A Descriptive Account of Factors Affecting Student Satisfaction in an Online Master's Degree in Agriculture and Life Sciences

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Abstract

The purpose of this qualitative study was to explore factors affecting student satisfaction with an online master's degree in agriculture and life sciences. Purposively selected program graduates (n=8) provided in-depth interviews utilized by the researchers to understand student motivation, perception of their educational experience, factors affecting satisfaction and provide recommendations for improvement. Primary themes that emerged were related to technology, instructional design, coursework, teaching and learning, student support and recommendations for improvement. These themes were utilized to frame the results and offer recommendations to improve the teaching and learning process. Based on the results, recommendations include: (1) develop a marketing plan that includes an online presence and targeted information to industry groups and professional associations; (2) provide orientation sessions for online graduate students; (3) utilize multiple delivery methods to accommodate learning styles; (4) provide technical assistance in course development; (5) review course materials periodically; and (6) design experiences that promote faculty-to-student and student-to-student engagement. This study provided an opportunity to assess the teaching and learning process using student perceptions and experiences. The information is being utilized to improve an online master's degree program and should be considered when designing future online degree programs in Colleges of Agriculture and Life Sciences.

Introduction

Enrollment in online courses and degree programs in Colleges of Agriculture continues to experience robust growth in the United States (Allen and Seaman, 2011). This growth has led to the accelerated development of online courses and degree programs as a result of the increased number of people with internet access and modern information technology platforms which have facilitated a change in the way educational content is delivered (Sher, 2008). With 31% of all college and university students now taking at least one online course (Allen and Seaman, 2011), the institutional capacity needed to address this emerging educational environment continues to evolve as well as offer tremendous opportunities for Colleges of Agriculture. In 2011, 65% of chief academic officers reported that online learning was critical to their strategic plan (Allen and Seaman, 2011). It is evident that online learning has become a mainstay in educational institutions around the world (Harasim, 2000) and the trend towards online delivery of educational content is likely to continue (Weller, 2013).

Online education has been defined as a "group communication phenomena" (Harasim, 2000, p.43). These online courses and degree programs are characterized by the activities such as the presentation of information, discussion and group work are undertaken online (Waltonen-Moore et al., 2006). The availability of online education and the increasing number of students enrolled speak to the importance of this educational delivery method (Zapalska and Brozik, 2006). The flexibility of online education has increased people's expectations for quality instruction and provides the impetus to investigate student satisfaction in online courses and degree programs (Kaminski et al., 2009). Student satisfaction in online courses has been implicated in program persistence (Rivera and Rice, 2002), motivation (Bolliger and Wasilik, 2009) and higher levels of learning (Shea et al., 2001). The experiences and personal perspectives of online learners can provide valuable data that speaks to what matters most to online students and help institutions gain a better

understanding of current strengths and challenges in delivering online programs (Noel-Levitz, 2011) as well as provide a framework for program and course enhancement (Olmstead et al., 2011). Additionally, satisfaction data from the learners' perspective can assist faculty members and administrators can identify areas where improvement is needed (Reinhart and Schneider, 2001).

The purpose of this study was to provide an evaluation of the online Masters of Agriculture and Life Sciences (OMALS) degree offered at a land grant institution in the mid-Atlantic region of the United States. The objectives were to:

1. Determine the factors affecting student satisfaction in an online degree program.
2. Offer recommendations to improve student satisfaction in online degree programs.

Prior to this study, no evaluative data had been collected on this program to inform the faculty, the college or to offer guidance for future students and their needs as learners.

Literature Review

As the number of online degree programs continues to increase and competition for students among universities is amplified, it is important to evaluate and assess the effectiveness of these online programs and the factors that influence student satisfaction. Student satisfaction is defined as the student's perceived value of his or her educational experiences at an educational institution (Astin, 1993). Allen et al. (2002) and Wang (2003) argued that in any educational institution, the satisfaction of a student can be determined from his level of pleasure as well as the effectiveness of the education that the student experiences. Students with higher levels of satisfaction towards various aspects of e-learning courses are reported to show considerably higher levels of learning than students with a low level of satisfaction (Shea et al., 2001). In this regard, instructors of online courses can increase their students' satisfaction by considering the primary factors of student satisfaction (Leong et al., 2002). Bollinger and Martindale (2004) identified three primary factors central to online student satisfaction: instructor, technology and interaction.

