**Princeton’s EGR200: Creativity, Innovation, and Design**

**General Description**

**This submission has been extensively edited to more clearly address the class’ applicability to entrepreneurship and to institutions other than Princeton, among other reviewer inputs.**

**Abstract:**

ENT 200: *Creativity, Innovation, and Design* succeeds in preparing its students to be successful entrepreneurs by identifying opportunities to implement innovative change, per the theories of Kirzner and Schumpeter[[1]](#footnote-1). The course has developed innovative pedagogies relative to: opportunity discovery, constraint-based understanding, and using the campus as a classroom, resulting in virtually all students expressing confidence in their ability to innovate. The class has been taught sixteen times by five different professors, each with different backgrounds, and each having achieved outstanding evaluations. Its impact is so consistent and profound that it is a required class for Princeton’s entrepreneurship certificate, while also being open to all Princeton undergraduates.

**Description of the class and its impact:**

Princeton explicitly defines entrepreneurship as the ability to impact the world. With this understanding in mind, we leverage design thinking as applied to “wicked problems[[2]](#footnote-2)” as a best-practice framework for both opportunity identification and innovation in our ever more complex world. We view “creativity” as the skill[[3]](#footnote-3) to “think differently,” “innovation” as the skill to get a group of people to adopt an idea/product/behavior as a new best-practice, and “design” as directed innovation under constraints. Entrepreneurship is ultimately the design of new businesses and business models. Our pedagogical challenge was to construct a class that *enables undergraduates of all backgrounds, with no prerequisites, including freshmen, to develop enough creativity, innovation, and design skills, in one semester, to successfully tackle a truly wicked problem such that the students have enough confidence to lead impactful efforts on their own, outside of class.* The specific learning objectives of the class are[[4]](#footnote-4):

* (Re)connect each student with their own personal modes of creativity
* Instill an ability to identify the creativity in others in order to work innovatively in groups
* Demonstrate the ability to identify opportunities to create value, social or monetary
* Design and propose mitigations to truly wicked campus problems such that the university adopts the design

With ENT200, these ambitious objectives are all met with virtually every one of the now hundreds of students that have taken the class, irrespective of prior experience. Derek Lidow and the four other instructors who teach or have taught the class consistently earn evaluations in 4.7-4.9+/5 range, i.e., in the top 5% of all Princeton classes. After taking the class virtually every student describes the class as life-changing[[5]](#footnote-5):

*“Best course I have taken here at Princeton and perhaps the only course which has changed my life and career trajectory.”*

*“Excellent class that sets me up with many important frameworks for entrepreneurial thinking. It is a long time in class every week -- 5hrs doing the readings and the journal every week. It takes time but it’s worth it. If you're interested in entrepreneurship or getting to know your creative self on a more intimate level, take this course”*

*“Drop whatever you're doing and take this course. I don't care if you want to do entrepreneurship or not – this course will change your mind/the way you think forever. And, you CANNOT do without it. It'll be the best decision of your Princeton experience!!”*

The class continues to impact student lives after they’ve taken the course. In the eight years the class has been offered students have: started successful companies based upon exercises in the class; have developed and implemented designs that mitigate wicked problems in our community and state; gone into careers unprecedented for our undergraduates (e.g. directly into product and innovation design—including IDEO’s first ever undergraduate full time hire); and have advanced rapidly in very demanding fields such as strategic consulting. Very few Princeton classes have ever had this magnitude of short- and long-term impact on its students.

**Pedagogical Innovations:**

*1. Teaching the skill of being able to identify hidden constraints*: We constructed a unifying concept for the class of “constraint identification” that proved very powerful in enabling students to reconnect with their own personal modes of creativity and to feel comfortable with abductive reasoning associated with both opportunity identification and innovation[[6]](#footnote-6). Additionally, students readily adopt this easy to understand metric (how many hidden constraints and assumptions can I identify that prevent me in doing what I want) to confidently take responsibility for self-guiding their creativity, innovation, and design skill sets once the class has ended.

