistent Google Hangout spaces. Two distinct spaces are available, **Students Only** and **Students and Faculty**. The reason for the separation is to give students and faculty an area to talk together, but to also give students a private space where they feel free from any kind of formal/informal assessment. Faculty

members can use the Students and Faculty space for office hours, open review sessions, project check-ins, and online events that aren't specific to a particular class. Since the links are persistent, if students/faculty are using them frequently, they can bookmark them and access them without going through the Moodle space (though they will have to log into their Adelphi Google account). Google Hangouts allows for up to 10 simultaneous participants.

The two major functions of the **EdTech Calendar** are to (1) keep people updated and involved in their EdTech community of practice, and (2) schedule video chats. Ultimately, the calendar widget should feed in content from several different Google Calendars.

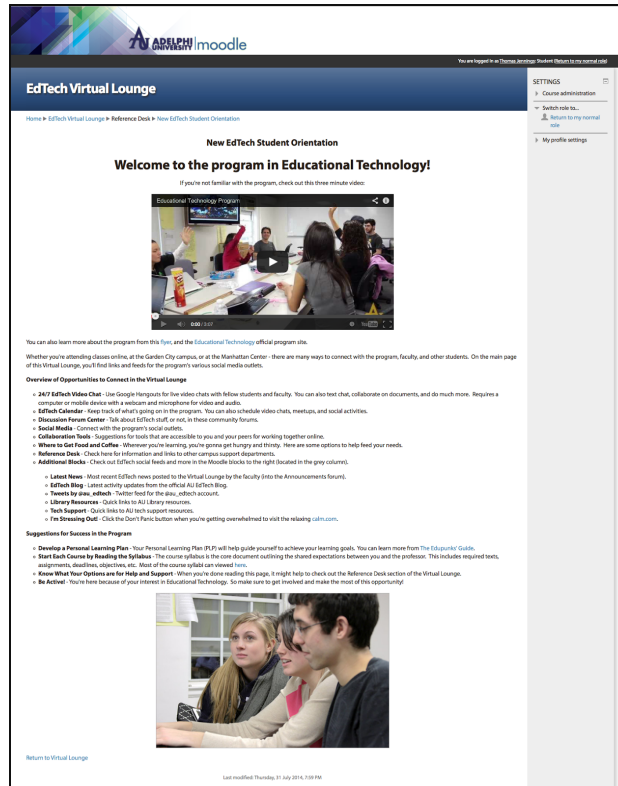
Recommended Calendars:

- Class Schedule
- University Events
- Program Events
- Social Events
- Online Video Chats

The Online Video Chats calendar should be editable by all members. Faculty can schedule office hours, and students can schedule times to collaborate. Since they're next to each other at the top of the page, students can easily see on the Calendar if someone has scheduled a faculty or student video chat that day.

The Social Events calendar should also be editable by all members. That way everyone can suggest ways to meet up and be active in the greater community of Educational Technology. Conferences, hackathons, webinars, site visits, and other group socializing can be coordinated here. The other calendars will help students keep track of more traditional curricular concerns, such as class times, relevant events (on and off campus), due dates, etc.

Finally, the first module will also have a link for a **New Student Orientation** page, which provides introductory information for the program as a whole, as well as an overview of the EdTech Virtual Lounge.

