



3th International Conference on the
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Title: Preliminary Analyses of a Cutting-Edge Knowledge Distribution Method of MOOC (Massive, Open, Online Course) to Teach Tourism as an Industry

Session 4: eLearning in the Regional Tourism Information System framework

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Extended abstract:

University of Central Florida (UCF), in partnership with Canvas Network, launched two MOOC courses in 2013, and one course was in the field of tourism. The course introduces students to a concept of tourism as an industry, and leads them to learn Input-Output, Social Accounting Matrix before an introduction to Tourism Satellite Account (TSA). This study records one of the earliest experiments of MOOC format to disseminate basic knowledge to understand tourism statistics and tourism satellite accounts. As a six-week course entered into third week, more than 450 students registered a course entitled as "Tourism Industry Analysis". So far a little over 110 students submitted the first quiz and close to 100 complied with the instructor's request for taking a demographic survey. Result of survey revealed high level of diversity in terms of geographic locations, gender, academic attainments and motivations of students.

Compared with previous literatures which reported the results of earlier MOOCs, this course so far demonstrated higher retention and engagement rates. Challenges are similar to those reported in previous MOOC research such as how to increase the retention rates, when the certificates can be issued, and how quality of the course can be maintained given overwhelming diversity of students in terms of prior knowledge on specific subjects.

[Background]

Many international organizations face constant needs to train and educate large numbers of people across the world about some specific topics. Trainings are usually conducted by a group of educators or experts who will physically commit their times and conduct required seminars, workshops and training. While the traditional methods have been effective to share knowledge to small numbers of audiences, it tends to incur substantial expenses for moving all participants and trainers to the same location. Time commitment often prevents certain people from attending those educational events.

In the meantime, Massive Open Online Course (MOOC) concept appeared as early as 2008, and the idea is to share knowledge through large-scale open online course, often free to public. New York Times declared 2012 as "The Year of MOOC" and became a very timely topic in 2012. (Pappano, 2012)

Stanford University, University of Pennsylvania, Princeton University, University of Michigan, and MIT offered MOOC courses in 2012 and attracted thousands of students. Coursera, one of the MOOC platform providers, showed that in the first 13 months of



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operation, they offered 325 courses, with the breakdown of 30% in sciences, 28% in arts and humanities, 23% in information technology, 13% in business and 6% in mathematics.

[Introduction]

(Course – Tourism Industry Analysis)

While there are approximately over 170 Universities with tourism or hospitality programs in the U.S., most do not offer dedicated full-semester courses on tourism statistics and Tourism Satellite Accounts (TSA). This appears to demonstrate a certain degree of structural disconnect between current tourism/hospitality curriculum and the existence of vast knowledge in the tourism statistics area contributed by national statistics offices and international organizations such as United Nations World Tourism Organization (UNWTO), World Bank, and the Organization for Economic Cooperation and Development (OECD).

The full-semester fully-remote streaming video lecture online course has been taught in Spring 2011 and Spring 2013 to hospitality management students, the majority of which have no prior knowledge on economics, matrix computations and tourism statistics. One of the objectives of the course was to educate students without prior knowledge of economics how Input-Output (I-O) and Social Accounting Matrix (SAM) and TSA works. This method of teaching students without requirements for prior knowledge of economics may or may not work with MOOC students who may not fit into typical characteristics of students.

Based on the structures of fully streaming video courses, we have trimmed the course contents from 16 weeks equivalent to only six-weeks to cater to the findings of previous MOOC courses at preceding courses at varieties of universities. While the core curriculum of I-O, SAM and TSA were retained, MS-Excel based case studies were trimmed due to its labour intensiveness. MOOC course had weekly quizzes which mainly comprise of multiple choices and ordering questions of the contents. Six week course has the following contents (Week); (1) Introduction to Tourism Statistics (2) Introduction to Input-Output Model (3) Tourism Impact Analysis (how to use I-O) (4) Introduction to Social Accounting Matrix model (5) Poverty Alleviation and National Development (6) Introduction to Tourism Satellite Accounts. Course contents can be seen here: <https://www.canvas.net/courses/tourism-industry-analysis>

The experiment was made available with a platform called Canvas Network, which hosts varieties of courses from multiple universities, mostly located in the United States. Canvas platform is offered by Instructure, which is an educational technology company based in Salt Lake City, Utah. Canvas Network was launched in November 2012 by Instructure. The University of Central Florida is a metropolitan public research university located in Orlando, Florida, United States. UCF is one of the State University System of Florida, and it is the second-largest university in the United States by enrolment as of 2012. Rosen College of Hospitality Management is the largest hospitality and tourism programs in the United States by enrolment of over 3,000 full-time students, due partly to its location in Orlando, Florida, which received the highest number of annual visitors of 57 million in 2012 in the United States. The Research Initiative for Teaching Effectiveness (RITE) supports UCF faculty in formulating and implementing research on effective teaching practices in higher education.