We point out the importance of recognizing constraints from day one in class with a discussion of how constraints, recognized or unrecognized, limit creativity and innovation, starting with Steve Jobs’ use of a finger instead of a stylus as a good example. The first thing we do in every class, all semester, is a short warm up to get students out of their rigid inductive/deductive mindsets required to excel at school (a constraint unrecognized by most students). For example, in the first class we recite a nursery rhyme—"Hey diddle-diddle, the cat and the fiddle, the cow jumped over the moon." We then ask the students, standing at white boards with markers, "how did the cow jump over the moon?" Students are stunned at first but then draw some jet-pack or rocket to get a cow over the moon–usually inspired by looking around to see what their fellow students have done. We then discuss other ways cows can jump over moons (e.g. My name is Cow and I jumped over my dog named Moon, etc.) and then discuss why it is hard to think of those different ways to frame the question (re-framing being one of the skills that everyone can use to be creative) and how we therefore make things difficult for ourselves by constraining what we allow ourselves to think of.

2. *Innovative exercise to viscerally teach students not to self-limit:* A primary challenge of the class is to get Princeton students to reconnect with their own personal modes of creativity quickly and decisively, which happens with 100% of the students in the first 4 weeks with a pedagogically innovative exercise in failed innovation. As mentioned above, in the first 3 weeks, through in-class warm-ups, standard lab exercises, readings, class discussion, and journaling, all students begin to feel comfortable that they can think and act creatively, i.e. *think differently by imposing no self-applied hidden constraints or assumptions*. For this we use our “Palmer Square” exercise. The specific prompt is: "Go to Palmer Square (Princeton’s small-town commons) and observe what's going on there. Identify some hidden constraints or assumptions about the Palmer Square experience and then return to the classroom and sketch out some way to break one of the hidden constraints you observed. Recall that major innovations often come from people that enable others to break constraints previously hidden or are so well accepted they are not noticed. You have 90 minutes." We go on, "We want to warn you. We've been giving this exercise for years and students always come back with the same set of not hidden constraints and very mundane suggestions for breaking the not hidden constraints." In spite of the warnings, >80% of all students come back with some plan to alleviate the parking problem or to add some store or event to pull students into Palmer Square. When everyone walks around the room and listens to each student describe their innovation sketch everyone realizes that they haven't been very innovative at all in spite of thinking they had.

During the next 80-minute class we discuss what happened. Invariably the reason students defaulted to obvious constraints and mundane mitigations because they felt they did not have permission to think other than linearly and analytically – in spite of understanding that creativity requires thinking differently and therefore with fewer constraints than usual. We remind the students that feeling and being creative and innovative requires that you feel you have permission to do so and we emphasize, "you have our permission to not think analytically anytime you want to be creative and innovative, so in next week's lab we'll repeat the exercise and we know you'll all come up with extremely different innovations. What constraints you decide to remove or keep relative to the innovation you propose is completely up to you."

During this next class we then review what we already have learned about identifying hidden constraints that we impose upon ourselves and those imposed upon us in any place, like Palmer Square; e.g., self-imposed expectations, POVs, frames of references, time, scale, communication and language vehicles including colors, smells, and sounds, social norms, etc.. We then review common methods that can help us: what would an alien think? what would be the worst thing that we could do (... to people in Palmer Square)? what could we do with all the money in the world? what could be done in the year 2200? etc..

The next session is the repeat of the lab. Students consistently comes back with a long list of constraints, even in dimensions we had never discussed (e.g., new forms of behaviors, economics, genders, ...) and every student comes up with innovations that would be extremely exciting to some segment of the universe. Of the many favorites, a few examples: Palmer Square expects children will be well behaved, so one student proposed a cable car that took children over the university to wide open playing fields where gingerbread houses could be constructed and dogs trained to look after the kids; another, turning the one-way street that circumnavigates Palmer Square into a race track for races of all types; or another, a place where grandmothers could cook your favorite dishes, .... Students describe this experience as being “Palmer Squared,” which is now considered a transformative badge of honor among all alumni of the class.

3. *Innovative use of campus as classroom for inspiring high levels of achievement:* Even with the Palmer Square exercise, the class would not be as impactful without the final exercise. We use design thinking as an accessible and proven trans-disciplinary design methodology to structure the final 6 weeks of class where students, working in teams of 3 or 4, must research, ideate, plan, prototype, and test designs to mitigate a truly wicked problem, under some considerable time pressure[[7]](#footnote-7). The pedological innovation comes from using the campus as the context for assigning and assessing the student’s work. We ask students to define hidden opportunities and to test their ideas through prototyping to assess their innovativeness. Each section works on a different wicked campus specific problem area, e.g. mitigating high-risk drinking, sexual assault, stigmatizing behaviors, sleep deprivation, loneliness, etc. We let students know their grade depends upon whether their designs are actually adopted by the university and we arrange for the students to be judged by important, well known, and influential faculty and administrators. The understanding that the university will seriously consider each of the proposed designs makes students feel extra invested in their projects. The fact that the university has eagerly and regularly adopted designs from the class underscores the seriousness of the exercise as well as the potential for students to leave a lasting legacy upon the university[[8]](#footnote-8). Students regularly describe how they work harder on this assignment than any other they’ve ever had.

