



USING EXPERIENTIAL TEACHING MODELS TO TEACH BUSINESS STARTUP TO ENGINEERING STUDENTS

Olokundun Maxwell, Fred Peter, Ibidunni, Ayodotun Stephen, Deborah Motilewa
Covenant University Ota Ogun State Nigeria

ABSTRACT

Entrepreneurship education has not received ample consideration in engineering pedagogy. One of the greatest challenges facing engineering students in the classroom is visualization or conceptualization of the objects of learning. Therefore, to make teaching and learning of entrepreneurship more productive and interesting for engineering students, an innovative teaching strategy based on experiential models is considered appropriate. Therefore, the aim of this study was to propose a conceptual model showing the link between experiential teaching models considered effective and appropriate with respect to university entrepreneurship education and engineering students' business startup. Based on the conceptual model proposed, the study suggests that experiential teaching models such as invitation of guest speakers, individual and group project, business simulations activities, and role play are considered more effective and appropriate teaching methods required stimulating business startups among engineering students.

Key words: Experiential Teaching models; Entrepreneurship; Engineering Students; Business Startup; Conceptual Model.

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1. INTRODUCTION

A major aim of entrepreneurship education in the university context is to stimulate students to perform as entrepreneurs; hence teaching methods in entrepreneurship education should enable tryouts through students' business startups in an organised environment within universities (Ahmad, Baharun, & Rahman, 2004; Akinbola, Ogunnaike & Amaihian 2013). There is a strong foundation based on literature, that teaching methods are salient to university students' venture creation potentials (Ogbari, Oke, Ibukunoluwa, Ajagbe & Ologbo 2016). This suggests that university entrepreneurship education provides a good platform for students to express their intentions and considerations of a career in entrepreneurship through business startups (Olokundun et al 2017). Therefore, it is possible that employing appropriate

and practical teaching methods in entrepreneurship classes may trigger university students to engage in business startups during the course of the programme. Entrepreneurship education has not received ample consideration in engineering pedagogy. This outcome is rather startling because through appropriate entrepreneurship education engineers can be empowered to exploit entrepreneurial opportunities resulting from technological innovation. One of the greatest challenges facing engineering students in the classroom is visualization or conceptualization of objects of learning. To this end, visualization and experience have been shown to correlate extremely with successes and achievements in engineering (Strong & Smith, 2001). Therefore, to make teaching and learning of entrepreneurship more productive and interesting for engineering students, an innovative teaching strategy based on experiential models is considered appropriate. Experiential teaching models have been engaged in entrepreneurship classrooms and the results have been impressive compared to theoretical models of teaching. The study of Arasti, Falavarjani, and Imanipour (2012) provided evidence to show that there is a need to engage effective teaching methods in university entrepreneurship education in order for students to develop necessary entrepreneurial competencies. Penanluna, Peneluna, and Jones (2012) also reported low levels of business start-up activity among university students during enterprise education and/or within one year of graduation. However, what these studies have not been able to establish is the correlation between employment of appropriate teaching models in entrepreneurship and business startups with particular focus on engineering students. Therefore, based on a conceptual review, the aim of this study is to propose a conceptual model showing the link between the teaching models considered effective and appropriate with respect to university entrepreneurship education and engineering students' business startup.

2. CONCEPTUAL REVIEW

2.2. Teaching Models in Entrepreneurship and Entrepreneurial Development of Engineering Students

Lovat (2003) asserted that research has dismissed these two myths as regards teaching; effective teaching derives from subject knowledge and mastery, and a competent teacher can teach or instruct on any subject. This was supported by Schwartz (2006) who argued that effective teaching is not just a function of subject mastery, but also the ability to identify the essential and relevant mix of knowledge and skills, necessary for effective teaching. In the same light, Fayolle and Gailly (2004) posited that the effectiveness of teaching models in entrepreneurship, is assessed based on the extent to which the methods are able to essentially blend knowledge and skills, required for teaching entrepreneurship. Therefore, there is a strong foundation based on literature, that the aforementioned entrepreneurship teaching models can be considered salient to entrepreneurship development of engineering students in the university context. The next section presents a conceptual review on the teaching models in entrepreneurship considered salient to the context of this study.

