Muse Design Studio: Advancing creative problem solving as a platform for interdisciplinary education

It is often the case that design is synonymous with problem solving, innovation and ingenuity. Design education is built around experiential learning and the pursuit of the unknown. It would seem logical to start here as a place of beginning when exploring creative problem solving as a foundational component of undergraduate education. Much of the framework outlined in this paper is based upon my experience as a design student, instructor and researcher. Still, it was not until I began working in a more interdisciplinary setting that a more impactful educational experience began to take shape. As we consider what the future of higher education might or should look like in a world desperate for problem seekers and solvers I am proposing a way forward through interdisciplinary action. This action is centered around experiences over skills, people over products, and leading over knowing.

This paper details an ongoing project aimed at building the capacity for creative leadership in undergraduate students. Central to this project is the belief that creative leadership is best fostered through interdisciplinary experiences and holds value beyond commonly practiced creative strategies and skills (Reiter-Palmon, 2004). This tripartite exploration of teaching, learning and service can act as a case study for future interdisciplinary research and practice related to creative problem solving.

For the past decade I have pursued a research mission heavily invested in undergraduate curricular development at the University of Kentucky. As outlined in Figure 1, this collective effort has contributed to what is now a pilot program on campus (UK Student Center Design Thinking Challenge) to test and advance innovative teaching methods. The impetus behind this effort has been the aspiration to positively impact the current model of undergraduate education and provide a model for other institutions to follow and improve upon. These experiences began as design centric courses seeking to develop cognitive awareness and understanding related to creative problem solving. However, as this effort has continued to evolve the reach has expanded across disciplinary boundaries. Recent developments continue to maintain an interdisciplinary focus while seeking increased problem complexity through the incorporation of real world problems and stakeholders.

The newly launched program, entitled Muse, borrows from previous creativity development experiences (Figure 2) to forge an immersive experience aimed at elevating students into creative agents of change. The first year of this ongoing pilot program consisted of a two-semester experience with senior level landscape architecture students first serving in a leadership capacity in LA 111 (University of Kentucky general education course) during the 2018 fall semester. In LA 111, a cohort of landscape architecture students and faculty engaged undergraduate students in majors across the academic spectrum through the beginning stages of creative inquiry and problem solving. In the 2019 spring semester, a combination of three courses (GEN 109, LA 397, LA 426) were taught communally and transitioned the landscape architecture students into creative leadership roles with the courses functioning as a vertical creative studio. The landscape architecture students worked on a project examining ways to reshape the current student tailgate experience on campus with undergraduate students from
various disciplines, community and industry partners, and high school students seeking college credit. This team set out to test, prototype and model potential solutions before proposing a final action plan and helping stakeholders launch the solution into action. Of particular importance is the fact potential problems were identified and shared through an ongoing Wellness Initiative on the UK campus (Figure 3). By grounding the problem within the university community, the students immediately became invested and informed through their own personal experiences. This level of expertise is extremely valuable in order to build enthusiasm and a level of foundational understanding. In this model the landscape architecture students developed skills as leaders in creative problem solving through engagement, teaching, and reflection activities with less experienced students. They were then challenged to develop these ideas, insights, and experiences into real solutions and test each in collaboration with various communities of interest.

The creative challenge identified for this initial exploration was entitled “Fix the Fall, reimagining the student tailgate experience on campus”. This challenge was prioritized by the University of Kentucky President and remains a complex and meaningful issue within the campus community. As with most universities the student tailgate culture around UK football gamedays had begun to foster underage drinking and subsequent illegal behavior spilling out of the tailgate experience onto campus and beyond. The student led group was tasked with utilizing the design thinking approach first initiated in LA 111 to ideate, prototype and launch a proposed solution. Outside of the product-oriented design deliverables the team remained equally focused on the documentation of their process and the reflective insight throughout the experience from the perspective of each team member. The documentation of this interdisciplinary exploration was shared on a website designed specifically for the project and can be found at ukla426.com

**Lessons learned**

*The importance of a beginner’s mind*

Finding a problem that is both multifaceted and complex in nature is critical to the experience. For students it is more important to find complexity in process than clarity in a solution. The value of this experience comes in the moments of uncertainty, doubt and even chaos. However, these interactions must be intentional, reflective and informative to how best to navigate current and future problems. Perhaps the central role of the instructor in this project was to maintain a dialogue of thought with the team members throughout the project, and when uncertainty arises ensure that this ongoing discussion slows down and becomes a record of shared reflection. This reflection in action is what ultimately builds capacity to grow as a creative problem solver. In this project we used a custom designed website to document these discussions along with moments of inquiry and insight.

