Interactive E-Learning Program

turning bright ideas into creative solutions

UNMC
UNIVERSITY OF NEBRASKA
MEDICAL CENTER™

Reflections on the E-Learning Journey

H. Dele Davies, MD, MS, MHCM
Vice Chancellor, Academic Affairs

In the fall of 2012, we began to research how educators were transforming teaching through blended learning — replacing lectures, creating interactive online modules for pre-class work, and utilizing class time for creative thinking while improving student evaluations.

This led to communicating across the U.S. with experts, attending national meetings, and bringing a committed UNMC team and dedicated advisory board to share in the reshaping of our educational future.
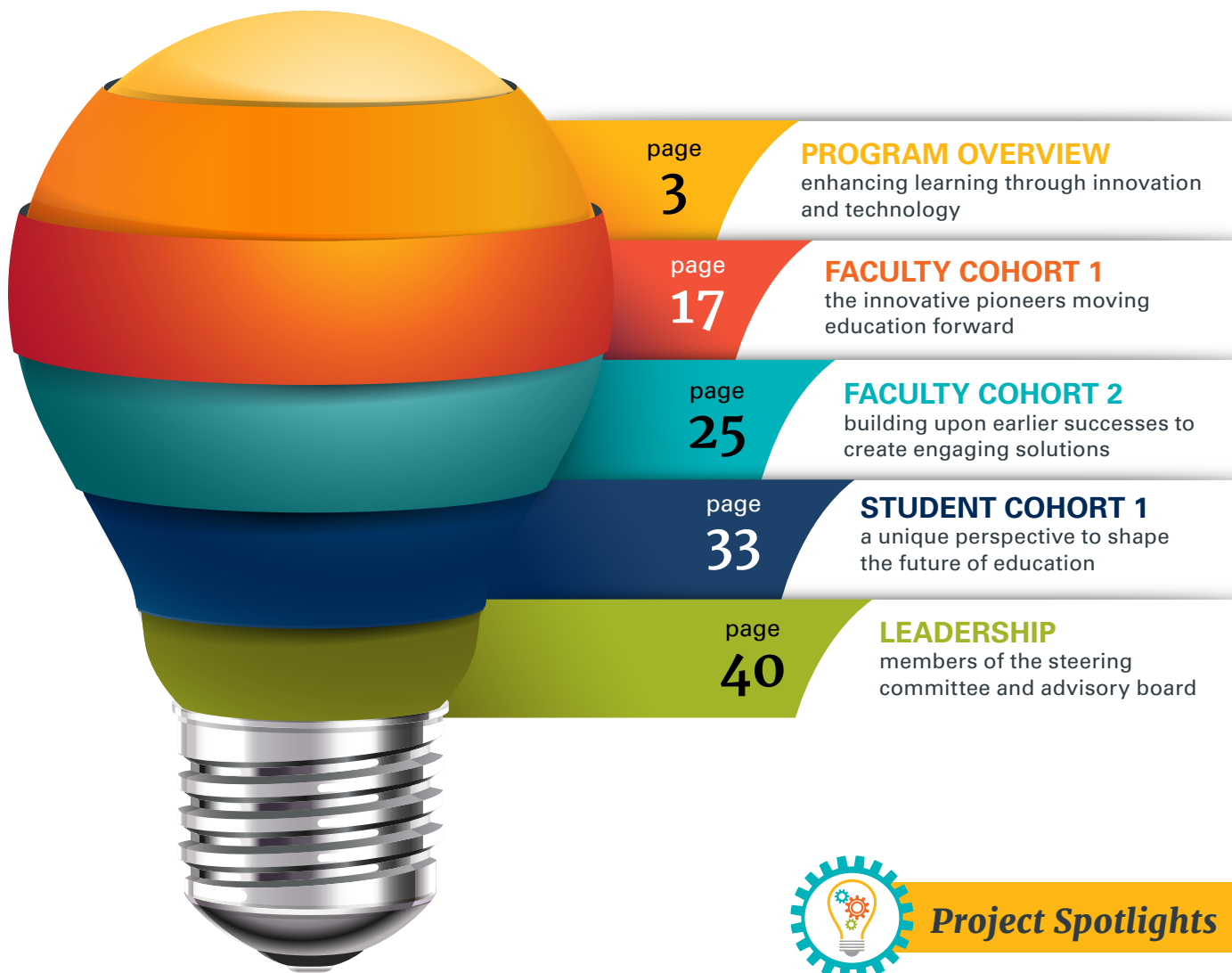
What transpired has been an exciting journey during which the **creative potential of our faculty, staff, and students has been released and transformative** with the development of e-learning projects embedded with features to engage digitally native learners and increase retention in ways that are difficult to do in a traditional lecture format.

The results of this journey are detailed in this report and are nothing but compelling. From each cohort of e-learning awardees, we have been able to learn, refine and improve our processes.

We are fortunate to have extraordinary support from the UNMC Chancellor's Office, the Office of the President of the University of Nebraska, and the University of Nebraska Online Worldwide in providing resources for project funds, hiring instructional designers, and building an e-learning studio, among other items. We have also been able to partner with colleagues at the University of Nebraska–Omaha and University of Nebraska–Lincoln for further expertise.