Setting such high expectations, under considerable time pressure, is enabled because we use the campus as a classroom, which makes the student feel more connected to the challenge they’ve been given. Each campus based wicked problem is something they’ve directly experienced and something they can quickly become more expert in by doing the observational and interview exercises we assign, backed up with assigned readings. To help the teacher help each student, it is a requirement of the course that students keep and turn in a weekly journal (for a weekly grade of plus, check, or minus) documenting their reactions to the class and its activities. These journal entries enable teachers to have all the information we need to help teams and individual students achieve a high level of empathy with potential users, maintain a fast pace of constraint identification and ideation, and formulate hypotheses that can be effectively tested with rapidly assembled prototypes used in real life situations—ultimately be successful in formulating and testing designs with actual real-world impact as evaluated by distinguished experts in the field. With success students develop the confidence to continue to tackle wicked problems once they’ve finished the class, which a very high percentage of students actually proceed to do[[9]](#footnote-9).

**Scalability and Transferability:**

The class is scalable and reproducible; it has been taught 124times since 2013, now twice each semester[[10]](#footnote-10), by 5 other lecturers besides Derek Lidow, each time with the same impactful student experiences, resulting in innovative student designs, and very positive student evaluations. The five teachers have had very different backgrounds: 1 Physics PhD, 1 Design PhD, 1 MFA, 1 MBA, 1 MPP, 1 MArch. A detailed class-by-class syllabus was created to outline key aspects of each class that helps in creating a uniform student experience regardless of which professor teaches the class (a summary of the syllabus is attached as an appendix). The class’ success with Freshmen, some in their first semester, irrespective of background, testifies that it would be transferable to most other institutions. Additionally, the “wickedness” of the campus-based problem can be scaled, or commercialized, to fit departmental objectives, although we always have a social entrepreneurial focus with our choice of wicked problem.

**Summary**

The novel pedagogies taught in EGR200 that enable students to identify opportunities and implement innovative ideas are scalable because we teach creativity, innovation, and design as a set of skills with an underlying theme of how to deal with constraints. We have created pedagogies that make novice students credible socially-minded Kirznerian/Schumpeterian entrepreneurs in highly constrained and ill-defined circumstances. The class sits on established foundations of how you teach skills, amplified by novel pedagogies focused on constraints and using the campus as a classroom to associate positive emotional experiences with overcoming seemingly impossible tasks.

**Appendix A: Class Syllabus**

**Cornelia Huellstrunk**

Executive Director Keller Center Princeton University

ACE23 Engineering Quad Princeton, NJ 08544

609-258-7221

[chuellst@princeton.edu](mailto:chiangm@princeton.edu)

May 21, 2018

Noam Wasserman Award Chair

University of Southern California

Dear Dr. Wasserman,

I am delighted to write this letter in support of awarding Professor Derek Lidow’s novel class ENT200 “Creativity, Innovation and Design” the Innovation in Entrepreneurship Pedagogy Award by the Academy of Management Entrepreneurship Division and McGraw-Hill. Thank you for encouraging us to apply again for this prestigious award. Kindly note that we are submitting a fully revised nomination.

ENT200 is a singular class at Princeton University. The course is open to students from all across campus and of all majors. It is offered through the Keller Center, a highly interdisciplinary Center situated within the School of Engineering and Applied Science, with the missions of innovating engineering education, and fostering entrepreneurship and design thinking on campus. At Princeton, the Keller Center is the innovation center for undergraduate students—currently reaching approximately 800 students per semester out of an undergraduate student body of about 5,500 with its courses and co-curricular programs. As the Executive Director of the Keller Center, I have been very pleased to not only witness the increasing interest in this novel course, but also the follow-on activities that students have engaged in and most importantly the profound effect it has had on students who have participated in the course.