As with most creative challenges this particular problem was inclusive of many key factors we had not originally considered. At the outset it appeared very clear how to contextualize this problem. The situation had been documented through outcomes and actions that helped frame the problem as an issue centered around underage drinking. Still, there were a multitude of issues that surfaced through the empathy and listening stages of our project that
were not recognized at the project outset. Looking back, it was essential to begin the project in a position of seeking understanding rather than acting on the initial problem statement. Following a period of broadening perspectives, the project statement was redefined through a deeper understanding and issues such as inclusivity, community and tradition. Each of these ultimately became driving forces in the proposed solution. From a creative leadership standpoint one of the strongest realizations by the senior student was the value in finding comfort in that initial stage of ambiguity. He pointed to the power that rests in beginning with an open mind and embracing the fact you are seeking understanding in a complex space rather than acting to find comfort in certainty.

Beyond design

Coming from a design background there is an expectation that any problem will require an iterative process of finding a solution through the association of multiple lines of thought. However, there is a tremendous value placed on finding and representing one best solution in a way that communicates design understanding and intent. In this project there was a concerted effort to make the focus equally about the role of a creative leader in guiding others along a path to clarity. The key aspect was not the product but the experience of dealing with the unknown and helping others who are even less comfortable with the ambiguous state of creative problem solving.

Being a masterful creative problem solver is something that develops over time through endless iterative experiences focused on negotiating complex problems. This characteristic seems increasingly rare throughout undergraduate education in some part due to a reliance on more traditional ways of teaching and learning. By focusing primarily on the goal of acquiring skills and knowledge students are bypassing the development of cognitive awareness and understanding. Being a proficient leader is also of increasing value and dwindling focus. I would argue that leadership in its full capacity is developed through engagement with problems and people in the context of the unknown and endless possibility. This project placed a priority on utilizing the creative problem state to not only develop an understanding of how to approach and think about complexity but more importantly at a higher level appreciate and embrace the ability to help others reach their creative potential. This project involved students seeking both of these objectives with less experienced students serving as participants and a senior student assuming a leadership role throughout the project. The interplay and adoption of both learning objectives proved to be extremely enlightening on many levels. Overall, it was made clear that immersion into a complex problem state is unlike any setting in a typical undergraduate experience. By their very nature, uncertainty, iteration and failure are major roadblocks to most inexperienced students. Figuring out how to avoid and overcome these obstacles provided invaluable lessons that are applicable to any creative problem state. Also, placing the burden of leadership on a student required skills reaching far beyond any one design discipline into more broadly defined areas of human interaction and communication. In that regard it became apparent that creative problem solving is not design, it is at its essence about people and relationships. Consequently, for the senior student, creative leadership became an ongoing quest to relate to and support team members in an ever increasingly complex situation. The ability to do is more precious than any collection of skills, knowledge or external artifact. How do we as educators develop and support
programs that allow for as many students as possible to encounter this dilemma as many times as possible in preparation for a life of transformative action and influence?

*Technology bump*

One of the new explorations in this project was the use of virtual reality to model potential solutions. The use of this technology allowed each of the proposed ideas to be shared across a group of users prior to finalizing a solution (image). The virtual platform was extremely helpful in accurately representing potential solutions in a way users could richly experience and respond. The virtual model allowed users to be placed into a proposed physical space, engaging multiple senses through interaction. For many of the students this technology was initially viewed as a powerful way to share their ideas. Still, the ultimate power of VR as tool was far beyond its advanced capacity for graphic representation. Utilizing VR allowed the team to engage the user in a way that generated meaningful feedback. A key to this from a user perspective was both an excitement and willingness to use the technology and a sensory rich experience that prompted thoughtful and multifaceted responses.

Nonetheless, there should be caution in allowing the use of VR to become a focus of the exploration (product) rather than a tool in generating discussion (process). In this project many of the users were enamored by the technology and some familiarity was needed before the conversation could move into more meaningful feedback. The interaction with users experiencing the VR model must be intentional and focused in order to avoid distracted or technology centric responses. Undoubtedly VR is a new pathway for insight but should be monitored to ensure the power is realized in a way that allows for greater understanding and in-depth dialogue of ideas.

*Next steps*

The Muse model has provided an interdisciplinary framework for the undergraduate landscape architecture students as they acquired expertise in creative leadership through a collective deep dive into a complex problem. It is the experience of working in a leadership capacity and negotiating the problem while helping others find their creative muse that prepares these students to have the largest impact as agents of change. The impact of the lone creative genius is insignificant compared to the capacity to develop in others the ability to see and experience the world through a creative lens. As the initial pilot period concludes, the Muse program will be evaluated and modified before seeking a permanent place within a collection of newly launched creative initiatives on campus. The ultimate goal is for the Muse program to empower students and educators across campus and beyond to seek opportunities for creative influence, and in doing so build a network of experiences aimed at illuminating complex problems and elevating students with the capacity for transformative change.