[Purpose]

The purpose of our experiment is first, to evaluate teaching effectiveness of highly quantitative and complex contents of economic impact studies and s can be disseminated and taught to audiences who are expected to have diverse characteristics in terms of age, gender, motivation, geographic location, prior experiences with online education, MOOC, level of highest educational attainment, prior exposure to economic impacts calculations and studies in English to name a few. The course requires no specific pre-requisites, therefore researchers expect to encounter some degrees of variances in educational preparedness for learning how to use theories which were awarded with Nobel Prize in Economics in 1973 and 1984 for I-O and SAM.

[Theory / Issues/ Previous Research]



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Research paper on MOOC are all relatively new, which reflects the fact that it started only as early as 2008 led by Stephen Downes and George Siemens through University of Manitoba, Canada in 2008 in *Connectivism and Connective Knowledge 2008* (Mackness, Mak, & Williams, 2010).

Findings from a survey of CCK08 participants show that the course attracted adult, informal learners, who were not concerned about course completion. (Fini, 2009) Fini stated that an investigation was also necessary to understand MOOC participant profiles as they relate to course outcomes and retention and whether terms such as course and attrition were appropriate in this context. In 2011, researchers looked at differences from the typical structure of a traditional course while a MOOC engages networked learning methods. While usage of Facebook was encouraged to connect with other participants and facilitators, only a limited number of participants joined the FB group - 8.2% of 1,641 in one course and 18% of 700 in another course. (Kop, Fournier, & Mak, 2011).

While there are tens of research papers already as verified by researchers who made systematic review of the published MOOC literature since 2008 (Liyanagunawardena, Adams, & Williams, 2013), many of them are in exploratory in nature due to its short history of MOOC format. And we did not identify any research papers which specifically deal with their experience of MOOC over the hospitality/tourism field. Many of the existing academic research are related to conveying knowledge of hard science, while they provide useful information on the characteristics of MOOC format.

In the 10th World Conference on Mobile and Contextual Learning in 2011, a study was presented on results of 556 learners, of which 13.3% (74) were active members, being defined as who posted at least one message in addition to their introduction. (de Waard et al., 2011) While the study discussed over usage of mobile device, researchers pointed out that MOOCs have a high enrolment of participants at the start, by they also have a high percentage of non-active participants with high dropout rate. The study also mentioned about lurkers among non-active participants, who find that following the course from the sidelines adds to their knowledge. One paper examined how emergent technologies.

One Researcher describes the short history of MOOCs and sets them in the wider context of the evolution of educational technology and open/distance learning. (Daniel, 2012) While the hype about MOOCs presaging a revolution in higher education has focussed on their scale, the real revolution is that universities with scarcity at the heart of their business models are embracing openness. It could also create a welcome deflationary trend in the costs of higher education. Another paper asserts that almost 20 million learners in over 203 countries have enrolled in MOOC. (KARSENTI, 2013)

In the academic year of 2011-2012, professors at Stanford University and MIT launched courses which became the prototypes for the MOOC providers Coursera, Udacity and edX (Pappano, 2012). As New York Times published an article called 2012 as the Year of the MOOC, there are surge of research publications since then.

Professors who taught physics via MOOC format recorded interesting observation. As part of a larger research project into massively open online courses (MOOCs), researchers have investigated student background, as well as student participation in a physics MOOC with a laboratory component. Students completed a demographic survey and the Force and Motion Conceptual Evaluation at the beginning of the course. While their course is still actively running, they have tracked student participation over the first five weeks of the eleven-week course. (Aiken, Lin, Schatz, & Caballero, 2013) Our paper would be similar to this study as our MOOC course is still the 4th week of the six-week course. One thing which appear to be common with any MOOC course is also recorded in Aiken et al's study, that "roughly 40% of the students watched the first video, but less than one-fifth (17%) watched the twelfth video. By the fifth week, only 4% on average are watching lecture videos... In the first week, about 15% on average attempted the two homework assignments. By the fifth week, the number of students doing homework decreased a factor of seven to 2%."