At the Keller Center, the “Creativity, Innovation and Design” course continues to be one of the key drivers for much of the increased activity at the Center and the course has served as a highly effective launchpad for students interested in pursuing additional opportunities to tackle real world wicked problems in an entrepreneurial fashion. Many of the ENT200 students go on to participate in Princeton’s Tiger Challenge program, in which Princeton students tackle wicked problems in partnership with communities in an effort to co-innovate impactful solutions. Others still join the eLab startup accelerator program to work on their own venture. For many the course has been one of the most meaningful experiences at Princeton clearly impacting their trajectories during their time at the university and beyond.

In the class, the students are entrusted and empowered to tackle some of the most intractable campus challenges such as sexual assault and binge drinking and to share their designs with faculty and senior level campus administration, creating a unique bridge between the students and the university’s leadership and the broader campus community. The course is powerful as it reconnects students to their innate creativity, introduces them to the design thinking methodology and also enables students to work together in teams to address seemingly wicked challenges all in a uniquely conceptualized structure and classroom environment. In a nutshell, the learnings in this class represent the best practices for entrepreneurship. In the fall of 2016, the Keller Center introduced a certificate program in entrepreneurship. In recognition of the important educational lessons re entrepreneurship that students can garner in ENT200, all students in the certificate program take ENT200 along with ENT201 Foundations of Entrepreneurship. These two courses –ENT200 and ENT201- represent the gateway courses into the certificate program. Given the popularity of ENT200 coupled with the exceptional course ratings (>4.9 out of 5), we have increased the number of offerings from just one section per academic year to four. Even this increase might not be enough and we are contemplating even further growth. These sorts of classes often are not scalable but this class, by virtue of its high impact exercises, and its multiple channels of learning is scalable and has been taught successfully by 3 other professors along with Professor Lidow. The diverse backgrounds of the additional instructors and their equally high course ratings speak to the scalability of this course. The continued interest on behalf of the university’s senior leadership to participate in the final presentations of the class and to adopt the most meaningful designs, speaks to the profound impact the course has had at Princeton.

I believe this course to be highly innovative, scalable, reproduceable and impactful on both the students and the university. I hope that you will agree that this course—with its novel pedagogy and transformative impact on students—is deserving of this reputable award.

Sincerely,



Cornelia Huellstrunk

Executive Director, Keller Center



Princeton University 328 Frist Campus Center Princeton, NJ 08544 (609) 258-2575 [mcgraw@princeton.edu](mailto:mcgraw@princeton.edu) [http://mcgraw.princeton.edu](http://mcgraw.princeton.edu/)

To the Innovation in Entrepreneurship Pedagogy Award Selection Committee:

It is my privilege to write this letter of support on behalf of Professor Derek Lidow’s EGR 200: Creativity, Innovation and Design course. In the time that Professor Lidow has been a member of the Princeton faculty, he has made a profound impact on the academic entrepreneurship curriculum, of which this course is only the latest example. The students who encounter his courses, and there are many more who want to than who are able, take away important principles and practices of design thinking that they integrate into all aspects of their individual course of study. It is hard to think of a suite of courses that have made more impact on campus recently than Professor Lidow’s.

Teaching creativity is no simple task; faculty members who take on the challenge need to reassess pedagogical practices at every level of course design. As you know from reading the nomination, this course has used several innovative strategies. Firstly, the actual physical space of the classroom was completely redrawn to foster the collaborative environment without which the particular learning goals of the course could not have been met. Professor Lidow designed a space with moveable furniture, innovative power strategies, multiple white boards for brainstorming, and AV capability unavailable almost anywhere else on campus. In recognizing how our built environment affects our modes of thinking and communication, this course introduces the students to a critical tenet of impactful change in the very first moments they spend in the room itself.

Secondly, the assignments and activities in the course range from intensely personal (*i.e*., journaling) to intensely collaborative and project-based. It is important to understand the crucial emphasis on the centrality of individual reflection; the first learning goal of the course is to assist students in connecting or re-connecting with their own personal modes of creativity. This course allows for the kind of introspection that is so often lacking in today’s classroom, and that is the necessary foundation for authentic and successful leadership. Moreover, sending the message to our students that creativity is not something that you are simply born with, or without, but rather a skill you can build and a talent you can choose to deploy, is an enormously important over-arching lesson for all students. Similarly, designing group projects that attempt to leverage the different kinds of creativity and strength of different team members teach students how to work well within groups while being true to their own skill set.