In online courses, the ability of an instructor to reduce the social distance between themselves and their students is a positive predictor of student learning and course satisfaction (Arbaugh, 2001). A lack of feeling connected to faculty has been shown in previous research to be a significant variable in the student's sense of potential for completion of the online course (O'Brien, 2002). Additionally, the time and place flexibility that technology provides has been found to positively influence student satisfaction (Berger, 1999).

Interaction has been deemed one the most important components in online education (Moore and Kearsly, 1996). Previously, the quality of interactions with faculty and other students has been found to influence student satisfaction (Thurmond and Wambach, 2004; Levy,

2007). And the perceived emphasis an instructor places on course interaction has been positively associated with student satisfaction (Arbaugh, 2000). Because high levels of satisfaction lead to lower attrition rates, higher persistence in learning and higher motivation in pursuing additional online courses (Allan and Seaman, 2011), assessing student satisfaction in online degree programs can help institutions evolve and address the needs of this unique group of learners.

Background

The Online Masters of Agriculture and Life Sciences (OMALS) was developed by the College of Agriculture and Life Sciences as a completely online degree, which primarily utilizes asynchronous with some synchronous instruction and blended learning tools and technology into the program. The program provides broad, scientific-based courses in agricultural and life sciences and related fields. The online format offers participants access to a graduate degree program relevant to their professional career areas in the agricultural industry, agricultural education or extension. The OMALS program required 30 credits of coursework that must include 12 credits in one of five areas of concentration: Biosecurity, Bioregulations and Public Health; Education; Environmental Science; Food Safety; or Plant Science and Pest Management. Additional coursework includes nine credits in core courses, three elective credits, as well as 12 credits for the culminating project and report required for completion of the program. At the time of the study there were 31 graduates of the new program. By identifying and understanding factors affecting student satisfaction faculty can add value to online degree programs.

Materials and Methods

Case study methodology was employed in an effort to understand the in-depth, real-life phenomenon over a period of time with a set audience, to try and gather meaningful data (Yin, 2009). A strength of case studies, when compared to other research methods, is that a variety of evidence is provided through an array of techniques, like interviews, observations or document analysis (Yin, 2009). This qualitative case study did not propose to represent all students in the program, but instead focus on the program as it is conducted within the Department of Agricultural and Extension Education at Virginia Tech. Corbin and Strauss (2008) explain, *"Qualitative research allows the researcher to get at the inner experience of participants, to determine how meanings are formed through and in culture and to discover rather than test variables"* (p. 12). Additionally, interviews provide rich descriptions of the ways students engage in cognitive processes, which could not be accomplished through pure quantitative analysis (Rossman and Rallis, 2003).

The population of the study was OMALS program graduates (n=31). The sample of nine graduates was purposively selected based on their willingness

to participate in the study. The (name of institution) Institutional Review Board approved the study protocol and all participants provided written informed consent prior to participation in the study. Open-ended questions served as the primary evaluation tool. An interview guide was used by the researchers to help students recall and reflect on the curriculum, the structure of its delivery and the technology used to deliver the lessons. The data collected included conversations and comments from a semi-structured interview format that allowed for follow-up questions (Ary et al., 2009). The data from the interviews was audio recorded to achieve accuracy and transcribed by the researchers to provide evaluative data. Constant comparison analysis was used to examine the results. According to Strauss and Corbin (1998) in vivo, focused and axial coding methods characterize constant comparison analysis. Express Scribe© transcription software and Atlas.ti© coding software was used during the transcription and coding of the interviews with participants. After interviews were transcribed, the researcher used in vivo coding in Atlas ti© to first break the data into large codes based on patterns that were emerging using the participants own words. In vivo coding was done to determine what meaningful patterns were emerging to make up sub-categories of data (Charmaz, 2006). After open coding was complete, focused coding occurred. The resulting codes were more direct and began to explain larger segments of the data. Focused coding helped determine the adequacy of the in vivo codes (Charmaz, 2006). By comparing data to data, focused codes were created to help the researcher begin grouping like codes and refining them into larger groups of categories. The final step in the coding process was axial coding. Axial coding helped the researcher bring all of the data together and determine themes based on the research questions (Corbin and Strauss, 2008). All participants were assigned pseudonyms in accordance with IRB policy and approval.