Drawing from 230 million clicks from 154,763 students who registered for a prototypical MOOC offering in 2012, the researchers at MIT Teaching and Learning Laboratory and Harvard Graduate School of Education presented new approaches to describing and understanding user interactions in massive open online courses. In MOOCs, low barriers to registration lead to large numbers of registrants with diverse interests and backgrounds. 4,454 earned a certificate, about 2.9% of the total registrants. (DeBoer, Ho,



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Stump, & Breslow, 2013). Using the same data, MIT researchers confirmed low completion rate as troubling aspects of MOOCs. Only 3% of all students were said to have participated in the discussion forum. (Breslow et al., 2013).

There was a unique experiment of MOOC, which was recorded by researchers at Vanderbilt University in 2013. Stanford University Machine Learning MOOC was integrated into a graduate course in machine learning at Vanderbilt University during the Fall 2012 semester. The study shows that while students regarded some elements of the course positively, they had concerns about the coupling of online and in-class components of this particular blended course design. (Bruff, Fisher, McEwen, & Smith, 2013)

Researchers at Stanford University used their computer science MOOC course to verify disengagement of students. (Kizilcec, Piech, & Schneider, 2013) As MOOCs grow in popularity, the relatively low completion rates of learners has been a central criticism. This focus on completion rates, however, reflects a monolithic view of disengagement that does not allow MOOC designers to target interventions or develop adaptive course features for particular subpopulations of learners. Learners are classified based on their patterns of interaction with video lectures and assessments, the primary features of most MOOCs to date. In an analysis of three computer science MOOCs, the classifier consistently identifies four prototypical trajectories of engagement. The most notable of these is the learners who stay engaged through the course without taking assessments.

In 2013, the tenth annual report on the state of online learning in U.S. higher education was published with a title of “Changing Course: Ten Years of Tracking Online Education in the United States”. (Allen & Seaman, 2013) The survey is designed, administered and analysed by the Babson Survey Research Group. The study addresses MOOCs. Massive Open Online Courses (MOOCs) have generated a considerable amount of press coverage over the past year. While MOOCs have been around for a while, the new level of attention may have altered higher education leader’s perceptions and plans for MOOCs and other online offerings. Only a very small segment of higher education institutions are now experimenting with MOOCs with a somewhat larger number in the planning stages. Most institutions remain undecided. Only 2.6 percent of higher education institutions currently have a MOOC, another 9.4 percent report MOOCs are in the planning stages. The majority of institutions (55.4%) report they are still undecided about MOOCs, while under one-third (32.7%) say they have no plans for a MOOC. Academic leaders remain unconvinced that MOOCs represent a sustainable method for offering online courses, but do believe they provide an important means for institutions to learn about online pedagogy. Academic leaders are not concerned about MOOC instruction being accepted in the workplace, but do have concerns that credentials for MOOC completion will cause confusion about higher education degrees.

[Methodology]

In line with previous studies, we collect data from both academic performances of students in the course and their voluntary responses to multiples of questionnaires during and after the course. Academic performance of students are measured by six weekly quizzes and a final exam, and voluntary surveys consist of four surveys – Student Demographics Survey, Canvas Student Experience Survey, End-of-Course Survey, and MOOC2013 Term End Survey.

Because the course is still on-going at the time of this submission, we can only display partial findings of our course at this moment. We expect more complete results by the time of conference presentations.

[Results]

Though we are at middle point of the six-week course, there are some data which enables us to make preliminary report on the MOOC course on tourism statistics and TSA.

(Academic participation)

Active academic participation of students were recorded in Table 1.

Table 1: Participation of Students for MOOC- Tourism Industry Analysis - Fall 2013

	Total Student Registered	Lecture 1 Quiz (3047)	Lecture 2 Quiz (3052)	Lecture 3 Quiz (3053)	Lecture 4 Quiz (3054) On-Going	Student Demographics Survey	Canvas Student Experience Survey
n=463	463	108	72	54	11	91	37
Numbers	463	108	72	54	11	91	37
Percentages	100.00%	23.33%	15.55%	11.66%	2.38%	19.65%	7.99%

Source: Made by authors based on data from CN1468 Canvas Network

It appears that overall active participations, being defined as those who submitted weekly quizzes and surveys, look higher than previous data in other MOOC courses, while we can confirm decreasing participation rates up to Lecture 3 weekly quiz. Lecture 4 weekly Quiz is not yet due.

(Voluntary Survey Results)

Almost 20 percent of the registered students submitted surveys so far, enabling us to display summaries of responses. Table 2 shows the reason for taking this course.

