The Adoption of Intelligent and Virtual Teams in Online Entrepreneurship Education Courses

Li Chen[1], Dirk Ifenthaler[1,2]

University of Mannheim, Germany[1]
Curtin University, Australia[2]

Abstract

Educators adopt intelligent and virtual teams or elements of teams to online learning and teaching, especially in entrepreneurship education courses. This study aims to analyze the application and utilization of intelligent and virtual teams in online entrepreneurship education. As the limited open entrepreneurship courses provide virtual team activities, this study also considers practices that adopt team elements. Eight courses are self-paced in massive open online course platforms and two are live-streaming. According to the components of a virtual team, this research focused on communication, teamwork, taskwork, and the use of technology. Online course communication applies various methods, e.g., social media and forums. Educators provide team tasks for online participants. With more communication and completing tasks together, distributed teammates have a closer relationship. Technology facilitates the development of virtual teams. Accordingly, cooperative and collaborative opportunities can improve learning motivation which is crucial for learning effectiveness. However, the application of intelligent and virtual teams is still rare, also leading to low attendance of online courses.

Keywords: *adoption*, *intelligent and virtual team, entrepreneurship education, online entrepreneurship courses*

1. Introduction

Online entrepreneurship courses (OECs) provide entrepreneurship learning as well as teaching opportunities for global learners. Entrepreneurship courses mainly utilize Massive Open Online Courses (MOOCs) platforms (e.g., Coursera, FutureLearn, Udacity, OpenHPI, and EdX) for providing self-paced learning environments where learners seldom adopt virtual teams and acquire collaborative competence [1]. However, Intelligent and virtual teams leverage intelligent and virtual methods for distributed participants by leveraging information and communication technologies [2]. Although OECs adopt elements of team and researches of virtual teams are relatively mature, focusing on entrepreneurship education (EE) virtual team regarding teamwork, taskwork, and communication is scarce to date. However, supplied in online education, team activities and elements are critical for entrepreneurship didactics. Hence, the status of those in OECs needs to be traced and analyzed. This study explained the adoption of intelligent and virtual teams in OECs. The remainder of this article is structured as follows: Section 2 introduces the theoretical background of the virtual team. Section 3 presents the findings and discussions. Section 4 concludes the paper, along with future research perspectives.

2. Intelligent and virtual team learning

Virtual team learning introduced into the workplace and higher education institutes has a significant development in terms of asynchronous and synchronous methods (e.g., email, Wiki, forum, and social media) which are applied to team communication, taskwork, and teamwork. Task- and project-work focusses on the completion of a specific common goal by choosing team action methods or strategies, taking action, and getting feedback [3]. Teamwork emphasizes the role of team members during team activities [4]. Simply speaking, task- or project-work is cooperation and teamwork is collaboration. During perform tasks, team members need to successfully exchange ideas to make team relationships closer and acquire entrepreneurship attitudes and mindsets [5]. Those above-mentioned three elements are rarely designed together in an online learning environment, especially on MOOCs platforms [6]. Educational technology builds the basis for virtual team learning (e.g., social media, serious games, and artificial intelligence). For example, artificial intelligence (AI) tools are added to the virtual team to solve the shortage and workload of instructors using chatbots or intelligent team tutoring systems [7]. In addition, the amount of information transferred amongst distributed learners may be more than online courses without team elements and match face-to-face communication [8].

3. Result and discussion

Data collection criteria included the following constraints: 1) free (without certificates), 2) open, and 3) relatively high platform enrollment. The listed courses below are eight self-paced MOOCs, Coursera (2), EdX (2), XuetangX (2) and Icourse (2), and two Chinese live-streaming. One focuses on participants mainly from engineering areas. The other opens in a business university. Courses are for the beginner (77%) and mixer (23%). The mean enrollment of first two is around 35K and the rest is about 9K. Additionally, two live courses are 71 attendances. The mean of course length is nine weeks. The learning hour per week of MOOCs is 4-6 hours. Based on the courses related to EE, researchers coded them: Entrepreneurship Strategy: *From Ideation to Exit* (EE1), *Beyond Silicon Valley: Growing Entrepreneurship in Transitioning Economies* (EE2), *The Entrepreneurial Mindset* (EE3), *Identifying Entrepreneurial Opportunities* (EE4), *Into entrepreneurship* (EE5), *Entrepreneurship Team Building and Management* (EE6), *Entrepreneurship Management* (EE7), *Startup Innovation and Entrepreneurship Practice of Higher Education Students* (EE8), *Startup entrepreneurship* (EE9), *Entrepreneurship Speedup* (EE10). The detail is showed in table 1.