Results and Discussion

Online education has emerged in response to the need to provide access to people who would otherwise not be able to participate in face-to-face courses (Allen and Seaman, 2011). It allows the learner and instructor to be together but physically apart from one another in an educational environment (Beldarrain, 2006). The aforementioned research is supported by the fact that the majority of participants in this study were working full-time in agricultural or life science industries. The careers of participants varied from food safety specialists to managers in the Virginia Department of Agriculture; however, the majority of participants were agricultural and extension educators. Three of nine participants were required to obtain a master's degree as a condition of their employment; these individuals also received employee tuition reimbursement to offset the cost and serve as a motivator for them personally and professionally. Participants who self-funded their degree and those who were provided employer assistance agreed that the program was valuable. As one student explained, "*I will happily pay the money that I owe and be thrilled with information I got, [and] by no means did I waste my time or money, it was well worth it*" (David, p. 8).

The motivation for returning to school varied among students. Personal aspirations were mentioned briefly, but the reoccurring themes were an interest "in learning new things and thinking outside the box" (Debbie, p.3). Another student explained that a master's degree provided "*an opportunity to increase my earning power and advance in the organization*" (Scott, p. 1). A majority of the participants learned about the online degree program from their supervisor, professional association or by searching the Internet.

Six themes related to student experiences in the online program emerged during data analysis. These themes included student perceptions of technology, perceptions of instructional approaches, application of coursework, effective teaching and learning, influence of student and faculty interaction and recommendations for improvement. These themes are consistent with Shelton's (2010) quality scorecard for online education programs. The quality scorecard was developed using the Delphi method with 43 college administrators from public and private institutions serving as experts. These experts agreed upon quality indicators that should be used to evaluate the quality of online degree programs.

Student Perceptions of Technology

Technology plays an important role in the delivery of online degree programs (Shelton, 2010). Data analysis revealed two reoccurring sub-themes related to technology. First, technology provided the flexibility that working professionals desired. Students did not have to be place bound in order to complete the degree program and this was perceived as an advantage. As one student explained, "*For my work I probably travel about 5 weeks of the year so during that time I was able to continue my studies and I could do that from home as well as in the evenings after work*" (Scott, p. 3). This advantage was the sole reason why some individuals enrolled in the program, "*I looked at different college classes a lot of times and having to drive somewhere or be somewhere and this was the only thing that worked*" (Scott, p. 7). One student explained further that it was the only option "*to get continuing education and not have to give up your life and live in Blacksburg*" (Brooke, p. 1). The perception that the online program was "*virtual and it wouldn't impact my work*" (Larry, p. 1) was supported by many participants who posited, "*with my full-time job scheduling normal sit in the seat classes was pretty much out of the question*" (David, p. 1). Another student commented that the program allowed me to "*be a full-time professional while also being a student*" (Larry, p. 1).

The self-paced environment that technology provided was perceived as a benefit. Maggie commented that "being able to work at odd hours and review the lectures and work on the assignments at my own pace" was an advantage of the program (p. 2). This finding is

congruent with several studies that found the flexibility of online courses is attractive for students trying to balance work and family demands (Stanford-Bowers, 2008; Holder, 2007; Nash, 2005).

Two participants were weary of the technology utilized to deliver instruction. Debbie successfully conveyed the feelings of these participants when she described herself as "not that technologically advanced" and that she "felt intimidated" by the technology utilized in the program (p. 2). These two individuals eventually overcame the learning curve as Debbie explained best, "it took a little time to get used to the technology, but it is not that bad once you learn it" (p. 3).

The online degree program also provided individuals who were not technologically proficient the opportunity to learn new skills. As posited by Park and Choi (2009) this sense of personal growth can positively influence student satisfaction, motivation and persistence in online programs. As one student explained:

"*I was not proficient with web use and going to find things; that class really helped me earn how to use the web and be able to search for things and as a result I have encouraged a lot of people in my age bracket to go ahead and try it [online programs] because it is not that bad once you learn how to use the computer programs.*"(Brooke, p. 6)

This type of emotional support and encouragement from friends, family and coworkers has been shown to improve persistence of students enrolled in online programs (Holder, 2009).