However, the real **key to our success has been the devotion and dedication of the UNMC innovators who have invested many hours of their time** either in guiding the transformation or in taking the risk in experimenting with new ways in which to enhance learning.

This extensive investment highlights their confidence that **e-learning is truly an excellent foundation for UNMC to lead the world in health science education.**

Project Spotlights

Program Overview

enhancing learning through innovation and technology

181
participants

111
e-modules

2,240
learners impacted

The Educational Landscape Is Changing

The last 10 years have seen a major shift in how students gain access to, and assimilate, information. The infiltration of the Internet into all aspects of life means students now have faster access to more information than ever before. The growth of social media has opened new options for communicating and collaborating across the world. In addition, the boom of technology has created a technology-centric health care system that requires educators to utilize different tools to properly educate their students.

Further, the incorporation of technology into K – 12 curricula created a generation of students well versed in the uses and benefits of technology. These students are exposed to a blended learning strategy where the traditional, lecture-based model of teaching is replaced with e-learning resources and interactive learning techniques, allowing students to work with learning materials on their own time and at their own pace and leaving face-to-face classroom time for more engaging learning activities. These digitally native students expect the same level of advancement in their colleges and universities.

These Changes Represent a Great Opportunity for UNMC

As more and more digital natives transition into higher education, the need for educators to stay up to date with technology and new teaching techniques will only grow in importance.

Students' Perspective

6 in 10 agree they are more actively involved in courses that use technology

3 in 4 students bring **2 or more devices** to class

78% agree simulation is critical for health care education and **84% agree** it is a valuable learning experience

Results from the UNMC Educational Technology Student Survey, 2015

What is blended learning?

At UNMC, blended learning is a specific pedagogical approach that combines interactive opportunities found in classroom teaching, with technologically enhanced active learning in online formats. This fundamentally secures the valuable teacher-student relationship, widens possibilities for peer-to-peer learning, and maximizes flexibility in student-centered interactions with learning content.

This represents a great opportunity for universities who embrace technology to set themselves apart from those who do not, thereby attracting a higher caliber of students. UNMC is taking this leap to secure our current and future status as a national and international leader in teaching innovations.

To achieve this, Academic Affairs engaged leaders on the campus-wide strategic plan to develop innovative educational modules that maximize evolving technology and student interactive learning. UNMC's long-term goals are threefold:

- Enhance teaching within our colleges.

- Receive better information on how our students learn so we can best support the most appropriate mode of education for each student.

- Provide an environment that enables faculty and staff to advance the scholarship of teaching.

In 2012, **H. Dele Davies**, MD, MS, MHCM, Vice Chancellor for Academic Affairs, **Howard Liu**, MD, Assistant Vice Chancellor for Faculty Development, **Paul Larsen**, MD, Professor and Vice Chair for Education in the College of Medicine, and **Thomas Birk**, PhD, Senior Educational Designer in Information Technology Services, began to lay the groundwork for what would become the E-Learning Program by visiting and talking to national experts.

UNMC has a long tradition of excellence in training our students. We continually examine new educational methods to improve critical thinking, team building and problem solving. This interest underscores the ingenuity and creativity of our faculty, staff and students.

H. Dele Davies, MD, MS, MHCM
Vice Chancellor, Academic Affairs

In addition, an **interprofessional E-Learning Steering Committee** was established consisting of representatives from all across campus including faculty, staff and students. Further, an **external Advisory Board** of national experts in e-learning was established to provide guidance to ensure UNMC keeps up with the rapidly changing national scene.

In 2013, faculty members were invited to submit proposals for the creation of short (15 minutes or less) e-learning modules and courses that could be used in blended classrooms.

Faculty and Students Embraced the Mission

The E-Learning Program requires a passion for education and a commitment to innovative teaching — along with a time commitment that is focused and protected.

The **first cohort of faculty awardees** took the first bold step in experimenting with innovation on the journey to raise education at UNMC to the next level. A year later, the **second cohort of faculty awardees** built upon the previous group's successes to refine the innovative education process.

At the beginning of 2015, UNMC began its third round of funded projects. This time the developers were **students working with faculty advisors**. The students brought a unique perspective to the teaching arena. They recognized areas for enhancement in existing curricula and created innovative ways to make the learning experience easier for their peers. By combining the faculty advisors' expertise with the students' drive and creativity, some truly remarkable teaching tools were created.

50% of faculty participants were Professors or Associate Professors, showing innovation is driven by experienced educators who have a rich understanding of the learning process.

46 E-Learning Projects	111 Individual E-Modules	119 Faculty Developers	27 Student Developers	19 Staff Developers

Results from awardees are positive, with 95% of project directors rating their e-learning participation as either valuable or very valuable — the highest rating categories offered. This has led to the establishment of a **third cohort of faculty awardees** who, instead of creating individual projects, will be **redesigning an entire curriculum** to incorporate e-learning techniques. A **second cohort of student awardees** is also in progress.

95% of project directors rated their participation as valuable or **very valuable**.