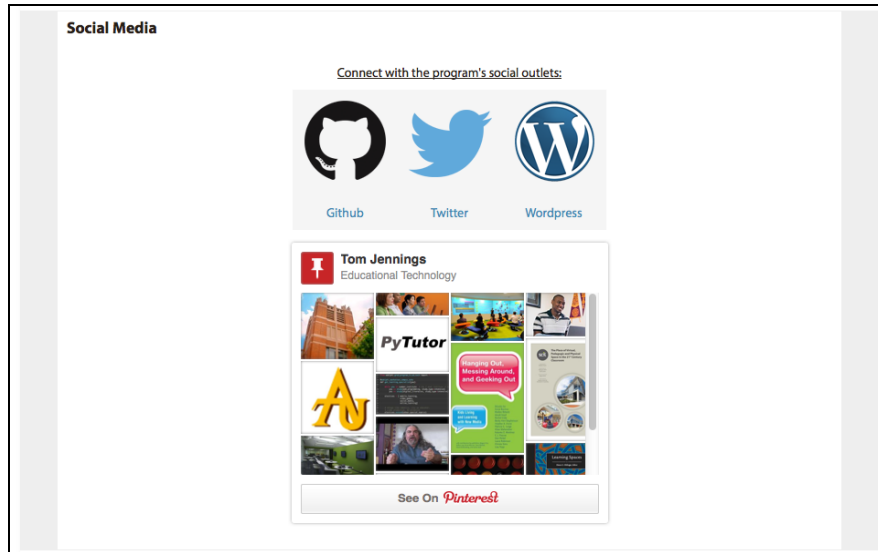


New Student Orientation



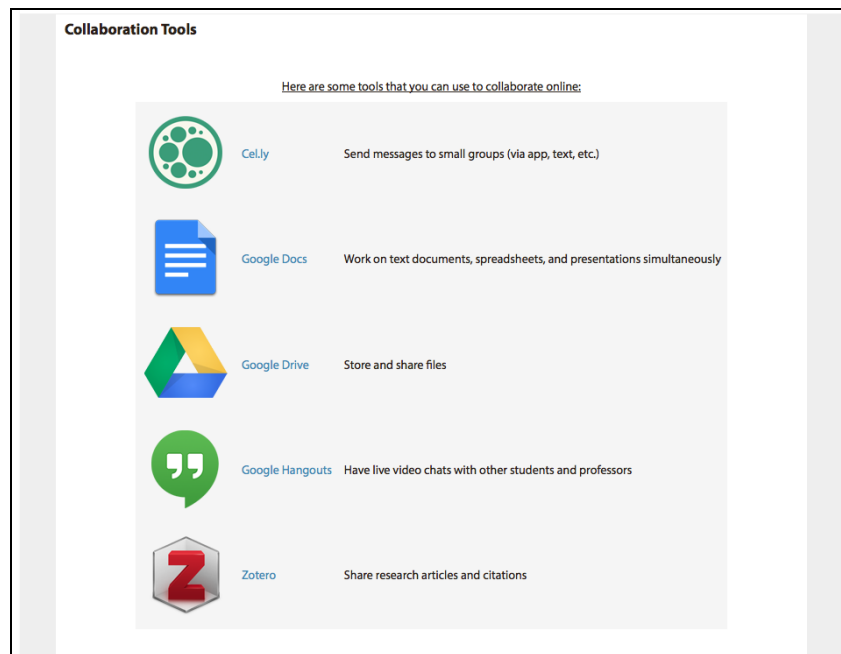
Discussion Forum Center

The **Discussion Forum Center** module is a group of forums for students to have discussions. For Adelphi classes, Moodle forums are typically used as an assessment outlet. Students post responses to readings, essays, etc. Posts are often graded or tied to class participation. In contrast, these forums are more open ended and driven by the changing interests of the community. They more closely resemble online affinity space forums (such as [TheGradCafe](#), [Linux Forums](#), or [Offtopic.com](#)).



Social Media

The **Social Media** module connects students to the program's various online social outlets. Some of these accounts (Twitter & Wordpress) also have feeds located in the side column.



Collaboration Tools

The **Collaboration Tools** module provides links and suggestions for tools that students can use to collaborate online.

Where to Get Food and Coffee

**Note: Adelphi does not in any way endorse these options. They are listed merely as suggestions.*

Garden City Campus				
Name	Location/Hours	Menu	Options	Description
UC Underground Cafe	Map/Info	N/A		On-campus Starbucks/cafe
Dunkin' Donuts	Map/Info	Menu		
The Lantern Diner	Map/Info	Menu	24/7	Diner
Avellino's	Map/Info	Menu	Delivery	Pizza and catering
Adelphi Deli	Map/Info	Menu	Delivery	

Manhattan Center Campus				
Name	Location/Hours	Menu	Options	Description
Soho Made Soups	Map/Info	Menu		Same building as campus
Starbucks	Map/Info	Menu		
Amelia's	Map/Info	Menu	Delivery; Online Ordering	Diner
Kool Boo	Map/Info	Menu	Delivery; Online Ordering; 24/7	Fast food take out

Anywhere	
Domino's	Order pizza online and have it delivered
Papa John's	Order pizza online and have it delivered
Starbucks (locator)	Find a Starbucks near you
Panera (locator)	Find a Panera Bread near you
Dunkin' Donuts (locator)	Find a Dunkin' Donuts near you
7-Eleven (locator)	Find a 7-Eleven near you
Diner Finder	Roadside's database of diners
Yelp	Find restaurants (and other businesses)

