2015-2016 Annual Report

Lynne O'Brien (lynne.obrien@duke.edu)

Associate Vice Provost for Digital and Online Education Initiatives

Online Duke advances educational excellence through online teaching and learning. We provide leadership and support to faculty and programs across the university to promote teaching innovation, contribute knowledge in service to society and showcase Duke's academic excellence.

EXECUTIVE OVERVIEW

From July 2015 to June 2016, Online Duke helped faculty, administrators, departments and schools use online education to extend Duke's global reach, promote educational experimentation and support campus education. Our work touched 89 Duke faculty and instructors in 30 departments, helping them to create 77 courses and projects. Duke's open-access online courses have reached over 2 million students around the globe. We have embarked on 6 new globally focused projects to further explore how online and digital technologies can connect Duke to the world.

Online Duke partnered with the Center for Instructional Technology, the Office of Information Technology, Duke Libraries and the Vice Provost for Academic Affairs to develop skilled project teams and production processes that quickly deliver complex online education projects. At Duke, and amongst our peers, our staff is noted for its expertise, dedication and ingenuity.

Trends across higher education and technology businesses are challenging traditional models of both online and in-person education. This year we saw increasing emphasis on modular online content instead of semester-long courses, project-focused models for graduate and professional education, collaborations between businesses and educational entities for career-relevant learning and new possibilities for open online courses.

Online Duke looks forward to helping Duke faculty, departments and schools take advantage of these trends and evolving online education models over the coming year.

For more information, or to suggest a project, contact online@duke.edu.

GLOBAL REACH

Online teaching and learning provides Duke with an excellent opportunity to extend educational experiences globally. This year, we found new ways to connect faculty and students located at Duke and around the world. We:

- Initiated globally focused online education projects in partnership with Provost Sally Kornbluth and the Office of Global Strategy and Programs through a Fall 2015 request for proposals. We received 37 proposals from Duke instructors, provided funding and support personnel for six projects and offered consulting, training, and planning assistance for 15 additional proposals.

- Worked with three Duke Global Health faculty located in three different countries to use video and online technologies to remotely teach *Infectious Diseases Epidemiology in Global Settings* to graduate students located on Duke's Durham campus.

- Gave pedagogical, technical and assessment consulting to Fuqua School of Business faculty for building online modules for entrepreneurs in Africa and South Asia.

- Reached over 2 million learners, 75% of whom are located outside the U.S., through Duke's open-access online courses on Coursera.

In addition:

- Over 32,000 Coursera financial aid applications were accepted for Duke's open online courses, providing free certificate-level enrollment to individuals around the world with financial hardships.

- As part of an initiative of Coursera and the U.S. Department of State launched in June 2016, refugees around the world will have free access to Duke's open online courses.

- Students from Denise Comer's English Composition MOOC have had their work from the course published internationally. A group of students from the course are now working on self-publishing an e-book of their collected short writings.

GLOBAL ONLINE EDUCATION PROJECTS FOR 2016-2017

Project	Instructor(s)	Program	Description
Global Health Research Design and Methods	Eric Green	Duke Global Health Institute	Creating online modules for use in Duke global health courses, DGHI global partner sites. Possible link to DGHI certificate program
Health Promotion and Disease Prevention	Queen Utley-Smith	Nursing	Creating online course that will be used by Duke and Duke Kunshan University students
Advanced Global Health Epidemiology	Joseph Egger	Duke Global Health Institute	Creating online modules for use in Duke global health courses, DGHI global partner sites. Possible link to DGHI certificate program
Global Environmental Health Problems: Principles and Case Studies	Junfeng Zhang	Environ. Sciences & Policy	Creating online course for environment and global health students at Duke, Duke Kunshan University and potentially Peking University

Infectious Diseases Epidemiology in Global Settings	Wendy O'Meara; Matthew Rubach; Gayani Tillekeratne	Duke Global Health Institute; Medicine	Revising online course for MScGH students at Duke and DKU, as well as learners at DGHI African partner sites
The Art and Archaeology of Ancient Athens	Sheila Dillon	Art, Art History & Visual Studies	Developing online modules and student engagement activities to link students at Duke and The American College of Greece

EDUCATIONAL EXPERIMENTATION

In 2015-2016, Online Duke worked with 54 Duke faculty members from 30 Duke departments and schools on innovative pedagogical uses of technology through 77 courses and projects. We consulted with an additional 35 faculty and administrators on online teaching and learning.