Innovation is being embraced by educators of all levels

DEVELOPERS BY RANK

30% Assistant Professor

22% Associate Professor

15% Student

11% Professor

10% Staff

9% Non-UNMC

3% Instructor
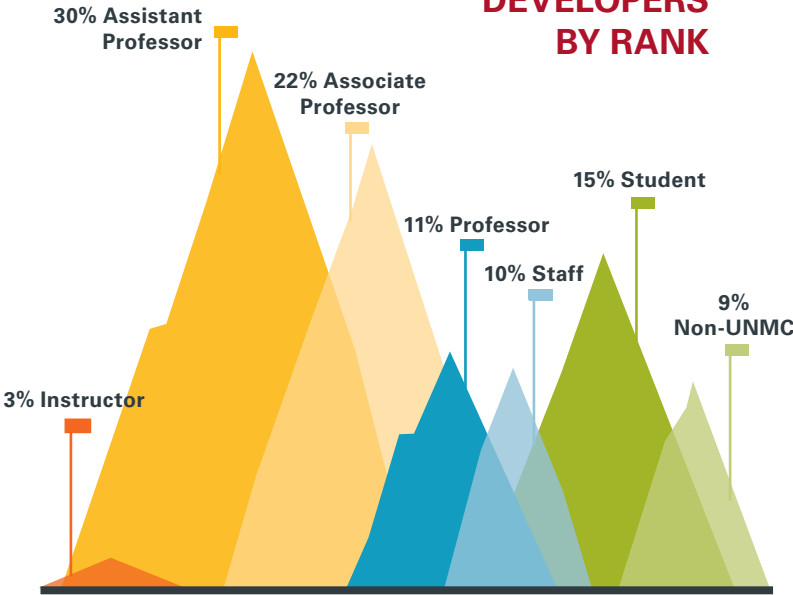
1/3 of program directors have been at UNMC for more than **10 years**
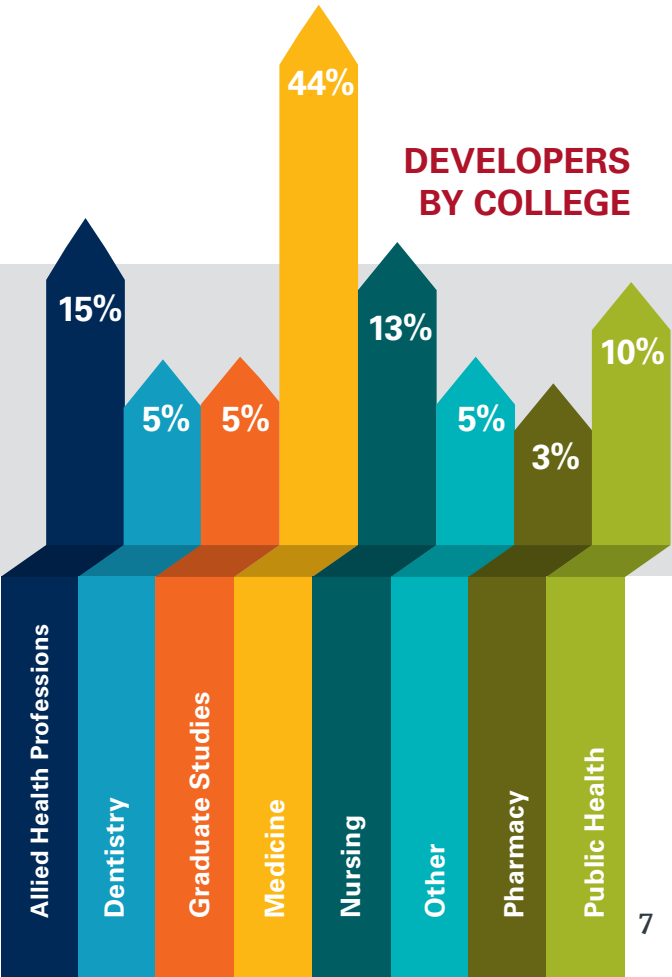
16 Non-UNMC Developers

$436,700 Invested in E-Learning

All 7 Colleges & Nebraska Medicine

DEVELOPERS BY COLLEGE

15% Allied Health Professions

5% Dentistry

5% Graduate Studies

44% Medicine

13% Nursing

5% Other

3% Pharmacy

10% Public Health

DEVELOPERS BY GENDER

44% Male

56% Female

7
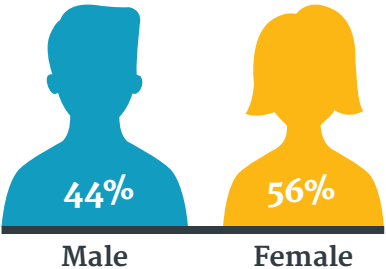
Innovation and Collaboration Continue Beyond the Program

The E-Learning Program is based on the desire to spur innovation and foster collaboration, and the projects developed so far support this goal. For example, one-third of project directors have gone on to create more modules outside of the program. This shows faculty value the importance of the projects and their innovation is not tied to receiving direct funding.

Also, over 90% of projects were awarded $6,000 or less, meaning innovation is not necessarily expensive. Additionally, now knowing how much time and effort go into the projects, the majority of project directors state they would participate again.

