Design Matters: moving beyond content to metacognition

It has always been important for students to be technically prepared and professionally competent. However, the future belongs to a very different kind of person with a very different skill set (Florida, 2002; Hawkins 2002). We are now a part of a new world in which creative thinking abilities are essential (Pink, 2006). Developing an understanding of creative processes can help to extend possibilities beyond predictable outcomes and can be used across many different disciplines to create new, more innovative solutions to problems. Today's decision makers must use a variety of thinking styles, methodologies and creative processes. They must learn to leverage their personal thinking processes using tools and techniques based on cutting-edge research.

If the goal is to develop students who are able to express a higher level of creativity then there is a need to link education to the existing research in learning theory, metacognition and creativity. And, through this linking, develop approaches to education that more effectively enhance creativity (Sawyer, 2015). This will allow educators to develop approaches that go beyond those of the past with iteration and reflection as essential parts of the process. It will enable us to go beyond teaching the way we were taught, to understand why some strategies work and some do not, and to find new approaches that will develop creativity in all of our students.

In this paper designers are challenged to step outside of their traditional role and answer a call to action to innovate our current education system. This step outward would extend beyond the built environment, requiring designers to look inward and share an approach to seeing and experiencing the world. This proclamation is based on the realization that designers are uniquely qualified to transform the model of education in the United States (Berk, 2016; Davis, 2017). Designers can become agents of change on a much larger and impactful scale, helping shape the minds of the next generation.

Design education is built upon the development of creative problem solving, a skill that is largely absent in the majority of K-12 education (Davis, 2010a; Davis, 2010b; Wagner, 2012). This iterative process of discovery is fundamental to how designers solve problems and ultimately engage issues. In addition to this skill set designers are trained to serve as mediators, communicators and empathizers (Brown, 2009; IDEO, 2015). They acquire a fundamental understanding and establish a shared language across many disciplines and ways of thinking. In addition, fostering the ability to see the world with fresh eyes and understand how to frame problems is essential to ensure that future generations are equipped with the creative capacity to thrive (Dorst & Cross, 2001; Horowitz, 2014). The interplay of divergent and convergent thinking throughout the phases of planning, guidance, modeling and evaluation must all be part of seemingly the most ambitious and challenging design problem (Brown & Kuratko, 2015). This is a call for designers to accept the challenge of helping build a culture equipped to collectively innovate.

This paper will highlight a collection of projects led by design faculty, professionals and students. These projects demonstrate the power designers possess when moved to respond to this
call for action. Each example highlights the tremendous impact designers can have in the effort to reimagine education at all levels. Projects range from middle and high school all the way through higher education and address the role of designers across various modes of engagement. For example, one project challenges middle and high school students to design and implement a new curriculum in their school based on design thinking principles. Another project focuses on collaborating with administrators at a top university to establish a curricular enhancement plan built around creativity as an immersive experience. Moving forward these case studies and others represent a model upon which a larger effort can build to effect change at all levels of education.

The following collection of projects were all heavily influenced by a course developed at the University of Kentucky called LA 111: Living on the Right Side of the Brain. This course challenges students to explore their creative thinking process through the framework of metacognition, thinking about thinking. The course was originally conceptualized and offered to design students as an elective to supplement their studio curriculum. However, several years ago when the University of Kentucky implemented a new general education core curriculum the course was chosen to serve as one of the first offerings in the Creativity Inquiry category. This shift opened the course to countless students across campus who would never have been exposed to the content.

Students in this course gain an understanding and awareness of creative strategies that may be used in future problem solving. These strategies help encourage creative thinking that leads to more innovative and novel solutions. Students practice a metacognitive approach by reflecting on their own thinking in an effort to enhance self-regulation and ultimately realize creative potential.

The following learning outcomes are intended for students participating in this course. First, students will be able to appreciate the influence of personal experiences on the creative process. Second, students can successfully outline their creative process from early awareness and conceptualization to a more detailed realization. Third, students are able to evaluate various creative thinking strategies in relation to problem solving, select a path of action and justify their choice. Fourth, students should be adept at understand the relationship between cognitive choices and personally or collectively held values. Fifth, students are comfortable documenting their personal approach to the creative process. Finally, students are capable of applying the ongoing design and realization of their creative process to not only their entire educational experience but more broadly to their daily lives.