2.2.1. Simulation in Entrepreneurship Education

Carson, Nelson, and Nicol (2010) described simulation as the imitation of the process of a real-world scenario in a given context. Hamstra, Dubrowski, and Backstein (2006) stated that to effectively simulate a process, a model that represents the major characteristics one desires to imitate must be developed. Janes, Silvey, and Dubrowski (2016) explained that the simulator characterises the process, while the simulation symbolises the operation of the system over time as regards its relation with other systems. In the context of teaching entrepreneurship, Brozik and Zapalska (2002) stated that using a simulator as a teaching model involves a process where a learner acquires actions, behaviours and skills through interaction with the simulated system over a period of time. In other words, educating a

learner is considered as a system which can be represented by business startup operating as in the real world (Hertel & Millis, 2002). Therefore, changing some operational details of the simulator, (business startup) in response to the actions of engineering students taking entrepreneurship courses is considered as the act of simulation (Kirkley & Kirkley, 2005).

2.2.2. Role Play in Entrepreneurship Education

Joyner and Young (2006) stated that role plays engage students in practical entrepreneurial activities that involve real-life business scenarios. Bonwell and Eison (1991) supported by Kerr Troth and Pickering (2003) argued that role plays are quite different from simulations because simulations are usually planned, while role play activities are usually short, impulsive presentations, which may also take the form of pre-arranged research assignments. In the context of entrepreneurship education, Joyce, Calhoun, and Hopkins (2009) suggested that role plays can present students with ample opportunity to engage in activities which are prototypes of the role of an entrepreneur and entrepreneurial career-related scenarios. To enhance engineering students understanding of the use of role-playing sessions, role plays should be content-focused, align with learning goals of an entrepreneurship programme and be applicable to real-world business scenarios (Harbour & Connick, 2005; Joyner & Young, 2006).

2.2.3. Project Method of Teaching Entrepreneurship

Gless-Newsome and Lederman (2002) described project-based learning (PBL) as an instructional methodology where students learn relevant and valuable skills by engaging in actual projects which are adjustable based on the dispositions of learners and learning situations. Blumenfeld (1991) affirmed that that project teaching method involves students in realistic, problem-solving contexts and environments, which help to build bridges between phenomena in entrepreneurial classroom and real-life business experiences. Colley (2005) on project method of teaching posited that students can employ core academic and creative skills, to solve salient problems in real business world situations. Particularly for engineering students, this implies that the entrepreneurship teacher's role is mainly that of a facilitator, task master, and evaluator.

2.2.4. Invitation of Entrepreneur Guest Speakers

Karns (2005) stated that invitation of entrepreneur guest speakers as a teaching method is a valuable tool because it offers a new approach and blend in teaching, while it also addresses salient topics that are often absent from a regular class. This view was supported by Metrejean, Pittman, and Zarzeski (2002) who argued that the uniqueness of this method, gives room for a better and effective one-on-one approach as well as a better understanding of a subject that otherwise would have been difficult and challenging for student's comprehension. Therefore, engineering students have the opportunity to learn about certain entrepreneurship topics in a way that enhances full involvement in the class and active engagement (Mooney, 1998). Hemphill and Hemphill (2007) advocated that in cases where there is a chosen entrepreneurship topic where a teacher is not so proficient; an entrepreneur guest speaker can be invited to talk about their field of expertise, especially because both the entrepreneurship teacher and students will be immensely imparted.

2.3. Engineering Students' Business Start-up

Damodaran (2009) defined business start-up as an entrepreneurial venture which involves an emerging business. Cole, Rebel, Tatyana, and Sokolyk (2014) described business startups as organisations established to search for repeatable and scalable business models. Cassar (2004) argued that startups are not necessarily smaller versions of larger companies, rather they are temporary organisations established and designed to search for a product/market fit and a business model. Cassar (2004) explained that in contrast, a large company is usually

a permanent organisation that has already achieved a product/market fit designed to execute a well-defined, fully validated, repeatable and scalable business model. Therefore, university entrepreneurship education provides a good platform for engineering students to express their intentions and considerations of a career in entrepreneurship through business startups.

2.4. Teaching Methods in Entrepreneurship and Engineering Students' Business Start-ups

Hidi and Renninger (2006) argued that it would be quite an extraordinary and challenging task for educators to take cognisance of each learner's interest given the time limitations and the class sizes instructors have to work with. However, employment of appropriate teaching methods can create the environment that stimulates students' interests in entrepreneurship and for business creation (Hidi & Anderson, 1992) The aforementioned calls for closer examination in university entrepreneurship education because; creating an environment that leverages upon the provision of real life situations and practical activities in entrepreneurship teaching, could trigger interest among engineering students to engage in business creation (Mitchell, 1993).