Perceptions of Instructional Approaches

Instructional design is the practice of creating "*instructional experiences which make the acquisition of knowledge and skill more efficient, effective and appealing*" (Merrill et al., 1996, p. 2). A variety of instructional approaches were utilized by the faculty members in the OMALS program. The primary educational delivery method was Adobe® Connect and Adobe® Presenter augmented by Blackboard© or Scholar© forums and blog postings to facilitate discussion of the course material. Courses that included a mix of synchronous and asynchronous instruction were perceived as the highest quality. One program graduate commented that:

"*Professors that taught in a way that basically gave you a lecture like they would if you were standing in the same room with them or they were in a room with 100 other people, those were, for me were the most beneficial classes because I can read a book, but the nuisances that you get when it is explained helped me learn it faster.*" (Brooke, p. 3)

Student experiences with this type of synchronous instruction heavily influenced the student's satisfaction with the course:

"*These classes were probably more like a real class rather than just going online and having a whole bunch of reading assignments, I mean we had that too, which was a good thing, but the whole experience was like being in the classroom rather than trying to teach yourself, which was great.*" (David, p. 3)

Asynchronous methodology was cited as beneficial by participants whose preference was to move at their own pace, "I like to move at my own pace so I like the information already up there [on Scholar©] so in case I finish something I can keep going" (Larry, p. 5). Another student commented that the asynchronous nature of forum and blog posts facilitated student interaction:

"*The use of Blackboard© where we could post or ask questions of each other works pretty well because even though we didn't know the others in the class you could kind of get a sense of how they were by what they wrote.*" (Neil, p. 3)

Lastly, faculty members that provided lecture materials that could be printed by a student and utilized to follow along during the lecture was cited as beneficial to their experience. Larry commented that "some of the instructors actually had their lectures in a text so you could save them and print them and follow along and highlight" (p. 5). These findings are congruent with Ojokheta (2010) who found that students who are satisfied with the program delivery method are more likely to persist in online programs.

Application of Coursework

Graduates of the program were asked to provide feedback related to the coursework as well as the amount of work required to complete the degree program. The most beneficial courses were those that were perceived as "relating to directly my current job" (Neil, p. 3). One graduate of the program summarized the sentiments of others by positing that she had positive experiences when she:

"*Could apply the coursework immediately to what I was doing in my work as a 4-H agent, which was nice. For example, I took a volunteer management class and there was information about volunteer recognition that I used immediately because it just fell at the time of year that we did our achievement night.*" (Maggie, p. 2)

Another student reflected that the coursework was relevant to develop a consulting business:

"*The business plan that we worked on was something that I could use in the future. Just the knowledge about how to approach a business plan and how to understand other people's business plans by doing that one was beneficial. I took that business plan and I am doing very well in business now.*" (Brooke, p. 5)

Overall, the courses that were seen as beneficial were perceived as meaningful and were considered to have practical application, "I got to apply my knowledge in a practical way and that was kind of cool" (Brooke, p. 6). Participants perceived some classes as, "*least beneficial only because of what my profession is; it was a great class, but I just do not do anything with the idea of marketing or building a business with what I do professionally*" (David, p. 6). These findings are consistent with research that found students who voice satisfaction with the relevance of coursework to their

individual needs persisted in online degree programs (Park and Choi, 2009).

Quality of communication in online courses has been found to be associated with student satisfaction. Hart (2012) posited, "Ambiguity in content or communication can be difficult for the online student to process, thus increasing the importance of quality interactions with faculty" (p. 32). This is evidenced by the sentiments of students who took a course taught by multiple professors:

"*Each [professor] has different teaching styles and expectations. That made the course almost certainly my most difficult educational challenge I have ever had and I desperately fought my way through that class and I am just amazed that I was able to get through.*" (David, p. 3)

Effective Teaching and Learning

Several themes emerged from the data related to effective teaching and learning. The majority of participants preferred engaging instructional approaches. Participants felt satisfied when they were engaged with the curriculum and faculty members. Debbie explained, "*A couple of the classes were really good because it was hands-on types things, you were actually doing things and turning in work the same time you were listening and doing the lectures*" (p. 6). On the other hand, learners with varying styles were satisfied when they were provided with opportunities to learn using their preferred style:

"*I really like the way we went to class. I am a visual and auditory learner. I am more auditory then I am visual and the fact that you could go to class and you could get a PowerPoint® presentation with voice that would talk through the material.*" (Brooke, p. 2)