In this course students are exposed to modes of thinking including the discovery, application, integration, and the sharing of knowledge. This is accomplished in lectures, discussion sessions, and a variety of contemplation exercises. The contemplation exercises are assigned requiring writing enhanced with supplementary diagrams, sketches and photos. While asking students to reflect on content introduced throughout the semester these exercises are intended to externalize, articulate and chronicle the development of students’ creative process. The five reflective exercises include the following subjects: Creative Self, Creative Making, Creative Reflection, Creative Search, and Creative Lessons Learned.
An essential aspect of students’ reaching their creative potential is learning through experience (Kolb, 1984; Moon, 2004). Therefore, in addition to the exercises part of this class involves posting and commenting on the class blog (themetacogblog.blogspot.com). There are two different types of activities on the blog. The first activity involves reading responses. Students are required to participate as an author on a weekly basis. The blog serves as a forum for reading discussions and allows for the sharing of ideas. Ultimately this fosters discussion of various topics related to this course and beyond. The second is response to the weekly Chatter lecture series. Chatter fosters interaction and reflection with a collection of creative professionals who serve as guests throughout the semester. These interactions focus on each individual and the role of creativity in their past, present and future lives. Students are asked to post reflections/responses on the blog in an effort to broaden their perspective on the creative process.

Finally, students work throughout the semester on a comprehensive thinking exercise, the Design Thought Model. This project is intended to provide students’ some scaffolding in the construction of a personal creative process. Students’ creative and metacognitive thinking is assessed through this final design project for the course. In this summative, performance-based project students are required to construct a three-dimensional personal philosophy of their creative process (Figure 1). The project is non-discipline-specific in nature and places an emphasis on the awareness and understanding of one’s personal creative thought processes. The project guidelines are provided at the beginning of the semester to allow students the duration of the semester to consider their response. The process requires students to first provide a written summary of their design process during the semester. Next, they transform their written explanation into a three-dimensional expression of their philosophy. Last, at the end of the semester, an exhibit is held in which students are required to present and orally communicate how their philosophy is represented through their model to neutral judges. Giving students the opportunity to create a physical artifact afforded students the opportunity to externalize the cognitive processes of creative problem solving.

Students are also responsible for attendance and participation in weekly workshop sessions, first participating in hands on problem solving activities and then sharing their experiences /observations relating to creative strategy use. By expressing their own creative strategy use students are forced to externalize a process that is typically internal and are consciously building a greater understanding of their creative process. This expression of process will not only benefit them, but fellow students will be able to compare and contrast different approaches to problem solving, ultimately gaining a broader perspective through shared insight and reflection.

One of the projects that evolved from the LA 111 course is an experience called The Creative Study Tour. Born out of the overwhelming positive impact of the Chatter Series lectures this project was conceived as the next step, seeking creative insight and perspective from leading designers across the country. Led by design instructors this experience consists of small groups of students who are the first generation of their family to attend college travel to a city where they meet and interview creative individuals. Through the support of the University of Kentucky First Scholar Program past trips have included Louisville, Nashville, St. Louis, Chicago, Indianapolis, New York City and many others. The group typically consists of only 6-8 students to allow for these interactions
to happen in a very personal way. The meetings are typically informal and explore the themes of person, place, and story. Usually the interactions occur in a meaningful space; a studio for an artist, kitchen for a chef, building being constructed for an architect, library for a children's book author, etc. Discussions are generally interactive and at times revealing on many levels. Basic subjects relative to a participant's story, their current work, lessons they have learned about their creative process, etc., are all common elements, but often the discussion opens a window into their creative spirit and way of being.

