A Proposal to Investigate Solutions to Increase Innovative Product Development of Students at Bilkent University

ENG 401 - 09

Boran Yildirim
21401947

1 Introduction

The innovative approach towards education is lacking in Turkey, no matter the quality of education that students receive. It is obvious that Bilkent University provides its students with excellent opportunities with its distinguished scholars and programs. The top ranked universities all over the world already accept the best 5-10% of the applicants [1] and they form a community that is already successful. Then, they build on it with the selected students. In Turkey, there is the university entrance exam and universities have not given the chance to select their members. The university entrance exam tests the ability to solve problem on a written basis and from various branches. Unfortunately, it does not value other skills. This is why Bilkent has a certain emphasis to enhance its students' abilities within a wide scope throughout courses such as GE 250. Furthermore, the rote learning system is a significant problem. From primary school to university, students have been regularly tested and this lead them to memorize things rather than learning.

Since the Industrial Revolution, some countries conduct research and development processes to a great extent and they are now called the *advanced industrialized countries* [2]. What Turkey truly needs in the information century is innovation, and there is no better place than Universities for producing innovation. The impact of innovation can be observed via the well-developed countries. For creating innovative minds, we need a different system of education. It is difficult to make a full impact on the education system but we can develop one for our university. Bilkent Faculty of Engineering has a great reputation, and this faculty should take place at the forefront of innovation in Turkey. With this project, I aim to make innovation a tradition at Bilkent University.

2 Problem Definition

At Bilkent University, there is excellence in theoretical learning and practical learning. Students are expected to perform in lab courses and conduct internships, which is usually the peak of practice for a university student. However, a university should go beyond and produce innovation. I am a senior level Computer Engineering student and usually I have to perform projects as a course requirement. However, those projects are just stay in the paper or codes, and not goes beyond it. Each and every one of my classmates forms a group and many striking projects come off. Their destiny is usually the same. The problem that this paper seeks a solution for is the lack of innovative approach through education at Bilkent University.

3 Proposed Solutions

My purpose throughout this project is to provide three solutions for the lack of innovation problem within Bilkent University. First solution is offering different courses than usual which are centralized around entrepreneurship and thinking differently (see section 3.1). Second, besides the courses at theoretical level, there can be innovation labs in which Bilkent Faculty of Engineering members can collaboratively design and develop real life products (see section 3.2). Lastly, funding is a significant problem that makes the students keep distant from burdening risks. If there is a funding procedure for their products, they can produce and market products easier (see section 3.3).

3.1 Innovative Courses

The underlying skills, tools and technologies to develop products are thought at Bilkent University by high quality faculty members. A senior Bilkent University Computer Engineering student can develop a technical product from scratch by using his/her knowledge from university education. However, some non-technical problems cannot be solved by using university learning outcomes such as building a business model, establishing a company, reaching to customers and building a team etc. For instance, Stanford University, which is ranked as the 3rd best university in the world [3], solves these problems by offering an Innovation and Entrepreneurship program which offers courses on design thinking, business planning, leadership, customer empathy and collaboration by Stanford faculty and industry experts with deep experience driving innovation and disruption [4]. Building Business Models, Cultivating the Entrepreneurial Mindset, Demand Creation: The Secrets of Driving Growth, The Power of Stories to Fuel Innovation, Leading Collaborative Teams and Product Marketing Essentials are some courses offered by Stanford University [4]. These courses are given to students to teach business, validity of a startup

idea, marketing, innovation and leadership which are the crucial skills and topics can also be thought at Bilkent. Bilkent Faculty of Engineering can offer one course about Innovation and Entrepreneurship, like Stanford, in every semester so that students can gain essential skills throughout their education to launch their own ventures.

3.2 Innovation Lab

The collaboration of scholars, graduate and undergraduate students are significant to develop projects and conduct researches. These labs can be managed by professors and students can provide new ideas to develop or attend to existing projects of professors or other students in the fast paced university environment. For instance, New York University, which is ranked as the 27th best university in the world [3], has a Game Innovation Lab (GIL) which brings together faculty and students who are focused on engineering side of games [5]. GIL has funded by Yahoo Research, Microsoft Research, Bell Labs, and the National Science Foundation [5]. This collaboration can improve students' technical expertise by working with faculty and provide engineering students with an environment for innovation. Furthermore, engineering students can develop projects with other students from different faculties by providing innovation labs to all departments. A lab with engineering faculty members can be an opportunity for students to enhance their problem solving skills and build innovative products. Bilkent Faculty of Engineering can provide a lab inside the Faculty of Engineering building (EA building) for the use of engineering faculty and students to produce innovative products.