By providing several approaches to teaching and learning, instructors were able to provide experiences that benefit multiple learning styles. Additionally, practices that provided feedback were seen as positive and were perceived by students to improve performance:

"*Some professors had weekly quizzes or quizzes over a section. I think that is a big help because you know when midterm comes or the final at least you are prepared, you know how that instructor thinks and what kind of information they are looking for.*" (Debbie, p. 6)

The quality of instructor interaction and feedback improved the students' satisfaction with the online program. Feedback has been found to play a role in student satisfaction (Ivankova and Stick, 2007) and influence student perception of the course content (Ojokheta, 2011). Overall, multiple instructional methodologies and feedback loops enhanced the student experience and improved student satisfaction with the program.

The Influence of Student and Faculty Interaction

The data indicated that student interaction with faculty members is the most influential experience that informs the students' satisfaction and regard for the program and their degree. The theme that emerged related to faculty support was communication. This major theme was broken down into sub-themes: communication before the course and communication during the course. Due to the online nature of this program most students need sufficient time to acquire textbooks:

"*It would be nice to have faster notification in regards to textbooks. Some of the classes that I took, I barely got the textbook in time and it is tough because we are not on campus, we just can't walk over to the bookstore and get it.*" (Larry, p. 4)

The majority of students indicated that they would like to be provided an opportunity to meet with faculty before class starts or during the first week of class. The preferences espoused by participants were either one-on-one or group so long as the process facilitated an open line of communication: "I would love to Skype© or have a phone conversation if they are available" (Neil, p. 4).

Communication during the course was perceived by some students as a major source of frustration:

"*A really frustrating thing for me was that pretty much in all of the classes that I took the professors never participated in the online forum so I kind of felt like they were just posting the material that they did the past year and just kind of signing out for the rest of the year. I just didn't feel a professor present at all.*" (Maggie, p. 5)

On other hand, students who had positive experiences when communicating with faculty were satisfied:

"*What strikes me is that these people that spent their time teaching all of us they are very accessible if I reach out to them. If I email them they email me back immediately and it is not my feeling that other professionals in that level of education that they are that approachable. That I can reach out and actually get a hold of them and actually get a person to person conversation and then they talk to me level across board. They don't try to hold that higher education that they have above the person they are talking to over the phone.*" (David, p. 7)

A key measure of satisfaction, as reported by students, is an open line of communication with faculty members.

Recommendations for Improvement

The majorities of participants in the study had positive experiences and were satisfied with the degree program. Common recommendations that emerged during the interviews were the development of supplemental materials to orient new students, *"from a student perspective and someone who hasn't been a student for a while just trying to find out how to register how to get online. I mean some kind of tutorial would be helpful"* (Scott, p. 8). The majority of participant's indicated that tutorials on the proper use of Blackboard© and Scholar© platforms would be helpful too.

Several participants reported difficulty finding a time-line for when courses would be offered, *"it was difficult to*

stack up some of the courses; it was very tricky trying to lay it out so that I could finish and complete the program when I wanted to" (Maggie, p. 4). A common recommendation was to ensure, *"more variety and more consistent offerings of the classes that are in the course catalog cause a lot of classes I wanted to take, but they were never offered at the time I needed them"* (Neil, p. 4).

Another common recommendation for program improvement was the development of guidelines for final projects. The fact that there was not a written guideline was a source of frustration for some students:

"*I never got any guidelines as to how I could change my idea into a project or report and so finally after doing that for two years and I was coming towards the end of my course work and I just started working on it without the approval of my advisor."* (Maggie, pp. 2-3).

Summary

This study is an initial step toward understanding student satisfaction with an online degree program from the learner's perspective. These findings lead to several recommendations for agricultural faculty members who seek to improve or develop effective online degree programs. The relatively small sample size may not be representative of all program graduates, but based on the results of this case study the following practices could be implemented to improve the marketing of the program and student satisfaction.

First, the completely online nature provides working professionals with the flexibility needed to earn a master's degree with a career-relevant area of specialization. Berger (1999) found that time and place flexibility positively influences student satisfaction. The ability of our participants to complete coursework at their convenience allowed for the successful balance of work and family obligations. It is recommended that the completely online nature of the program should be highlighted when marketing the program to prospective students. For example, Ohio University developed an "MBA without boundaries" in an effort to attract place and time bound individuals into their online degree program (Ohio University, 2013).