Each year a trip is planned around multiple stops with a collection of participants (graphic designers, landscape architects, children’s book authors, chefs, singer/songwriters, architects, illustrators, fashion designers, and many more). As the Creative Study Tour has evolved so has the documentation component. The first two trips were captured through books detailing students’ reflections. Three years ago, a videographer was hired to follow the group and capture the experience with student narration. In addition, students were asked to record audio after each stop in an effort to capture their reflections in the moment. The past two years have focused on trips to New York City and included artist Veronica Lawlor documenting the entire trip through a series of illustrations (Figure 2). These reportage style illustrations help capture the dialogue and emotion of the encounters between students and professionals. They include a beautiful melding of reflective and instructive content from both students and professionals. Finally, it is important to emphasize just how transformative these trips are for everyone involved. The more than 50 students who have participated in the tours have identified this experience as one of the most influential in not only their academic careers but their lives. Perhaps the greatest impact is simply building students’ creative confidence as they recognize the shared experience of all who engage a creative problem.

In 2017 an opportunity arose following the success of LA 111 and the Creative Study Tour to impact a younger demographic across the state of Kentucky. Gear Up Kentucky was a six-year grant program funded by the U.S. Department of Education from 2011 to 2017. The program served 29 middle schools and their corresponding high schools in the state of Kentucky. Students who attended a Gear Up school and entered the seventh grade in 2011, 2012, or 2013 were Gear Up Kentucky students. The program provided services for students beginning in seventh grade continuing until at least 2017. One of these services was the Summer Academy offered during students’ junior and senior years of high school. These immersive experiences were offered in partnership with universities across the state of Kentucky in order to best prepare students for college and career readiness.

The 2017 Summer Academy at the University of Kentucky shifted from previous iterations and focused on developing students’ creative thinking capacity. A four-week deep dive was designed and led by design instructors and students to foster creative growth through the framework first established in LA 111 and The Creative Study Tour. With an emphasis on self-reflection, experiential problem solving, and interaction with a diverse group of creative professionals the Summer Academy became a wonderful laboratory in pursuit of creative knowledge relative to both problem solving and pedagogy (Figure 3). During the 2017 Summer Academy twenty-two high school students and their instructors engaged in an immersive creative problem-solving experience designed to investigate the future of programs like Gear Up in
Kentucky and generate innovative pathways moving forward. For these four weeks students were introduced to a new way of thinking, The Creative Process.

Of particular importance is the role designers played in stepping outside of their traditional role in both designing and leading this experience to high school students. Design students and subsequently the participating high school students helped reimagine education at all levels and across various modes of engagement. This project and others represent a model upon which a larger effort can build to effect change in education.

The final project to be highlighted is also the most recent and represents a collection of all that was learned in the previous three examples. Into the Fog worked closely with a multidisciplinary student team from the University of Kentucky and Vanderbilt University to explore ways to foster individual and team creative growth. Together the team focused their efforts on (1) solving a design challenge "How might institutions of higher education develop creative problem solving through immersive educational experiences?" and (2) creative process documentation of the entire project. This documentation was collected throughout the semester through a variety of digital mediums and shared on the project webpage. In addition, a series of exhibition boards were created as a final project deliverable which directly addressed the original challenge question (Figure 4).

This project is worthy of recognition, as it provides a window into how any creative individual might pursue their own creative growth by stepping Into the Fog. This project was conceptualized and executed by a design student as a part of their senior project. By their very nature designers must be creative in their professional pursuits. However, this project offers a framework for any student seeking to develop proficiency at solving creative problems and does so through the exploration of self.

The purpose of this project was to illuminate three foundational beliefs regarding creativity and personal growth. One, everyone is creative. It is a learned competence, defined broadly, realized differently for each person (Runco, 2004). Two, there is tremendous value in seeking and fostering a personal creative process. Three, the act of developing your creative process while reflecting-in-action is the most valuable component of growth (Schön, 1983). Immersion into a creative problem state and the act of reflection are ultimately how you grow as a creative individual (Hansen, 2008, Mainemelis, Boyatzis, & Kolb, 2002). As a result of the exploration the team was able to provide a detailed solution to the challenge question. This served as a plan of action for Vanderbilt University who is currently undergoing curriculum restructuring geared toward providing students opportunities for creative immersion.