Further, all three cohorts were interprofessional, involving individuals from different colleges, campuses, or universities. Outside collaborators included: University of Nebraska-Omaha, University of Nebraska-Lincoln, Nebraska Medicine, Brigham Young University, Peru State College, Public Health Solutions District Health Department, and Southeast Community College.

INNOVATION IS AFFORDABLE

Over 90% of projects were awarded **$6,000 or less**

COLLABORATION ON A LOCAL & NATIONAL SCALE

20% of e-learning projects were **interprofessional**

June 2013	September 2013	October 2013	November 2013	May 2014	June 2014

First faculty cohort starts their projects

E-Learning Studio opens in Wittson Hall

First showcase spotlights awardees

E-Learning Steering Committee formed

External Advisory Board formed

First faculty cohort completes projects
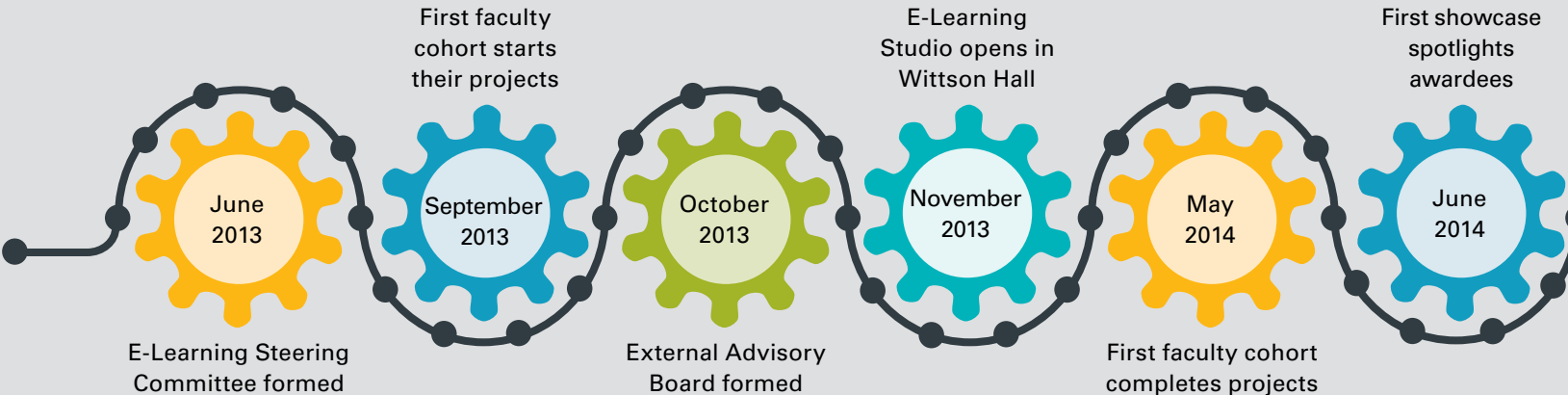
INNOVATION NOT TIED TO DIRECT FUNDING

Over 35% of the total e-modules created by project directors were done **outside of original funding**

173 total e-modules

111 through program

62 outside program
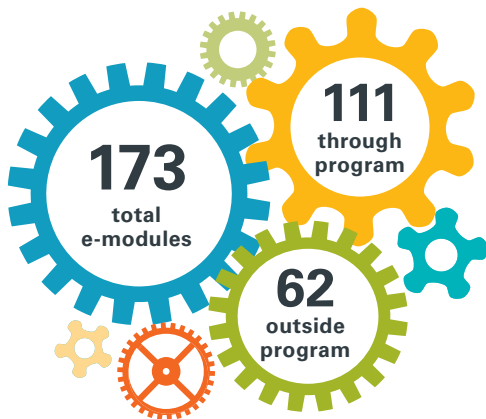
4 out of 5 project directors would participate again
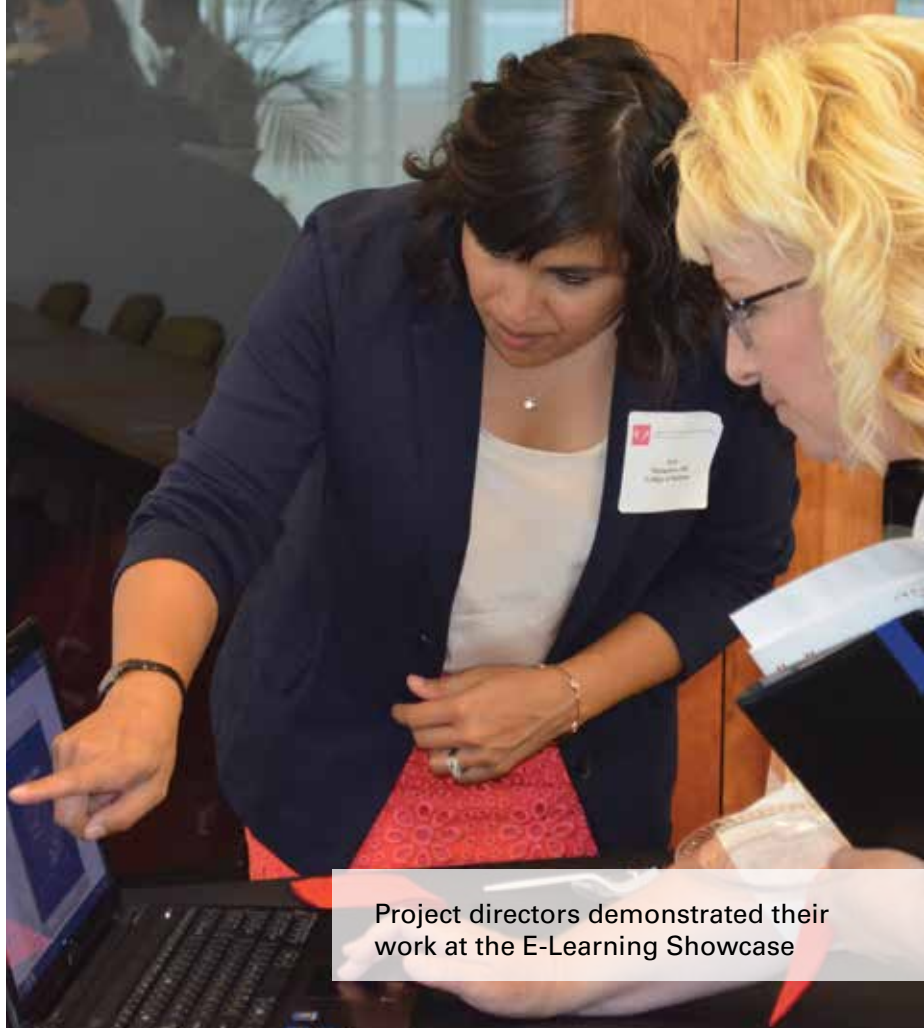
Project directors demonstrated their work at the E-Learning Showcase