Where to Get Food and Coffee

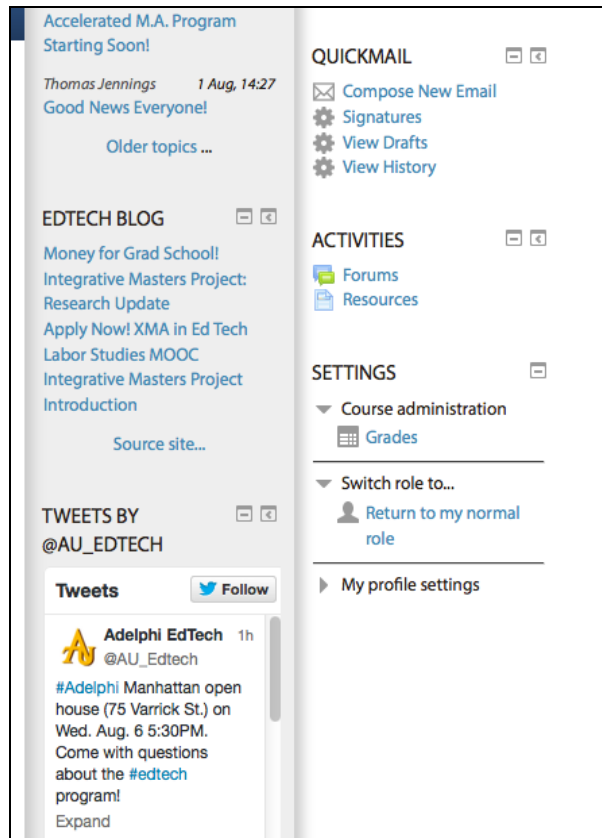
Reference Desk

EdTech Program Resources - Adelphi's Official Website for the Educational Technology Program - Program in Educational Technology (2013) - EdTech Program Course Syllabi - New EdTech Student Orientation
Adelphi Learning and Support Resources - Libraries - Information Technology (IT) - Learning Center - Writing Center - Learning Resource Program - Office of Disability Support Services
Adelphi Registration and Other Key Resources - Office of the University Registrar - Student Financial Services - Adelphi Course Search - AU Official Bookstore

Reference Desk

The **Where to Get Food and Coffee** module provides students with some options as to where they can get food and coffee to keep them going while they're studying. Provides options for all three student populations (Garden City, Manhattan Center, and online). Many of the options are open late and have delivery options (helpful for students deep into research and project work). Having this information available here adds to the 'cafe' or 'lounge' atmosphere of the space.

The **Reference Desk** module provides quick links to important Adelphi resources. There are categories for *EdTech Program Resources*, *Adelphi Learning and Support Resources*, and *Adelphi Registration and Other Key Resources*.



Moodle Column Blocks

Finally, there are two columns to the right of the modules with additional active content. The first (gray) column features blocks which feed active social information and helpful support resources.

Additional Column Blocks:

- **Latest News** - Most recent EdTech news posted to the Virtual Lounge by the faculty (into the Announcements forum).
- **EdTech Blog** - Latest activity updates from the official AU EdTech Blog.
- **Tweets by @au_edtech** - Twitter feed for the @au_edtech account.
- **Library Resources** - Quick links to AU Library resources.
- **Tech Support** - Quick links to AU tech support resources.
- **I'm Stressing Out!** - A button labeled "Don't Panic" which links to the relaxing calm.com website.

The second (white) column contains Moodle structural and maintenance blocks (**Quickmail**, **Activities**, and **Settings**).

Recommendations and Next Steps

- Give members of the program community (students, faculty) an opportunity to test the space and provide feedback.
- Site needs to be organized and optimized for display on mobile devices.
- Test other themes and/or reorganization of side column material to reduce cluttered or claustrophobic look and feel (suggestion by test user Ariel Fleurimond).
- Create an FAQ with info on how to use the space, what equipment the use will need, etc. (suggestion by test user Aaron Hung).
- Create two EdTech department Adelphi Google accounts (one for each Google Chat space). Use these accounts to create a series of calendars to feed into the display calendar within the Moodle module.
- Encourage faculty to use the space for virtual office hours, social media, etc.
- Develop system for students to contribute collaboration tools, social accounts, etc.
- Ideas for future modules:
 - **FOSS (Free Open Source Software) Resources**
 - **Job/Professional Resources**
 - **Suggestion Box** (or other built-in self assessment tool)

Connecting the Physical and Virtual Worlds

Augmented Reality (AR) is likely to be the central medium of the next great technology shift. With Facebook buying the [Oculus Rift](#), and Google pushing [Google Glass](#) into mainstream society, major tech companies are certainly gearing up for this burgeoning field. Education should remain at the forefront of studying, developing, and utilizing AR experiences. It provides an opportunity to connect physical and virtual spaces.