Finally, another equally impressive innovation in EGR 200 is the willingness to have students themselves find unrecognized problems for their projects. How much more important is it to be able to recognize a true problem in the first place, than to be able to go through a tired exercise set up for them in advance. A great example of this is the Palmer Square exercise in failed innovation, which forces them to confront the constraints they are still unwittingly putting on their own creativity. Such an exercise is the basis for true innovation and entrepreneurial leadership.

In short, this course is a testament to truly innovative teaching in the field of entrepreneurship. I am hoping to feature EGR 200, along with a few other courses recently added to the Princeton University course catalog, on a panel about teaching creativity in the fall.

As the Director of the Teaching and Learning Center here on Princeton’s campus, I am exceedingly lucky to have examples of innovation such as Professor Derek Lidow to showcase to our broader faculty. Thank-you for your time and consideration.

Sincerely,

 Rebecca Graves-Bayazitoglu

## Recommendation in support of Creativity, Innovation and Design

May 20, 2017

David Pal and Abhinav Khanna TAs 2015, Student 2014

After a combined 13 years in higher education (2 BS degrees and a PhD) we have never experienced a course quite like this.

While this course lives in the Keller Center, the entrepreneurship-focused unit of the Engineering School, the class is comprised of people from all over the university; engineers to architects, philosophy majors to musicians - fields of study are left at the door step. Upon entry, Derek encourages students to release themselves from the training of last semester, last year, or even the last decade where students search for the “right” answers. Upon exit, students feel excited, curious and prepared to search for problems worth solving and solutions worth building.

We have been fortunate to have an opportunity to TA for multiple classes throughout our academic careers - math classes, science classes, engineering classes, and tutoring countless subjects – but it is only through this class that we’ve been able to watch people grow as humans. There is a meme that has come to be known at Princeton called, “Palmer Squaring”. It’s derived from an exercise in this class where students are asked to redesign an iconic, yet bland piece of the town: Palmer Square. This exercise comes in two cycles: the first attempt usually leads to simple answers and ideas, but the second attempt results in wildly creative and other-worldly experiences. It’s at this point in the class where you can feel a change in how students perceive the world. As a TA, you can hear and see the changes in how people are perceiving their surroundings. But who would have imagined that 1 hour of wandering around town on two occasions would make such a profound impact (even when students know this is supposed to happen)?

This class is built on experiences, practice, and reflection. This practice and reflection allows every student to build and reinforce tools for exploration and inquisition. The students are tested and critiqued by their peers and Derek to help them break away from their habits and form new processes for uncovering truths, friction, and contradiction. The experiences are explored semi- privately in a set of journals written by the student, but the lessons and understandings are reaffirmed or dissected by Derek to help encourage growth and understanding. This rapid feedback allows for students to quickly become masters of these tools. This mastery comes with an expectation that they can and will use these tools immediately.

This class focuses on building an arsenal of tools for asking questions, learning about issues, and seeing the human nature of problems. This class demonstrated the need to ask questions, fail quickly, and ask even more questions in building and growing an entrepreneurial venture. Abhi and I have used these tools over and over again in building our current venture, Ads on Top.

Abhi graduated from Princeton with a degree in Computer Science and I graduated with a PhD in Environmental Engineering, yet we run a company that builds software for the out-of-home (OOH) advertising industry. Neither of us knew anything about OOH before we started this company, but we knew that we had all the tools we needed to play in the industry.

Ads on Top started with the idea that we wanted to put ads, similar to the ones you see in NYC, on the tops of Ubers and Lyfts around the country. We knew nothing about advertising, or OOH, but we thought that it was a reasonable expectation that it could work. While we started to plan out what we would like to do and how we would build the technology (we were building an app to help track drivers and signs), we talked to everybody that would let us ask them questions about OOH. As we had these conversations, we’d take notes, compare to other conversations we were having, and find the common themes and the frequent contradictions. We knew that this would be a fruitful place to find innovation.

We built and focused and asked for a few months before we started to try sell our product. Of course we ran into logistics challenges and tech issues, but we embraced the challenges with the sales. Since we had been asking so many questions from strangers, often over multiple conversations, they became champions of Ads on Top and helped us to make connections and take meetings with people that would actually buy our product. However, we couldn’t sell our product. While everybody loved our technology, nobody wanted to buy printed advertising on cars – they wanted to buy ads on Ubers and Lyfts, but not printed ones. Yet, like we were taught we used this as a chance to understand why they didn’t want to buy that space and what they would buy. These failed sales pitches were crucial in finding out current market fit.