First student cohort starts their projects

Second showcase spotlights awardees

Second student cohort starts

September 2014

January 2015

April 2015

May 2015

July 2015

November 2015

Second faculty cohort starts their projects

Second faculty and first student cohorts complete their projects

Third faculty cohort starts their curricula redesign
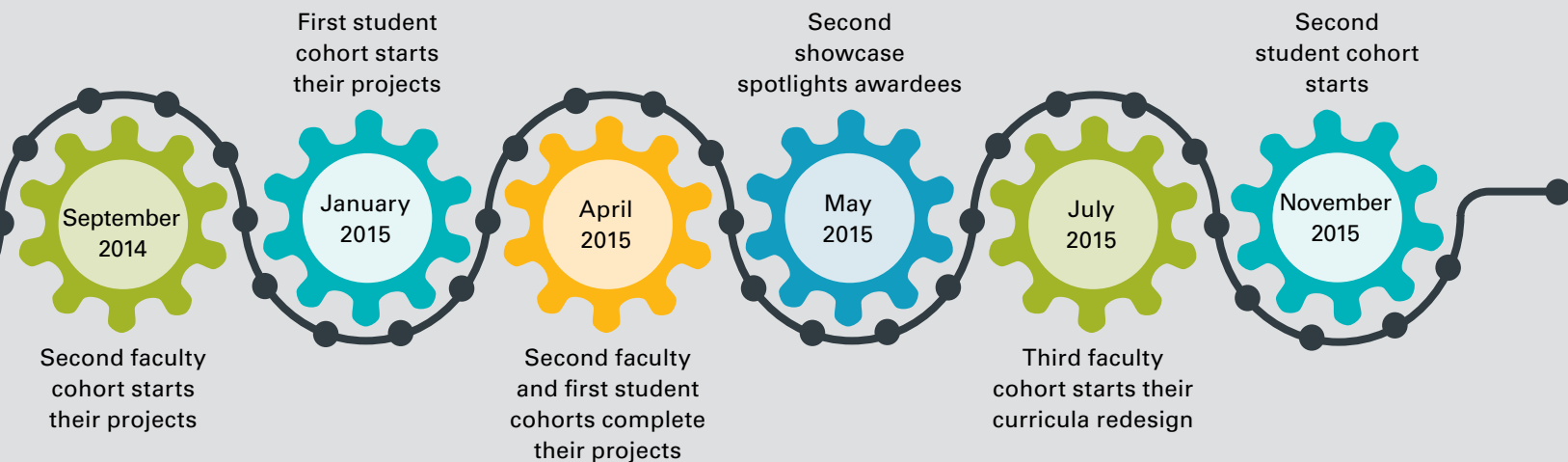
E-Learning Benefits Enhanced by Campus-Wide Support

Understandably, this shift in teaching to a more blended style has raised some challenges, such as time investment, the possibility of losing face-to-face contact with students, limited resources, and unfamiliarity with new teaching styles. The E-Learning Program has been structured and resourced to overcome these challenges, leading to strong support from all across the university.

The Time Commitment Pays Off

Faculty members save time in the long run with e-learning. They do not have to answer the same questions or revisit often confusing topics because students have access to the information 24/7 through the e-modules. They are also able to spend more time with the students and, the more familiar they become with e-learning, the faster and easier it is to create modules for more projects.