Table 1. Online courses with virtual team learning elements

Code	Platform	Length (w)	Enrollment	Level	Communication	Team work	Taskwork	Technology
EE1	Coursera	5	33K	Beginner	Medium	Weak	Review peer work	Social media+ forum
EE2	Coursera	5	39K	Mix	Weak	Weak	Review three peer work	Forum
EE3	EdX	4	33K	Beginner	Medium	Medium	No	Forum
EE4	EdX	4	72K	Beginner	Medium	Medium	No	Social media+ forum
EE5	Icourse	15	7K	Beginner	Strong	Strong	Review two peer work	Forum
EE6	Icourse	15	3K	Beginner	Weak	Weak	Tasks suggestion	Forum
EE7	XuetangX	8	18K	Mix	Medium	Medium	Discussion, share documents	Social media+ chatbot+ forum
EE8	XuetangX	12	7K	Mix	Medium	Medium	Share information	Mini software+ chatbot+ forum
EE9	Live-streaming	6	46	Mix	Strong	Strong	Team building, team tasks	Social media
EE10	Live-streaming	14	25	Beginner	Strong	Strong	Startup project mimicking	AI+ Social media+ forum

To facilitate connection amongst distributed learners and improve completion rate, designers of MOOCs adopt virtual teams or elements of them. Team communication mainly through a forum of platforms and external social media. Attendees review peer assignments and discuss the documents in detail (EE1, EE2, and EE5). Learner uploads homework as required and reviews others before the due. Learners post topics in the forum and it attracts interested participants or under the recommended topics posted by educators (EE3, EE6, and EE8). Course designers add social media (e.g., Facebook) to facilitate communication (EE4, EE7, EE8, EE9, and EE10. The conversation is a critical element for FutureLearn [9] and other platforms. MOOCs provide interaction through forums

and social media where learners can stay longer. Although entrepreneurial pedagogy needs more communication methods and collaboration, the limitation of online learning leads designers to focus on basic entrepreneurship knowledge. Text and recorded videos are mainly methods to inspire distributed students. Additionally, despite discussion being part of the final score, both the motivation and effectiveness of online communication are lower than instructors expected.

Everyone reviews two or three peer assignments (EE1, EE2, and EE5). EE6 provides task suggestions (e.g., who is the big boss). However, leaners need to organize teams by themselves. EE9 and EE10 set a series of team tasks according to the characteristics of OECs. EE9 mainly adopts social media (WeChat) and designers used online seminars two times (four teams and four-six teammates per team). Team relationship gets closer through online team meetings and tasks (e.g., I am the founder). EE10 introduced an entrepreneurship simulation system where teammates follow step by step. Distributed undergraduates organize their teams (six teams and four teammates per team) and submit an entrepreneurial project at the end. Generally, participants in social media are less than the enrolled, like EE4, 851:14,540. Instructors set the group for all learners (EE4, EE7, and EE8) as a result. Teamwork (or social relation) in online courses comes from doing taskwork together or organizing activities by themselves. Hence, both the social relation of EE9 and EE10 are strong. EE1, EE2, EE5, EE7, and EE8 have medium team relationships. EE3 and EE6 have weak team relationships. Although EE4 has no external taskwork, the relation is medium, which might because the instructors come from Babson College. Online courses provide team tasks or team element have higher completion rate [10]. While the restrictions of OECs, especially entrepreneurship MOOCs, lead to designers setting team elements instead of the virtual team. Aided by technology, the tasks in two live-streaming courses are similar to the face-to-face, usually proposing and completing a project with online teammates. OECs set peer assignments, team homework, or discussion, mainly teaching entrepreneurial basic knowledge and skills and seldom fostering attitudes and empirical competence. While mimicking the entrepreneurial process facilitates learners to master the knowledge and understand entrepreneurship deep. Hence, tasks need to be more practical and collaborative. In addition, online attendees have diversified backgrounds and lack nonverbal communication. Many educators are aware of this and take action. However, they need more supplements to motivate online students to join extra activities

Therefore, instructors apply technologies to OECs. Those courses combined with social media, serious games, learning management systems [11], promoting collaboration and cooperation in an online and blended learning environment. OECs adopt other technologies, e.g., EE8 adopts a mini software (business model canvas) except for social media. The chatbot answers common questions on the XuetangX platform. Technology makes authentic and high-risk entrepreneurial business experiences learn from low costs. Meanwhile, technology remedies the shortcomings of online education. Adopting AI or other cutting-edge technologies is still in the initial era, e.g., human-computer interaction. Especially, scholars and educators need to consider combining technology with OECs profoundly and perfectly.

4. Conclusion

Although most entrepreneurship MOOCs are self-paced, the collected data show instructors adopt teams or team elements to an online environment. Except for evaluating peer assignments, educators provide more space and possibilities to this learning method. For example, social media groups share information, discuss questions and complete a business project together. Information exchange in teams facilitates teammates' relationships [2]. Still, the acceptance of MOOCs for EE may be critically reflected and requires further research [12]. Under the circumstance of the COVID-19 pandemic, virtual team-based learning provides collaboration opportunities for teammates and fosters cooperation competence that entrepreneurs need. Two live courses are still running until the end of the semester. This study focuses on the first three weeks. Authors will continue to trace, observe and improve the projects in future research.

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