Duke partnered with Coursera in 2012 to offer massive open online courses (MOOCs) to the world. This past year, we experimented with creating shorter, more modular courses in Coursera and moved 17 courses to Coursera's new model where cohorts of students start every month.

In addition, Online Duke advanced research in online teaching and learning by providing MOOC data and research support. These efforts resulted in three published papers, three in-progress research projects, and two undergraduate Bass Connections research projects.

NEW COURSERA COURSES 2015-2016

Coursera Course	Instructor	Dept.	Description
Oil & Gas Industry Operations and Markets	Lincoln Pratson	Earth & Ocean Sciences	First of two courses that provide a technical, business and societal understanding of the world's current energy system. Planned use in campus course.
Copyright for Multimedia	Kevin Smith	Duke University Libraries	Follow-on course to *Copyright for Educators and Librarians* focuses on copyright issues specific to multimedia in education.
Music as Biology	Dale Purves	Neurobiology	Featured video of performances by musicians visiting Duke to help demonstrate the relationship between music and the brain. Planned use in campus course.
Art of the MOOC: Merging Public Art with Experimental Education	Pedro Lasch	Art, Art History & Visual Studies	Learners completed creative assignments and collective art projects. Held online and in-person events for discussion on socially engaged art. Planned use in campus course.
Innovation & Design for Global Grand Challenges	Alex Dehgan	Innovation & Entrepreneurship	Included guest presentations from 20 global leaders, innovators, and social entrepreneurs.

Behavioral Finance	Emma Rasiel; John Forlines	Economics	Shorter version of popular campus course was co-developed by Duke faculty member and financial professional.
Bioelectricity: The Mechanism of Origin of Extracellular Potentials	Roger Barr	Biomedical Engineering	Expands on Barr's first Bioelectricity MOOC to offer further information on a topic not taught elsewhere online.

COURSERA SPECIALIZATIONS

Coursera Specializations are sequences of four to five short courses coupled with a capstone project, often developed in partnership with a business. In Spring 2015, Duke University received external funding to develop two new Specializations in high-demand fields: Java programming and business analytics. We produced these new programs within six months and launched them by the end of 2015.

In April 2016, Duke launched another Specialization: Statistics with R, using Mine Çetinkaya-Rundel's popular data science and statistics MOOCs plus a new course in Bayesian statistics.

Duke's Specializations resulted in models for rapid course development, brought in new revenue and expanded Duke's reputation in target global locations, including India, Brazil and Mexico.

DUKE'S NEW SPECIALIZATIONS IN 2015-2016		
Excel to MySQL: Analytic Techniques for Business *Daniel Egger and Jana Schaich Borg* http://bit.ly/duke-mysql	**Java Programming: An Introduction to Software** *Owen Astrachan, Robert Duvall, Drew Hilton, Susan Rodger* http://bit.ly/duke-java	**Statistics with R** *Mine Çetinkaya-Rundel, David Banks, Colin Rundel, Merlise Clyde* http://bit.ly/duke-rstats
Capstone project: Increasing Real Estate Management Profits: Harnessing Data Analytics	Capstone project: Java Programming: a DIY version of Netflix and Amazon recommendation engines	Capstone project (launching Fall 2016)

CAMPUS IMPACT

Duke's online courses and projects ripple far beyond their initial impact.

- Pedro Lasch adapted his open online course *ART of the MOOC* into a for-credit advanced undergraduate and graduate-level course, *Social Art Practice*, offered on campus in Spring 2016.
- Current and prospective students have enrolled in Duke's MOOCs to supplement their regular coursework, and MOOCs have been adapted into special courses for Duke alumni.
- Three Ph.D. students gained hands-on experience in online college teaching by collaborating with Duke faculty to develop Coursera MOOCs through the Bass Online Apprentice Fellowship program.