An unexpected side benefit of the e-modules is a decreased volume of student questions about the course logistics. Also, with the time saved by having students review the course material before or after orientation day, we are able to have a more interactive time with our learners.

Paul Paulman, MD
Project Director, Faculty Cohort 2

Student/Teacher Relationship Is Strengthened

When students do pre-class e-modules, it frees up in-class time for more interaction. Instead of a lecture, faculty spend time talking with students, addressing concerns, and building their relationship.

My relationship with students is better, and I actually have more time with them. Instead of looking at a sea of faces as I lecture, I have more contact with students in the sense of group interaction or online discussion.

Geoffrey Talmon, MD
Project Director, Faculty Cohort 1
Faculty Advisor, Student Cohort 1

Teaching E-Learning Techniques Has Become a Focus

The majority of faculty may not be familiar with these new teaching strategies and how to successfully implement them. That is why there was an increased focus on campus on how to engage today's learner. In fact, 50% of all Faculty Development training sessions last year that offered accreditation included techniques on how to engage digital natives — and they were the highest attended Faculty Development events of the year.

Responding to faculty's needs has always been an ongoing mission for Faculty Development. We structure seminars to support our hardworking faculty members and make sure they have the tools and knowledge they need to provide the best learning experience for their students.

Howard Liu, MD
Assistant Vice Chancellor,
Faculty Development

50% of accredited Faculty Development events were related to e-learning — and they were the highest attended events of the academic year.

Campus Resources Are Growing

Faculty members are not on their own when creating e-learning projects. For example, instructional designers in Academic Affairs are available to provide guidance to faculty members.

In addition, the E-Learning Studio was established to ensure faculty members have tools (at no cost to them) to develop their projects. The studio, centrally located in Wittson Hall (Room 8012), contains on-site equipment as well as items for checkout, all installed with e-learning software. The studio is also staffed with lab assistants.

The Education Technology Collaboration (ETC) learning community was established to provide support and guidance to faculty and staff interested in integrating technology into the classroom.

I collaborate with faculty, students, and staff on resources, tools, and pedagogy for the effective development of interactive e-learning modules used in their health science curriculum.

Peggy Moore, MSEd
E-Learning Instructional Designer, Academic Affairs

$183,700
has been invested in
all e-learning resources.

Providing support for e-learning adopters

The **Education Technology Collaboration (ETC)** brings together faculty and staff interested in integrating the latest educational technology into teaching practice. The group meets every month to share best practices for integrating technology in education and foster collaboration to develop innovative projects and scholarship across campus.

18 meetings held   ## 80 members

E-Learning Studio Resources

)) Experienced Staff
The e-learning instructional designer is on hand to collaborate with faculty, staff and students on best practices and sound instructional design. The studio is staffed with lab assistants to help faculty with software and equipment checkout.

)) On-Site Equipment
The studio is fully equipped with PCs and a Mac Pro. Available software includes Articulate Storyline 2 & Studio, Camtasia, Final Cut Pro, Microsoft Office, and AVS Audio Editor. A large Wacom Cintiq tablet and a sound isolation booth for recording are on site.

)) Equipment for Checkout
Faculty can check out and use equipment free of charge, including laptops with e-learning software, portable Wacom Cintiq tablets, a camcorder, USB and wireless microphones, a digital camera, and a tablet Swivl device.

)) Conference Area
To boost collaboration and allow multiple participants to contribute ideas, the studio is equipped with a videoconferencing area, which includes a TV for screen-sharing capabilities, software for connecting multiple devices, and seating for five people.

)) Online Resources
Faculty have access to the E-Learning Resource Center on the E-Learning Program website (unmc.edu/elearning), VideoScribe and 20 Minute Mentor subscriptions, as well as a stock photography library.

New teaching and technology degree offers more opportunities

The proposed **Master's of Health Professions Teaching and Technology** degree aims to improve interprofessional instruction and innovative teaching methods in both academic and non-academic settings. Benefits of the program include:

- Curriculum designed and delivered by **interdisciplinary** health professions faculty
- Emphasis on **evidence-based teaching** principles and techniques
- Focus on **innovative educational technology** throughout the courses
- **Online format** with great flexibility, designed for busy professionals
- Content with **direct relevance** to faculty's roles as educators

Implementation and Impact

Even though many of the e-learning projects are newly completed, the majority are already in use. In fact, over **60% of the projects have been implemented** and the majority of the remaining projects will be deployed within the 2015 – 2016 academic year. A total of 66 sessions have utilized an e-learning project with students.

Further, these projects are not limited to usage in one specific area. In fact, **many projects are being multipurposed** across departments and some are even being used outside of the UNMC community.

E-learning also provides faculty members exposure on the local and national scene, with **over 20% of project directors publishing or presenting at conferences**. The positive effect the projects are having on students is noteworthy, with three-fourths of implemented projects having a positive impact on learner satisfaction and 58% improved learner assessments.

Students indicated they enjoyed the e-learning modules. They engaged in "playing" the games (about half play the games more than once to review the other questions, responses and rationale). This leaves time in the flipped classroom to discuss and practice the best ways to improve on the skills targeted in each module.