Secondly, a majority of the individuals learned about the degree program from their supervisor or professional association and completed follow-up investigation of the program via the Internet; therefore, online agricultural programs should develop a marketing plan that includes a robust online presence and targeted information to agricultural industry groups and professional associations. An online presence could serve as a venue to share positive experiences of program graduates via testimonial videos and print materials. Many individuals placed an emphasis on the ability to advance in the organization as a reason for pursuing their degree. A follow-up study is recommended to determine the career advancement of graduates as well as the realized salary increase as a result of completing the degree program.

Lastly, a majority of participants felt they had limited experience with computers and online educational

delivery systems. The perception of these learners is that technology can be intimidating. It is recommended that the coordinator of the program develop tutorials for the technology that will be utilized in the online degree program. The development of tutorials will facilitate the use of technology as a tool to achieve learning outcomes. This recommendation is supported by Arbaugh (2000) who found that perceived usefulness of course software is positively associated with student satisfaction.

It is recommended to provide an orientation session for new online graduate students. This practice is often seen as a valuable experience for students who are on campus. An orientation that provides an overview of the program, technology, expectations and faculty can also serve online students as well. In order to ease student apprehension, technical assistance and support should be provided throughout the degree program. This orientation can also serve as a means to develop relationships between students and teachers. This recommendation is congruent with O'Brien and Renner (2002) who found that a lack of feeling connected to faculty has been shown to be a significant variable that influences student satisfaction. If an orientation session is not feasible, having a point of contact to address technology related questions in order to streamline the process and alleviate technology related requests to the student's adviser or other faculty members who may not be of assistance. Assistance from one source will be more efficient and can be done via email to start and move to other modes of communication to address technology related issues. This will also ensure that the message is consistent for similar problems and the students know that one person or a group will support them.

These findings indicate that students preferred to be taught as if they were in a traditional classroom. Courses that incorporated multiple instructional modalities were often considered the most valuable to graduates. The practical implications are that faculty members should focus on instructional activities that are varied and seek ways to provide interaction with the course materials and students. One way to accommodate various learning styles is to utilize synchronous and asynchronous delivery methods. Options to call into the equivalent course that is offered face-to-face can be done at the students' discretion and the faculty member should make streaming available. By offering the asynchronous students the option to participate in the live class, they may feel as though they are receiving a more traditional setting, have access to more information during the class and interact with the students in the course, offering the feeling that they are participating. It is recommended that faculty or advisors encourage online students to engage with each other to provide camaraderie, support and build professional relationships. Data from cohorts suggests that students who feel supported by their peers persist through their degree program. By encouraging interaction among students, it can foster positive relationships that will aide in the completion of coursework and degree program.

Coursework that was relevant to the individual's career or aspirations was seen as most beneficial and motivated students to continue in the program because they saw the value it would have later on in their career fields. Instructors who augmented course reading with additional insight through personal stories, current events or additional materials and media improved the educational experience of students. It is recommended that course materials be reviewed periodically in order to remain relevant and responsive to the needs of learners.

The ability of the faculty member to design experiences that promote faculty-to-student and student-to-student engagement heavily influenced the satisfaction of program graduates. Those individuals who felt that they did not have an open line of communication were frustrated with the course and online degree program. On the other hand, those individuals who had an open line of communication had positive experiences, developed ongoing relationships with faculty and are advocates for the OMALS program. Improving the lines of communication between faculty and students can have a tremendous impact on the student's college experience. It is recommended that faculty members remain responsive to the needs of online students; feedback on student assignments should be provided in a timely manner. Additionally, faculty members should communicate their preferred method of communication with students enrolled in online courses. Students should also be provided a forum to interact with other students in the online environment. Additionally, it is recommended that the coordinator of the online degree program make an effort to engage students with the institution.

This study provided an opportunity for the College of Agriculture to assess the teaching and learning process using student perceptions and experiences. The following information will be utilized by [college] to improve the online master's degree in agricultural and life sciences. This data should also be taken into account when designing future courses and degree programs in Colleges of Agriculture. By building on the positive results and addressing areas for improvement this degree program can continue to meet the educational needs of working professionals.

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