Table 2: Survey Results - Reason for Taking the Tourism Industry Analysis Course

14026: What is your reason for taking this course? (select all that apply)	Be part of a community of learners	Complete the course	Gain skills for a career opportunity	Check out Canvas Network	Learn about the subject	Other
Responses	13	19	46	7	73	6
percentage (n = 93)	13.98%	20.43%	49.46%	7.53%	78.49%	6.45%

Source: Made by authors based on data from CN1468 Canvas Network

Majority of students (78%) respond that they are taking the course to learn about this specific subject, while half of those responded (49%) express gaining skills for a career opportunity is the reason. This will prompt us to check whether students are currently engaged in either tourism-related studies or occupations.

Expected labor input would affect the student's experience with a course, and Table 3 shows their expected labor input to the course.

Table 3: Students' Expectations of Labor Input per Week

14027: How many hours a week are you planning to spend on this course?	Less than 1 hour	Between 1 and 2 hours	Between 3 and 4 hours	Between 5 and 6 hours	Between 7 and 10 hours	More than 10 hours a week
numbers	2	25	32	16	14	3
Percentages (n=92)	2.17%	27.17%	34.78%	17.39%	15.22%	3.26%

Source: Made by authors based on data from CN1468 Canvas Network

Even though our course syllabus states that approximately 10 hours of study per week is required, students' expectations for labor inputs are much shorter, with 3 to 4 hours being the highest (35%), followed by 1 to 2 hours (27%), both of which counts over majority of expectations of labor input by students.

Table 4 and 5 show gender and age of students respectively. While female majority would be the same as traditional courses at tourism and hospitality management programs in the United States, the age distribution shows wide variances with half of them fit into 25 to 34 range, similar to graduate students' profile in traditional course setting.

Table 4: Gender of Students

Gender of Students	female	male
numbers	51	40
Percentages (n=91)	56.04%	43.96%

Table 5: Age of Students in MOOC course

14039: How old are you?	numbers	percentage
18-24	9	9.89%
25-34	45	49.45%
35-44	17	18.68%
45-54	14	15.38%
55-64	6	6.59%
Total	91	100.00%

Table 6 shows current status of mobile and computing devices' usage for global distant learning for this course.

Table 6: Usage of Computing & Mobile Devices for MOOC course

14037: What devices will you be using to access this course most of the time? (choose all that apply)	Desktop or Laptop (Apple)	Desktop or Laptop (Windows)	Android Phone	Android Tablet	Iphone	Ipad	other
number of devices	14	76	8	8	7	9	3

Percentage (n = 91)	15.38%	83.52%	8.79%	8.79%	7.69%	9.89%	3.30%
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Source: Made by authors based on data from CN1468 Canvas Network

Overwhelming majority (83%) use Windows PC. Together with Apple computers (15%) almost all use either desk top or laptop. This may be related to global distribution of students for the MOOC course, as usage of mobile devices could be different among nations.

Now, students are asked whether they have participated in MOOC courses previously, and whether they have taken online courses before. Their replies are shown in Table 7 and in Table 8 respectively.

Table 7: Previous Participation in MOOC

14035: Have you participated in a MOOC before?	Yes	No
number of responses	17	73
Percentages (n=90, 1 missing value)	18.89%	81.11%

Source: Made by authors based on data from CN1468 Canvas Network

Table 8: Previous Participation in Online Courses

14034: Have you taken an online course before?	Yes	No
number of responses	43	47
Percentages (n=90, 1 missing value)	47.78%	52.22%

Source: Made by authors based on data from CN1468 Canvas Network

As we have seen in Table 2, students appear to be focused to take this specific course to learn about the subject of tourism statistics and TSA, which are rather narrow subject of study. That led to our assumption that students are either currently or previously worked in the related industries. Table 9 shows the answer to our assumption.

Table 9: Previous Work Experience in Hospitality and Tourism Industry

14033: Have you worked in the hospitality and tourism industry?	No, I have never worked in the hospitality and tourism industry.	No, I have not worked but I have been a volunteer in the hospitality and tourism industry.	Yes, I have worked less than 5 years in the hospitality and tourism industry.	Yes, I have worked for more than 5 years in the hospitality and tourism industry.
Number of responses	19	3	41	27
Percentages (n = 91)	20.88%	3.30%	45.05%	29.67%

Source: Made by authors based on data from CN1468 Canvas Network

About 80% of the respondents claim that they have worked or working in the hospitality and tourism industry, which would pose important differences from typical students in traditional courses. Having identified majority's prior experience with the industry, we believe this may pose an interesting challenge to cater to 20% minority group who have not worked in the industry, when others know about the norms and customs in the industry. Table 10 shows who are literally students.