3. CONCEPTUAL MODEL

Teaching models

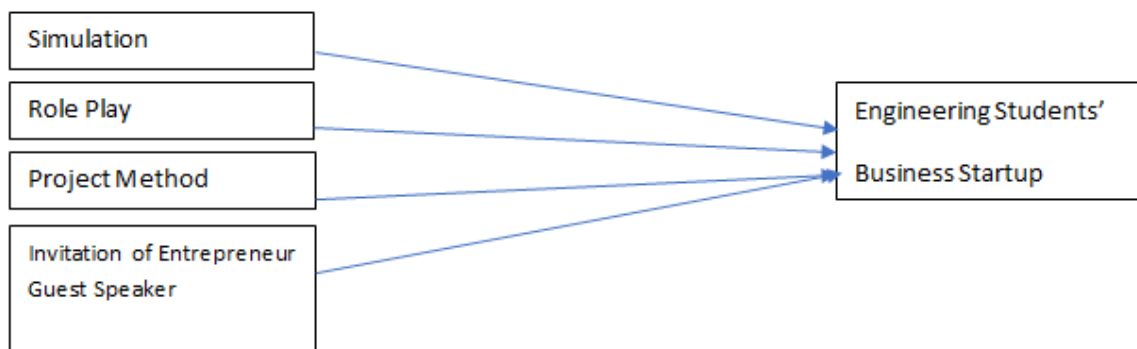


Figure 1 A Conceptual Model on the Relationship between Teaching Models in Entrepreneurship and Engineering Students' Business Startup

Therefore, based on the conceptual model proposed in figure 1 above, four relationships as regards teaching models in university entrepreneurship education and engineering students' business startups have emerge. These are stated as follows:

- i) Simulation in university entrepreneurship teaching motivates students' business startup
- ii) Employing role play in university entrepreneurship teaching encourages engineering students' business startup
- iii) Using Project method in university entrepreneurship teaching stimulates engineering students' business startup
- iv) Invitation of entrepreneur guest speakers in university entrepreneurship teaching inspires engineering students' business startup

4. CONCLUSION AND DISCUSSION

The aim of this study was to propose a conceptual framework showing the relationship between teaching models in entrepreneurship and engineering students' business startup. It is imperative to note that teaching models in university entrepreneurship teaching have become

a focal point of emphasis based on the implications for the development of desired entrepreneurial competencies. This study proposes a conceptual model to show that practical oriented teaching methods have a positive relationship with engineering students' propensity for business startups. The emergent requirement for engineering students to cultivate entrepreneurial capabilities emphasizes the need for universities to consider the employment of appropriate and experiential teaching methods based on the implications for the development of essential entrepreneurial competencies such as business startups. To this end this study proposes that business startup can be simulated as a course model in order to develop the entrepreneurial competencies and capabilities of engineering students. This aligns with the work of Hamstra, Dubrowski, and Backstein (2006) supported by Janes, Silvey, and Dubrowski (2016) which suggests that to effectively simulate entrepreneurship as a process, a model of business startup which represents a major desired entrepreneurial competence must be developed. The study also proposes that entrepreneurial role play activities afford engineering students the opportunity to take up the role of an entrepreneur in practical entrepreneurial activities. This supports the studies of Knight (2002) and Joyner and Young (2006) which showed that role plays engage students in practical entrepreneurial activities that involve real-life business scenarios. In the same vein, this study proposes that engineering students learn relevant and valuable skills by engaging in actual entrepreneurial projects. This confirms the studies of Gless-Newsome and Lederman (2002) and Colley (2005) showing that students can employ core academic and creative skills, to solve salient problems in real business world situations. Finally, this study proposes that invitation of entrepreneur guest speakers as an entrepreneurship teaching method is a valuable tool because close contacts with successful entrepreneurs may inspire engineering students to want to achieve similar feats as it relates to starting their own businesses. This view was supported by Metrejean, Pittman, and Zarzeski (2002) and Karns (2005) who argued that the uniqueness of this method, gives room for a better and effective one-on-one approach as well as a better understanding of a subject that otherwise would have been difficult and challenging for student's comprehension. Based on the conceptual model proposed, this study suggests that experiential teaching models such as invitation of entrepreneur guest speakers, individual and group project, business simulations activities, and role play are considered more effective and appropriate teaching models required to stimulate business startups among engineering students

SUGGESTIONS FOR FURTHER STUDY

This study proposed a conceptual model hence, there is a need to further empirically test and validate the conceptual relationships between teaching models in entrepreneurship and engineering students' business startup as presented by this study.

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