3.3 Funding

Funding can be accepted as one of the most significant part of the startups since 82% of startups fail because of cash flow problems [6]. 77% of startup founders rely on personal savings for their initial funds [6] which is a significant problem for university students since generally students does not have much personal savings to fund and operate their own ventures. To solve this issue, university can provide funding to their students startups. For instance, University of California (UC), Berkeley, which is the 15th best university in the world [3], has a program called Startup@Berkeley to connect student entrepreneurs with UC Berkeley's startup ecosystem [7]. They have funding resources such as The House Fund, Dorm Room Fund and Berkeley SkyDeck Funding [7]. The House Fund funds Berkeley students and faculties up to $250,000 [8]. Dorm Room Fund gives $20,000 to Berkeley students' startups and until now they have invested in 200 startups who have raised $400 million [9]. Berkeley SkyDeck Funding buys 5% of the students' startup with $100,000 [10]. Bilkent University can create a fund system and fund their students' promising startup with TL50,000.

4 Criteria for Assessing Proposed Solutions

4.1 Effectiveness

Effectiveness of each solution will be investigated and compared to find the most effective solution. The objective of this criteria will be finding the solution which produces more innovation.

1. The impact of innovative courses at Stanford University and/or other universities to produce innovation will be analyzed to understand its effectiveness.

2. The impact of innovative labs at New York University and/or other universities to produce innovation will be analyzed to understand its effectiveness.

3. The impact of funding at University of California, Berkeley and/or other universities to produce innovation will be analyzed to understand its effectiveness.

4.2 Sustainability

Technology and systems change rapidly so providing a sustainable solution is significant. Sustainability of each solution will be investigated and compared to find the most sustainable solution. The objective of this criteria will be finding the solution which produces more sustainable innovation.

1. The sustainability of offering innovative courses at Bilkent University will be analyzed.

2. The sustainability of innovative labs at Bilkent University will be analyzed.

3. The sustainability of funding at Bilkent University will be analyzed.

4.3 Cost

Cost of each solution will be investigated and compared to find the cheapest solution.

1. The cost of offering innovative courses, which includes professor salary and classroom adjusting, at Bilkent University will be analyzed.

2. The cost of innovative labs, which includes lab adjusting and lab personnel salary, at Bilkent University will be analyzed.

3. The cost of funding, which includes TL50,000 funding to each promising startup, at Bilkent University will be analyzed.

5 Proposed Research Methodology

The main research methodology will be web based research since the possible solutions are based on the examples of US based universities. The outcomes of the solutions will be asked in the interview with a professor from Computer Engineering department to find the most effective and sustainable solution. To analyze the cost of each solution, I will interview with Faculty of Engineering Dean's office and Bilkent University's Rector's office.

References

[1] Acceptance rate of top universities, *digg.com*, Dec 20, 2018. [Online]. Available: http://digg.com/2018/acceptance-rate-elite-colleges-data-viz. [Accessed: March 13, 2019].

[2] Top 25 Developed and Developing Countries, *investopedia.com*, Sep. 28, 2016. [Online]. Available: https://www.investopedia.com/updates/top-developing-countries. [Accessed: March 13, 2019].

[3] World University Rankings 2019, *timeshighereducation.com*, Sep. 26, 2018. [Online]. Available: https://www.timeshighereducation.com/world-university-rankings/2019/world-ranking. [Accessed: March 13, 2019].

[4] Stanford Innovation and Entrepreneurship, *stanford.edu*. [Online]. Available: https://create.stanford.edu. [Accessed: March 13, 2019].

[5] New York University Game Innovation Lab, *nyu.edu*. [Online]. Available: http://game.engineering.nyu.edu. [Accessed: March 13, 2019].

[6] Startup Statistics, *smallbiztrends.com*, Dec. 26, 2018. [Online]. Available: https://smallbiztrends.com/2016/11/startup-statistics-small-business.html. [Accessed: March 14, 2019].

[7] Startup@Berkeley, *berkeley.edu*. [Online]. Available: https://startup.berkeley.edu. [Accessed: March 14, 2019].

[8] The House Fund, *thehouse.build*. [Online]. Available: https://thehouse.build/the-house-fund. [Accessed: March 14, 2019].

[9] Dorm Room Fund, *dormroomfund.com*. [Online]. Available: https://dormroomfund.com. [Accessed: March 14, 2019].

[10] Berkeley SkyDeck Fund, *skydeck.vc*. [Online]. Available: http://www.skydeck.vc. [Accessed: March 14, 2019].