Derek’s class taught students to ask often, fail frequently, and keep iterating. We used these principals to build the software platform we have now. Listening to the experiences of the people we were talking to, we’ve pivoted twice since we started and we’ve found our product market fit. Not only have we been able to sell our product, but we’ve been able to build subsequent products in high demand, become an industry standard, and secure partners with leading technology teams. We’re not done failing and we’re certainly not done asking, and it’s all because the Creativity, Innovation and Design class taught us to focus on the people in the industry, as opposed to the product we wanted to build. We didn’t know anything about OOH, and now we’re industry experts.

Today, Ads on Top is a thriving company and we’ve advised countless others using the tools that we learned in Derek’s Creativity, Innovation and Design class. We wholeheartedly believe that the Academy of Management should consider this class as the most innovative and successful classes for teaching entrepreneurship and transforming entrepreneurs.

**Recommendation of Creativity, Innovation, and Design taught by Professor Derek Lidow**

Written by Annie Cardinal, Princeton University Class of 2015 Award Criteria:

1. The innovativeness and novelty of the content and pedagogical process
2. The demonstrated and potential impact and transferability
3. The course’s relevance (e.g., actionable lessons for entrepreneurs, addresses a social need).

It’s not often that one finds a course that truly changes the way one looks at the world. As a mechanical engineer passionate about product design, that course was Creativity, Innovation, and Design (CID).

From the very beginning, CID was like no course I had ever experienced. Each class started with a warmup to get creative juices flowing. This could be anything from a brainstorming exercise to an improvisational theater activity to quickly modeling a concept out of paper and pipe cleaners. The classroom had whiteboards and was a large open space with a whole wall of prototyping and craft supplies for projects. Every Tuesday, we had a lecture and discussion that would introduce a topic from the reading. Then Wednesday involved a 3 hour lab putting those skills to use in different teams, using many of the prototyping supplies. Thursday was a reflection on the lab, which further helped cement those skills. Finally, we reflected in individual Creativity Journals to document our own understanding of the concepts and keep a record of personal development. Professor Lidow’s feedback on the journals was icing on the cake, as he found ways for each of us to push ourselves farther.

I was excited to learn different methods to push my creativity, innovation, and design skills, such as the Six Thinking Hats and the Stanford D.School’s 5-step design process. We were exposed to many different views of creativity through the readings and discussed case studies of different companies to learn about how to put these frameworks to use. Overall, learning the Design Thinking process was very

valuable for me, as it’s a problem solving framework that I can apply throughout my life when there are poorly defined problems. The course also emphasized working effectively in teams and constantly threw curveballs to keep us on our toes.

The final project for the course was to develop a solution to the “wicked problem” of binge drinking on campus. Most other entrepreneurship courses would have started with a well-defined problem and ended with us presenting a solution in front of the class. What makes CID unique is that we actually defined our own problem to solve under the umbrella of binge drinking, then tested the solution on campus, iterated upon it, and presented it to university administrators who have the power to implement the design. Instead of theorizing, we had to get out of our comfort zones and actually reach out to those who would be impacted by our solution. I’ve taken other entrepreneurship classes where we learn the theory but never apply it. This course taught me skills and then forced me to immediately implement them, which is why these skills have stuck with me long after graduation. What I also loved about this challenge is that it encouraged us to define and solve problems in our own community and address a social need.

Many other classes would end with a final paper that provides little use after the end of the class. The final assignment for CID was to write a Personal Innovation Strategy. This paper pushed me to ask others for times when I was creative and reflect on these examples to develop a way to stay innovative and

hold myself accountable. The Personal Innovation Strategy benefits me personally and provides inspiration and guidance toward meeting my goals that I can refer to for years to come.

I began looking for jobs the summer after my junior year, and CID gave me the confidence to search for the product design jobs I wanted instead of an entry-level position at a large engineering company.

Instead of applying to online job postings, I reached out to design firms directly and asked them for advice on starting a career in product design. I then made a trip to meet with them in person, as I knew it would make me stand out. I would never have had the confidence to present myself differently and reach out directly without taking CID.