Teresa Barry Hultquist, PhD, APRN–CNS, NE–BC
Project Director, Faculty Cohort 1

Learner satisfaction was very high and students suggested that all laboratory modules for all M1 cores should be converted to this style. Faculty also noted a remarkable difference in the questions and interactions with students during lab compared to previous years. Students were prepared for higher-level discussions during the lab sessions after previewing the modules the night before.
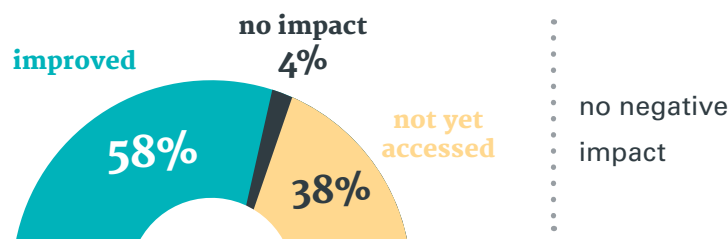
Ryan Splittgerber, PhD
Project Director, Faculty Cohort 1

Over **2,240 learners** have been impacted

75% of projects resulted in a **positive impact** in learner **satisfaction**
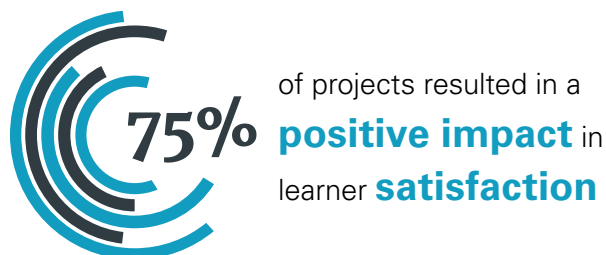
Learner **assessments** showed **improvement**

improved

no impact 4%

58%

not yet accessed

38%

no negative impact

Over **20%** of project directors have been **published or presented** at a local or national conference

25% of projects have been requested for use **outside of the original department** that created it

Note: Implementation and impact data does not include massive open online course (MOOC) results; learners were not identified as unique or repeat.

Ongoing Impact

The results of e-learning go beyond the program alone. It laid the groundwork for future initiatives and projects across campus designed to support faculty in the progressively technology-centric health care and education systems. Examples include:

Establishment of a university-wide teaching academy

The Interprofessional Academy of Educators will work with faculty to help them understand and implement new engagement techniques.

Creation of iEXCEL[SM]

The Interprofessional Experiential Center for Enduring Learning will focus on enhancing human performance through simulation techniques.

Beginning of mobile device initiative

UNMC's colleges will use mobile devices in seminars and laboratories to streamline learning resources, reduce printing and textbook costs, and connect with students in real time for immediate assessment and feedback.

Formation of an e-learning writing group

E-learning innovators established writing groups to help move e-learning discovery, research, and best practices to the national higher education audience.

Development of unfunded e-modules

The E-Learning Studio and its lab assistants are being utilized as a resource to assist faculty with building modules outside of the e-learning program.
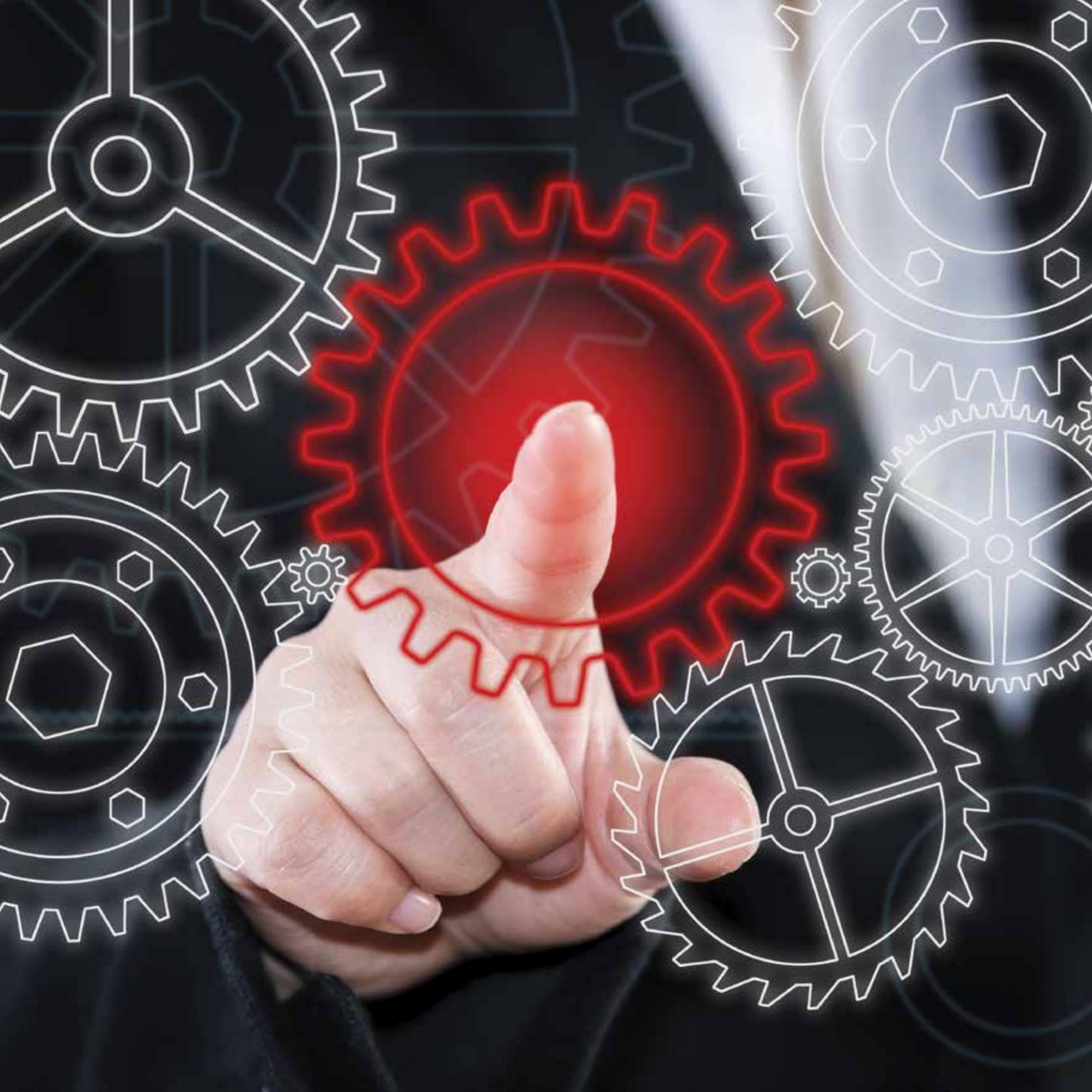
Faculty Cohort 1