The nature of this project is complex in that it not only sought to find a creative solution to a challenge question but also layered in a reflection-in-action component to promote personal growth and creative development (Figure 5). The project needed a way to not only capture but share these two threads across the spectrum of the entire project. Starting from a blank slate and designing a web platform was the best option to not only ensure clarity but also disseminate the work to a broad audience. Into the Fog was a four-month challenge aimed at answering one question. The project asked its participants to reflect on their journey. Individual daily and
weekly reflections took the form of various written, audio, and video presentations. Video blog reflections were posted in the Reflection-in-action section of the project website.

Into the Fog was strategically phased into five parts: Research, Ideas, Refinement, Exhibition, Impact. Participants actively contributed to each phase by documenting their journey along the way, enhancing their understanding of the problem at hand, and ultimately discovering both viable solutions and themselves. In summary, the website serves to provide a broad look into the entire process including all aspects of the personal reflective journey and the challenge question. Serving as both an information hub and a resource for future journeys.

Integral to this studio-based project was an intense process of reflection with documentation of personal discovery and growth and how this shared process was negotiated across team members in various geographic locations. This project explored a better understanding of how students negotiate a creative process both individually and collectively. As a pilot project Into the Fog had a tremendous impact on the students, faculty, and universities involved; however, the framework established through this model has the potential to impact educators and students at various levels across the world. The hope remains that Into the Fog becomes a catalyst, not only for designers, but for any individual seeking a greater understanding of themselves and the world around them.

There are some overarching conclusions relative to these highlighted projects. First, these experiences examine the role of reflective practice on creative skill development. Reflective practice is one of the missing pieces that prevent most of us from reaching our creative potential (Feldhusen, 1995; Hargrove, 2012; Pesut, 1990). This must take place throughout the problem-solving process, including pre, post and most importantly reflection-in-action. Second, these projects use multiple approaches to develop a flexible creative process. People rely on creative thinking every day. This approach to problem solving is not fixed and should develop over time through self-reflection and self-regulation (Jausovec, 1994). Third, the experiences are grounded in a belief that places value on preparing students (future professionals) as creative problem solvers. Educators must value the role students have in solving and leading transformational change. They should be focusing on developing students who will help solve the most challenging issues facing our cities, regions, and the world (Juul-Sorensen, 2014). Fourth, these projects begin with a foundation of learning the power of self-awareness in realizing creative potential. Perhaps the greatest skill a person can have is self-awareness. Building an awareness and understanding of how one thinks provides the groundwork for future growth (Hargrove & Nietfeld, 2015). It is alarming how unaware students are about such a personal process. Fifth, these experiences develop an appreciation for experiential lifelong learning. The development of creative thinking is not a list of items on a checklist. It requires a holistic approach to the way we see and experience the world (Sawyer 2003; Sawyer 2015). It requires students to actively engage real world problems and propose solutions based on not just ideation but articulation, prototyping and testing.

Each of these conclusions begins with the acknowledgement that students must go beyond skill acquisition and develop a unique way of seeing and experiencing the world. Educating future problem solvers involves a balance between finding their creative muse and acquiring the technical skills and expertise to be valued as a professional. In a perfect educational
model these two objectives come together, they develop in parallel and complement one another. However, we don’t develop the same as creative thinkers, this journey is far less prescriptive and requires one to look inward. The willingness and ability to do so is not easy for an 18 year old. This is not easy for a 39 year old! Many students come to a university and have to overcome barriers or catch up from when they were most creative—back when they were 5 years old. Many students arrive as teenagers and in a few short years they are back out again as young professionals. When they enter the profession, their focus is typically not on developing as a creative thinker. The system is broken if our goal is to produce and employ professionals who are utilizing a full spectrum of creative impact. The pedagogical approach highlighted in this paper calls for designers to lead a radical change in education and outlines a roadmap for others to adopt in what may be the ultimate creative challenge of our lifetime.
References


IDEO Design Thinking For Educators. (www.designthinkingforeducators.com).


Figure 1: LA 111 Design Thought Models

Figure 2: Illustrations documenting the Creative Study Tour
Figure 3: Gear Up Kentucky Creative Discovery Camp

Figure 4: Into the Fog final exhibition
Figure 5: Into the Fog diagram of reflective practice