CID’s unique approach to teaching entrepreneurship made its many lessons stick. At my current job as a product design engineer, I use the skills learned in CID every day when dealing with clients and developing new consumer products to meet a user’s needs. They are also valuable in my personal life, as I am constantly designing aspects of life and defining new goals. This can be anything from developing and testing a new morning routine to brainstorming where I’d like to be in 5 years. When I’m ready to take on an entrepreneurial role, I now have the skills to look for problems, determine if they’re worth solving, and tackle them effectively by myself or in a team.

Creativity, Innovation, and Design teaches students to look at the world in a different way and gives them the tools to solve the most challenging problems in our society. Its lessons have stuck with me and are applicable to my career and everyday life. The course taught me that anyone can be creative and gave me the tools to hold myself accountable and continue pushing myself. I now have the confidence to look at the world and define my own problems to solve.

May 24th, 2017

To Whomsoever Concerned,

It is my absolute honor to recommend Professor Derek Lidow’s *Creativity, Innovation, and Design*

for its innovative new pedagogy for teaching entrepreneurship.

“Teaching entrepreneurship” was a phrase I always laughed off as an oxymoron until taking Professor Lidow’s class (the first year that it was offered) as a senior in her last semester at Princeton in the spring of 2015. Despite being one of the pioneering leaders of the Princeton Entrepreneurship Club on campus, visiting several startups and even interning at one, I struggled to see myself as an entrepreneur. Being an entrepreneur seemed to be an alternate reality – but I couldn’t quite pin down *why*. Why couldn’t I see myself as that founder who dropped out of school to follow his passion? Or that entrepreneur who left her high-paying job to start a successful business? Why couldn’t I come up with a *disruptive* idea that no one had thought of? Here is where Professor Lidow’s class helped me unlock my entrepreneurial mindset.

After spending two decades of my life focusing on achieving specific milestones in life, I had become accustomed to exceeding expectations on a set of criteria. In other words, much like many other over-achieving Princeton students, I saw life as a pre-outlined coloring book that I focused on diligently completing. My interest in entrepreneurship thus far has encouraged me to add some flair and embellishments here and there – but I never veered too far from the existing outlines. For the most part, this was due to carefully cultivated fear of failure. *Creativity, Innovation and Design* helped me gain self- awareness that this was the major roadblock in unlocking my entrepreneurial mindset. Professor Lidow’s brilliant pedagogical process - including literature on iconoclastic thinking and the ability of every individual to be creative, group reflections which helped us communally recognize our similar fears which were holding us back, and exercises that were set up so that we would fail at being creative and have to try again – broke down the wall reinforced by years of formal education which precluded us from creativity and innovation.

The Palmer Square exercise which is a climactic point in Professor Lidow’s class perfectly

demonstrates how Professor Lidow has managed to *transform minds* (which typically takes years of

experience to “undo” pre-conceived notions and learned behaviors) in a classroom setting. About midway through the semester, all students arrive in the class and are asked to take a trip down to Palmer Square (Princeton’s town center) and come back with a recommendation on how they would reconfigure Palmer Square. Equipped with half a semester’s worth of knowledge on creativity and innovation, each student is convinced that they have a brilliant recommendation – only to realize that the entire class has come up with the same set of banal recommendations with very little variation or impact. Why? Because there were “rules” we did not even think about breaking. It’s worth noting that as a methodical, deductive and risk-averse individual – reading and listening about entrepreneurs being “rule-breakers” had always served to distance entrepreneurship or even creativity from what I perceived as my reality. The ingenuity of this class was that it made us realize that the problem was *not* that we didn’t break the rules, it was that we were pre-conditioned to not even realize what some of the unspoken rules were. In other words, we were implicitly placing constraints and making assumptions that we did not even realize. Once we were equipped with the skill of making implicit assumptions explicit – there were now a whole new set of levers we could adjust to design a creative solution. This is a particular gift that Professor Lidow has – be it leadership or innovation, he is able to take an amorphous concept and crystallize it into tangible skills that can be worked on by a set of concrete next steps.

The final project of *Creativity, Innovation, and Design* which involved solving a “wicked design problem” of mitigating sexual assault on Princeton’s campus was (in no exaggerated terms) a life-

changing experience for me. As part of a team of four individuals, we developed the design for a UMatter

Bus which operating during weekend nights to pick-up students returning from a night-out at the Eating Clubs and drop them back to their dorms. We designed the bus so that it would re-route an existing bus (which formerly serviced the graduate students and had low utilization) and would have free-pizza to attract students and a peer-counselor on board to help further mitigate the risk. This was one of those ideas which people instantly responded to with: “Oh yeah – why don’t we already have that?” For

someone who had been notorious for developing over-complicated ideas every time I tried to be creative, having this elegant solution with such a huge potential impact was a life-changing moment. The design immediately received traction from the Princeton administration and has been running successfully for the past 2 years servicing over 3,500 students and enabling dozens of students to feel safer on campus. It has been two years since I graduated, and I have professionally worked with several Fortune 500 companies on high-profile strategy projects. But, the UMatter Bus still remains my biggest achievement. It is unbelievable that a one semester class helped me impact lives and *make a dent in the universe*.