Moving forward the Muse program will be constantly evolving as the scope of the projects include challenges that are both current and meaningful across communities of scale from campus, the city of Lexington and the state of Kentucky. In doing so, this program will
expand into serving as a laboratory for creative pedagogy, problem solving, and community/campus outreach. Following the 2019 spring semester, I will be dedicating time for reflection and refinement before launching an effort in the 2019 fall semester to design and implement a new series of pedagogical innovations related to creative leadership and problem-solving. This initiative will address the development of new experiences throughout the undergraduate experience. The objective is to model a variety of pathways so every undergraduate student at the University of Kentucky will have an opportunity to infuse creative problem solving into their curricular and co-curricular activities. This model will require rethinking how undergraduate education at the University of Kentucky is currently advancing student growth related to interdisciplinary experiences, collaborative learning, creative problem solving. All of which are central to the ever-changing demands of the workplace. The outcomes of the project will facilitate University buy-in, model a series of meaningful changes, and help establish a permanent center that will focus on bringing these projects into action while exploring future directions. Beginning in the 2019 fall semester and continuing over a three-year period I plan to incorporate what I have learned through my past efforts and ongoing pedagogical practices, model a series of new initiatives, and solidify a presence on campus moving forward.

**The power of permanence**

The Muse program is influenced by a model I first explored in partnership with Vanderbilt University during the 2017 academic school year entitled *Into the Fog*. That project looked closely at the undergraduate experience at Vanderbilt and how a series of curricular, programmatic and environmental enhancements might nurture long term, transformational change across campus. With the help of this project, Vanderbilt has launched a new campus initiative called DIVE with the goal of requiring an immersive creative experience for every student before graduation (https://www.vanderbilt.edu/immersion/dive/). The following website was created as a part of the project to help document and share the findings: https://waho223.wixsite.com/intothefrog.

The programs at Vanderbilt helped reinforce a belief in the power of place. Despite its shortcomings, the physical infrastructure and programming made possible through a permanent facility were striking. As part of the upcoming reflection period I will think carefully about how a similar space at UK would work given its unique outreach mission as a land grant institution. In addition, the timely nature of UK’s developing “innovation district” provides a tremendous opportunity for a permanent home as a part of a larger campus initiative. As shown in Figure 4 this program would carefully consider how to develop a three-part mission of outreach, education and research with an approach that allows each to inform and strengthen one another. Of particular importance is how each of these areas would function specific to programming and spatial synergies.

Moving horizontally across the graphic in Figure 4 the interaction of mission (outreach, education and research), program (Into the Fog, Muse, Meta Lab), and space (public, studio, laboratory) become evident. Viewed holistically as a system it is important to recognize the significance of ongoing interaction and growth. Reading vertically the pillars of outreach, education and research are framed along with suggested programmatic and spatial organization.
Again, these are not to be viewed in silos and were developed to overlap and interact accordingly.

At its core the project and place are grounded in a desire to advance undergraduate education. In terms of output there are certainly desired outcomes related to outreach (impact on community) and research (impact on a body of knowledge). However, central to this project is a strong desire to strengthen undergraduate education through a focus on creative leadership, applied learning, problem solving, and visual communication. Therefore, education and the Muse design studio component remains central as the outreach and research components support and inform (Figure 5).

Ultimately, the ongoing development of Muse has enriched and solidified my belief in an interdisciplinary approach for creative problem solving; an approach grounded in a process driven curriculum, reflective practice, innovative documentation and dissemination of information, and a diverse and multi-faceted strategy for reaching a wide portion of the undergraduate population. Looking forward, the University of Kentucky has a tremendous opportunity to develop not only the physical infrastructure to support an innovation district but more importantly the relevant programming needed to allow this infrastructure to optimally serve and impact students.
References

# MUSE: The Evolution of Creative Leadership

## BUILD Creative Confidence
- Overcome psychological barriers
- Frame creativity as something we all possess
- Challenge the belief of who we are
- Accept failure as part of process

## ADOPT Ways of Seeing and Experiencing the World
- Realize that creativity is not something we turn on & off
- Embrace the creative habit as a way of life
- Make the familiar strange and the strange familiar

## GAIN Understanding and Awareness of Self
- Find personal creative process
- Question a personal problem solving process and how might that develop with experience
- Identify strengths & weaknesses as a problem solver

## DEVELOP Creative Strategy Toolkit
- Determine tools / skills needed to navigate creative processes
- Discover which tools are best suited to a personal process
- Uncover which tools are best suited for certain types and phases of problems

## PRACTICE Metacognitive Approach
- Gather conditional knowledge (when, where, why) to use creative strategies
- Exercise self-regulation (planning, monitoring, evaluation) of creative strategy use
- Reflect on how one thinks relative to other professionals