The EdTech Community Portal

For the program, Augmented Reality presents an immediate opportunity to engage Educational Technology students in a medium that they will likely be developing and supporting in the near future. To bridge the classroom and virtual components of the Educational Technology learning experience, I created the **EdTech Community Portal**. On the surface, the Community Portal is just a sheet of paper. But scanning that paper gives members of the EdTech program community access to an AR environment. In fact, it is the missing link to seamlessly integrate the physical and virtual experiences inherent in the program.



Like the virtual space, this is meant to engage students in a convenient and versatile way. Again, the major goals were to create something **useful** and **collaborative**. It provides another access point to engage with the program.

Zappar was chosen as the platform because it provides a high level of functionality with a simple design interface. Zappar codes are scanned using a mobile app on either an iOS or Android device. This includes iPhones, Android smart phones, iPads (accessible to Manhattan Center students via the Library), and Android tablets (accessible to Garden City students in the Harvey 104 resource closet).



Zappar Scannable Handout Sheet

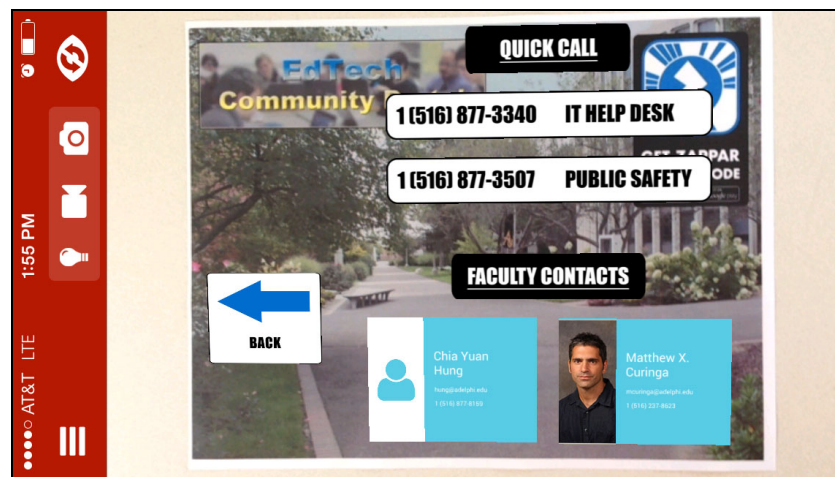
The sheet itself is intentionally minimal. The aesthetic purpose is to establish a visual connection to the University for the student/user. And the practical design rationale is to make sure the sheet itself doesn't contain any direct content. All of the content exists in the AR space. That way, updates can be done online. There is no need to access the sheet or re-print changes.



Augmented Reality Community Portal Main Screen

The **EdTech Virtual Lounge** button provides quick access to the Moodle site. Below it (lower left), there are three button graphics. These direct links will send students to the department's social media outlets (**Github**, **Twitter**, and **Wordpress**). The two buttons for **Students Only** and **Students and Faculty** video chats link to the same place as their Moodle (Virtual Lounge)

counterparts. The difference is that it will conveniently switch to the app and enter them into the video chat (provided their scanning device has the **Google Hangouts** app installed).



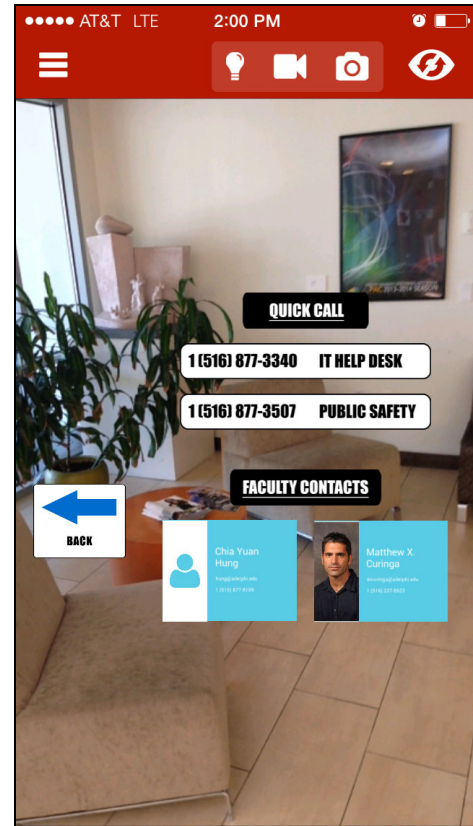
Augmented Reality Contacts Screen

The **Contacts** screen contains immediate access to helpful contacts. The **Quick Call** buttons will place a phone call (assuming the scanning device has such capability) to Public Safety or the IT Help Desk. This would be especially convenient for situations in which there is a problem with classroom equipment or access. The **Faculty Contacts** will add information for the corresponding faculty member to the Contacts of the scanning device.