Even before I enrolled in Professor Lidow’s *Creativity, Innovation, and Design* class, I had decided that I would embark on a post-college career in management consulting at Bain and Company. I wanted a role in which I could gain experience in solving tricky strategy problems for a myriad of businesses thinking that it would set me up for a career in entrepreneurship. As such, Professor Lidow’s class has boosted my career in two major ways: (1) it has helped me gain perspective of the “bigger picture” of where I am headed which enables me to get more out of my experiences today rather than simply going through the motions of my daily job; (2) it has made me unafraid of tackling complex, tough problems head-on. My supervisors consistently give me feedback that my ability to take complete ownership of even complicated workstreams is ahead of what is expected at my tenure level. I attribute this ability to Professor Lidow’s class because it gave me confidence in tackling tough problems without support.

Professor Lidow’s class is a pedagogical revolution which proves an ambitious point: creativity or innovation does not exist in opposition with a formal, rigorous higher education curriculum. Instead, over- achieving students completing their college educations are rigorous and prestigious universities across the world are missing just *one simple step of realization* to unlock their creative potential. Too often, people ironically make rules about who can “break rules” and be creative. Professor Lidow rejects those conceptions and makes creativity and innovation within access for *everyone* to apply in *every aspect of life*

– from your day job, to your new company, to how you design your life. Candidly, I cannot recommend Professor Lidow’s class highly enough and hope to see a future in which every senior takes a similar class as a capstone to frame their launch into the real world.

Thank you for your time. Please do not hesitate to reach out with any follow up questions you may have at [shell93@gmail.com](mailto:shell93@gmail.com).

Yours sincerely, Shompa Choudhury

Associate Consultant, Bain & Company

Princeton University ‘

1. See for example: Kirzner, Israel M. "Creativity and/or alertness: A reconsideration of the Schumpeterian entrepreneur." *The Review of Austrian Economics* 11.1 (1999): 5-17. [↑](#footnote-ref-1)
2. See for example: Buchanan, Richard. "Wicked problems in design thinking." *Design issues* 8.2 (1992): 5-21. A wicked problem is essentially infinitely dimensional and cannot be completely described in either words or algorithms. [↑](#footnote-ref-2)
3. Our skill-teaching pedagogies are strongly influenced by the concepts of “deliberate practice.” See for example: Ericsson and Pool, “*Peak: The Secrets of the New Science of Expertise*,” New York, 2016. [↑](#footnote-ref-3)
4. The class meets 2x 50” and 1x 2’50” “lab” each week for 12 weeks. Students then have 10 additional days to do a final project/paper. Each section is taught entirely, start to finish, by one professor or lecturer. [↑](#footnote-ref-4)
5. See also: <https://www.princeton.edu/main/news/archive/S40/43/92A56/index.xml> (note: the class was originally labeled EGR392) [↑](#footnote-ref-5)
6. See for example: Martin, Roger, The Design of Business, Harvard Business Press (2009), Cambridge. [↑](#footnote-ref-6)
7. Pressure, ideally controlled by an experienced teacher or coach, is an essential element of deliberate practice. [↑](#footnote-ref-7)
8. See for example: <http://www.dailyprincetonian.com/article/2015/10/umatter-tigertransit-to-provide-nighttime-weekend-bus-service> [↑](#footnote-ref-8)
9. The university has actually created a co-curricular program, Tiger Challenge (tigerchallenge.princeton.edu), to enable students to continue to pursue their social entrepreneurial ideas. Students can pursue commercially oriented ideas through our eLab accelerator (some teams have worked for one year in Tiger challenge and then switched to eLab after developing suitable business models). [↑](#footnote-ref-9)
10. Due to the size limitations of the 900 square foot classroom used for the class we must limit enrollment in each section to 25 students. Next year we’re going to three sections. [↑](#footnote-ref-10)