## EXPERIENCE Engaging Different Types of Creative Problems
- Iterate through a series of problem sets to build a cycle of knowledge and regulation of cognition
- Appreciate the diverse application of creative problem solving

## CST Experiencing Creativity Through Others
- Talk with various creative professionals about their success and failure
- Exposure to great minds who have and continue to wrestle with similar problems
- Challenge individuals who have never been asked to be creative
- Empower others with the ability to trust in themselves as problem solvers
- Step into the unknown of a creative problem and find a way toward understanding
- Find comfort in the ambiguous nature of a creative problem state

## GEAR UP Deep-Dive into Problem Solving
- Learn to communicate effectively within a creative team
- Work in parallel with others and appreciate multiple ways forward to a solution
- Acknowledge that creative growth happens with introspection
- Place a premium on a lifelong learning approach to creativity

## FOG Developing a Creative Framework for Others
- Learn about oneself through the act of teaching and leading others
- Share a higher level of cognitive awareness with others seeking to build that same capacity
- Lead others in the understanding and practice of various creative strategies
- Seek to build in others the ability to regulate the use of various creative strategies
- Commit to a holistic approach to cognitive self-awareness and understanding
- Place ultimate value on the continuing development of personal cognitive processes

## MUSE
- Seek a higher level of creative responsibility through leadership / mentorship
- Help others negotiate and find their creative muse
- Learn about oneself through the act of working closely in a mentoring relationship
- See problems with fresh eyes and understanding
- Empower others to become experts
- Seek an understanding of others by working closely in a mentoring relationship
- See problems with fresh eyes and understanding
- Empower others to become experts

**Figure 1**
**Fall 2018**

**LA 111**

- LA faculty mentor
- LA student facilitators
- Undergraduate Students

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**Spring 2019**

**LA 397**

- LA faculty mentor
- LA student facilitators
- Professional Partner
- Undergraduate Students
- High School Students

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**UK Initiative / Creative Leadership and Problem Solving**

- **Reflect and Plan**
- **Design and Model**
- **Test and Launch**

**Reflect** on past experiences
**Plan** a wide reaching creative platform for UK undergraduate education
**Design** a series of curricular and co-curricular projects
**Model** a select few for feedback and testing
**Test** one project with campus partners
**Launch** a system focused on future buy in and growth

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**Figure 2.**

- **Empathize**
- **Define**
- **Ideate**
- **Prototype**
- **Test**

- Learn about the audience for whom you are designing, by observation and interview. **Who is my user? What matters to this person?**
- Brainstorm and come up with as many creative solutions as possible. **Wild ideas encouraged!**
- Build a representation of one or more of your ideas to show to others. **How can I show my idea? Remember, a prototype is just a rough draft!**
- Share your prototyped idea with your original user for feedback. **What worked? What didn’t?**

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**Creative Team**

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[Diagram showing the process and participants]
Wellness Space
Tailgating Redesign

You are here
### Mission
- Engagement at various scales of community from campus (UK Wellness Initiative), city of Lexington (town/gown relationship), and state of Kentucky (various complex challenges).
- Effort in support of land grant mission of University of Kentucky and in response to communities of need across the various scales.
- Problems would fall along a continuum of complexity and would be selected on criteria comprised of all three elements of mission (outreach, education, research).

### Program
#### Into the Fog
- Interdisciplinary teams comprised of UK students, faculty and community members.
- Participatory model seeking partnership with various UK entities - CAFE (Community, Leadership and Development / CEDIK), UK Healthcare.
- Fold in expertise from the campus community based on the nature of a particular problem.
- Sharing of work in open workshops, galleries, and online models.

#### Muse
- A continuation of the pilot project with the goal advancing a curriculum based on multiple experiences negotiating complex problems.
- At its core this program is built around the tenants of creative leadership, applied learning, problem solving and communication (focus on visualization).
- A model for how best to foster creative thinking in the K-12 setting. Developing a partnership with the College of Education is critical.

#### Meta Lab
- Commitment to offering creative engagement and exploration to UK community of students and faculty.
- Potential tie into College of Education graduate and PhD student research.
- Seek K-12 partners in Kentucky schools for applied research in the classroom.
- Find and attract students with goal of creative leadership and/or community outreach.

### Space
#### Public
- Flexible space that opens to the public / streetscape
- Gallery and wall space dedicated to sharing both process and products
- Accessible to guests and visually engaging with pedestrians, vehicular traffic

#### Studio
- Core space for permanent instructors, students, staff.
- Based on a design studio culture - 24/7 access, immersive experience into various problems with a team of students, faculty, partners.

#### Laboratory
- Shared work space for interdisciplinary research teams
- Project work space for pin up / presentation of work
- Proximity or overlap of use with Muse studio space for sharing of information and ideas.

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**Figure 4**