- Online Duke partnered with the Center for Instructional Technology, the Office of Information Technology, the Library and the Vice Provost for Academic Affairs to develop skilled project teams and production processes that quickly deliver complex online education projects.

TRENDS and OPPORTUNITIES FOR DUKE IN 2016-17

Online education models are evolving rapidly in higher education and in the business world, creating opportunities and challenges for Duke University.

1. Trend: Increased use of modular online content for university curricula

Elite universities are shifting from producing semester-long online replicas of campus courses to creating concise, targeted, adaptable content. For example, Harvard Business School is offering four-week, MBA-style online courses for college credit. Duke's Chemistry department is creating 10 one-week online modules for undergraduates enrolled in Organic Chemistry. Instructors from Duke's Pratt School of Engineering and Math Department are developing a four-week online math course to prepare students for studying data science.

Related opportunities:

- Offering faculty more and better tools for creating online educational content.
- Expanding support for faculty experimenting with online education, from small first step projects to full online or blended courses.
- Meeting school and department educational goals with online strategies, such modules to support curricula and new certificate programs.

2. Trend: More innovation and competition in professional and graduate education

The University of Illinois's iMBA, MIT's MicroMasters in Supply Chain Management and Microsoft's Professional Degree in Data Science reflect a move toward stackable, short courses aimed at early and mid-career professionals who want alternatives to traditional master's degree programs. The new programs emphasize project-focused learning and developing career-relevant portfolios. The commercial sector offers both educational collaborators and competitors. For example, Duke faculty partnered with Airbnb to create a capstone project in one of our Coursera Specializations.

Related opportunities:

- Targeting resources at one to three schools or departments to reach new students, extend their reputation or bring in new revenue through online or blended learning.
- Supporting the use of Coursera Specializations (short, modular content with projects) or DukeExtend (Open edX) to deliver new types of professional education.

3. Trend: New educational and business models around online education

Duke's Coursera courses have enrolled 2 million learners around the globe and generated online course materials in humanities, science, engineering, social science and health science topics that can be reused in Duke campus programs. With over 20 million learners and a new technology platform, Coursera remains an interesting space for online experimentation.

Related opportunities:

- Developing a Coursera course or Specialization in the always-available model.

- Using Coursera content for Alumni Education.

- Leveraging content from over 40 Duke Coursera courses to prepare Duke students for campus courses or to help them develop new skills outside of regular courses.

- Carrying out pedagogical research. Use Coursera's A/B enrollment feature for randomized controlled trials to test interventions to improve learner performance and retention. Use anonymized data from 50,000 learners for research on online learning and related topics.

STRATEGIC CHALLENGES

As Duke continues to find ways to use online education, it faces several challenges:

- **Moving at higher education speed in an environment of rapid change**. To stay competitive, Coursera and other educational technology companies continually update platforms and make shifts in strategy. But faculty have limited time to experiment and university approval processes move at a deliberately slower pace. To remain a leader in online education, we need to navigate between rapidly evolving educational and business models and standard processes for generating courseware and maintaining academic quality.

- **Sustaining and updating online courses**. Duke has 40+ Coursera courses with thousands of new enrollments each week as well as other online programs. After the initial development, courses need ongoing technical and academic help as well as revisions that address problem points in the learner experience. As our overall catalog of online materials grows, the support needs also grow.

- **Appropriate reuse of online materials**. Faculty are finding opportunities to reuse their online educational materials with commercial ventures beyond Duke or with individuals affiliated with Duke but outside of regular courses. When faculty leave Duke or work in teams to create content, the ongoing use and revision of those materials becomes more complex. As new situations arise, Duke will need to review how university policies apply to the use of online materials.

- **Scaling support for larger projects**. As Duke schools and departments develop larger and more complex online and blended programs, Duke will need to provide sufficient time and incentives for faculty to participate and sufficient personnel to manage projects, produce materials and develop new business models.

- **Communicating opportunities with faculty**. We are working with faculty to determine how to best share with them examples of how online education can help them achieve their teaching goals and provide actionable information on what it takes to create online and blended learning materials.