For students to utilize, the sheet can be posted by the door, or somewhere in the classroom. Students can scan the sheet on their way in or out of class. Additionally, they can be handed out to students (perhaps along with the syllabus), so that they can bring it to their study space. For online courses, the sheet can be posted as a .pdf file. Online students can get the same experience by simply downloading and printing it. Zappar saves the most recent scanned content (until the user scans something else or quits the app entirely), adding more freedom and mobility to the experience.



Main Screen (View of Garden City Campus Outdoors)



Contacts Screen (View of Performing Arts Center Entrance Lounge)

Though much of this content also exists in the **Virtual Lounge** space, having it available here as well increases convenience and accessibility for those that have mobile devices.

It follows the Universal Design for Learning recommendations of providing multiple means of representation, action and expression, and engagement. It provides further opportunities for virtual collaboration, and is equally useful to students irrespective of their learning location.

Recommendations and Next Steps

- Since the AR experience can be updated online, content can be added and updated periodically (i.e. a project gallery).
- Students and faculty should attempt to utilize this experience, and provide feedback for usability and content improvements.
- A third screen with web links would be helpful for students to access on demand.
- Seeking out a Free Open Source Software alternative to Zappar would provide the institution with more ownership and opportunity regarding AR spaces.
- Even more dynamic and immersive student experiences can be created in classroom spaces using location based (markerless) AR.

Conclusion

Working from the information collected in the **Research** and **Program Assessment** sections, I have created prototype resources which link the physical and virtual learning environments of the Educational Technology program. The Virtual Lounge catalogued in the **Developing a Virtual Hub** section can serve as an online environment accessible to traditional learners across the program and provide deeper opportunities for online students to connect. And the AR Community Portal explained in the **Connecting the Physical and Virtual Worlds** section links the two spaces together. This **Conclusion** section includes information regarding means by which others can contribute or build upon this project. Many components of this document include a **Recommendations and Next Steps** subsection, with suggestions for anyone interested in continuing to refine this work. And finally, by releasing this document under a Creative Commons license, it enters into a widely accessible body of Internet knowledge.

Social Media/Collaborative Elements

I tried to foster flexibility and openness throughout the development of this project. To encourage involvement, I utilized these online social tools.

Tool: **Wordpress Blog**

Project Function: Periodically posted in-process updates on some of the material contained in this document to the AU EdTech Blog.

Link: <http://www.auedtech.org/>

Specific Posts: <http://www.auedtech.org/posts/integrative-masters-project-introduction/>
<http://www.auedtech.org/posts/tom-thesis-research-update/>
<http://www.auedtech.org/posts/tom-thesis-virtual-lounge-update/>
<http://www.auedtech.org/posts/tom-thesis-ar-update/>

Tool: **Google Doc**

Project Function: Sharing of an editable early draft of project research section.

Link: <https://docs.google.com/document/d/1MY2dKBTlji0CZndhYKjyPzDFqlyAZYHx9djgZo5Bcc/edit#>

Tool: **Zotero Group**

Project Function: Allow for sharing scholarly documents and citations.

Link: <https://www.zotero.org/groups/272372>

Tool: **Pinterest Board**

Project Function: Collect articles, graphics, websites, ideas, and inspiration for the project.

Link: <https://www.zotero.org/groups/272372>

Development Tools Used

Here is a list of the software tools utilized to carry out project research and develop new resources.

Tool	Project Purpose
Adobe Photoshop	Image editing
Gmail	Email correspondence
Google Calendar	Virtual hub editable calendar
Google Docs	Document creation and sharing; administering survey
Google Hangouts	Video chatting
Firefox	Web access and site testing
Moodle	Learning Management System (hosting virtual hub)
Pinterest	Collecting web resources
Wordle	Creating word cloud
Wordpress	Hosting progress update blogs
Zappar	Augmented Reality development platform
Zotero	Collecting scholarly research

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