Table 10: Current Academic Status of Participants in a MOOC

14031: What is your current academic status?	I am currently an undergraduate student.	I am currently a graduate student.	I have taken continuing education courses in the last 5 years.	I am not currently a student, but have graduated in the last 5 years.	I have taken continuing education courses in the last 5 years.	I am not currently a student and have not taken continuing education courses in the last 5 years.	I am currently a professor, a teacher, or a professional educational facilitator.
Number of responses	8	23	15	14	15	19	12
Percentages (n = 91)	8.79%	25.27%	16.48%	15.38%	16.48%	20.88%	13.19%

Source: Made by authors based on data from CN1468 Canvas Network

Table 10 shows that majority of students are not “students” but those who are working, while the largest segment is the current graduate students. It is noteworthy to see wide varieties of academic status, with an extreme of current professors/teachers taking the course. More details of their academic attainment can be seen in Table 11.

Table 11: Academic Achievement of Participants in the MOOC

14030: What is your highest level of education?	None of these	High School or Preparatory School	Some college, but have not finished a degree	Completed 2-year college or university degree	Completed 4-year college or university degree	Some graduate school	Master's Degree (or equivalent)	Ph.D., J.D., or M.D. (or equivalent)
Number of responses	1	3	7	7	28	9	30	7
Percentages (n = 91)	1.10%	3.30%	7.69%	7.69%	30.77%	9.89%	32.97%	7.69%

Source: Made by authors based on data from CN1468 Canvas Network

As verified by previous research on characteristics of MOOC participants, majority has already degrees from higher institutions, indicating that course contents may have to be tailored to those with academic degrees in their hands.

Most of MOOC assumes that students can understand lecture contents in English, and table 12 verifies such an assumption can be justified given the global audiences.

Table 12: Self-Declared English Proficiency Level

14029: Please tell us about your English proficiency.	My English skills are very, very basic.	I can read English well but have limited writing skills.	I can read basic English texts and have a very basic writing skills.	I can read and write well in English, although it is not my native language.	English is my native language.
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Number of responses	2	22	7	48	13
Percentages (n = 91)	2.20%	24.18%	7.69%	52.75%	14.29%

Source: Made by authors based on data from CN1468 Canvas Network

Table 13 shows actual location of regions that students are located.

Table 13: Geographical Locations of Students in the World

14028: Where do you live? (select one response)	Africa	Australia & South Pacific	Central America	East Asia	East Europe or Former USSR	Middle East	North America	South America	South Asia	South-east Asia	West Europe
Number of responses	7	1	3	11	7	4	7	4	2	2	44
Percentages (n = 91)	7.69%	1.10%	3.30%	12.09%	7.69%	4.40%	7.69%	4.40%	2.20%	2.20%	48.35%

Source: Made by authors based on data from CN1468 Canvas Network

In this MOOC, one region – Western Europe – constitutes almost majority of the students followed by East Asians by a distant second. Finally, the survey asks about the marketing information as to how those students learn about the MOOC course on this specific subject. Results are shown in Table 14.

Table 14: Information Source to Learn about the MOOC on Tourism Industry Analysis

14025: How did you hear about this Canvas Network Course? (select all that apply)	From a Canvas Network or Canvas communication	From a friend or Colleague	From the instructor	From a news story (print\, radio\, or TV) that mentioned Canvas Network	From a web search	I clicked on an ad	Through a social media site (like Facebook or Twitter)
Number of responses	16	36	10	3	15	2	22
Percentages (n = 91)	17.58%	39.56%	10.99%	3.30%	16.48%	2.20%	24.18%

Source: Made by authors based on data from CN1468 Canvas Network

In line with recent trends with marketing of tourism and hospitality, word-of-mouth information from friends or colleagues appears to be the most effective method, followed by social media.

[Conclusion and Implications of Study]

While we do not have full data and analyses to draw conclusions, the study so far demonstrated promising outcome of effectiveness of teaching complex contents to massive numbers of audiences across the world. Cost effectiveness of the



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experiment would be one of the strong factors to consider, as there were no noteworthy operating expenses to disseminate information to global audiences with various level of preparedness. In the physical workshops or seminars, variances of knowledge levels of participants can pose challenges to yield maximum results in the given time constraints, while in the MOOC environment, participants can learn at their own pace and at their own intensiveness in accordance with their perceived prior knowledge.

Most of the shortfalls of MOOC format which had been identified in previous experiments were evident in our experiment. A slightly better benchmark such as retention rate and active participation rate may be attributable to the level of focus of audiences who choose to take this specific course. In terms of cost and effectiveness, MOOC format appears to be useful for the organizational trainings of multi-national or global organization, as an application to academic and professional training on specific subjects seem to work just as regular traditional courses.

By the time of conference, we expect to have more data and statistical analyses to share.

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