the innovative pioneers moving education forward

75
participants

63
e-modules

1,476
learners
impacted

Clinical Management of HIV Infection: A Flipped Classroom Model Incorporating Web-Based Modules and Active-Learning Case Exercises

Directors: Sara Bares, MD, College of Medicine

Uriel Sandkovsky, MD, College of Medicine

Members: David McMillan, PhD, College of Medicine

Susan Swindells, MBBS, College of Medicine

Employee Satisfaction: A Leader's Challenge

Director: Teresa Barry Hultquist, PhD, APRN-CNS, NE-BC, College of Nursing

Members: Deanne Ernesti, RN, MSN, College of Nursing

Suhasini Kotcherlakota, PhD, College of Nursing

Susan Waters, MS, College of Nursing

☼ National Presentation:

Sigma Theta Tau International Biennium Conference, November 2015, Las Vegas, NV (oral presentation)

Health Literacy and Communication for Health Professionals

Director: Denise H. Britigan, PhD, MA, CHES, College of Public Health

Members: Analisa McMillan, MSEd, College of Public Health

Karen Honeycutt, MEd, MLS(ASCP)^{CM}SM^{CM}, College of Allied Health Professions

Janice Tompkins, MPH, MT(ASCP), College of Allied Health Professions

Sergio Costa, PhD, College of Public Health

Megan Kelley, College of Public Health

☼ Regional Presentations:

Nebraska State Minority Health Conference, May 2014, Kearney, NE

University of Nebraska Innovation in Pedagogy and Technology Symposium, May 2014, Lincoln, NE (oral presentation)

University of Nebraska Innovation in Pedagogy and Technology Symposium, May 2015, Lincoln, NE (extended oral presentation)

☼ National Presentations:

Institute for Health Care Advancement (IHA) Annual Health Literacy Conference, May 2014, Irvine, CA (poster presentation)

Coursera Partners Conference, March 2015, Newport Beach, CA (poster presentation)

Searching the Library for Evidence

Directors: Heather L. Brown, MA, McGoogan Library

Alissa V. Fial, MA, MLIS, McGoogan Library

Promoting Partnerships Through Community Engagement

Director: Sara Brown, EdD, RN, College of Nursing

Members: Katherine Kaiser, RN, PhD, APRN-CNS, College of Nursing

Ruth Margalit, MD, College of Public Health

Sharon Medcalf, PhD, College of Public Health

Janice Tompkins, MPH, MT(ASCP), College of Allied Health Professions

Suhasini Kotcherlakota, PhD, College of Nursing

Gout Racer

Directors: Amy C. Cannella, MD, MS, College of Medicine

James R. O'Dell, MD, College of Medicine

Members: Ted R. Mikuls, MD, MSP, College of Medicine

Alan R. Erickson, MD, College of Medicine

Zachary Fowler, MS, University of Nebraska-Omaha

Maxwell Burchall, University of Nebraska-Omaha

OTC Products for Insomnia, Urinary Incontinence, Cough and Cold: A Study of the Pedagogy of Video Learning

Director: Ally Dering-Anderson, PharmD, RP, College of Pharmacy

Members: Donald G. Klepser, PhD, MBA, College of Pharmacy

Teri Hartman, MS, McGoogan Library

Dean S. Collier, PharmD, RP, BCPS, College of Pharmacy

Marcia Mueting, PharmD, RP, College of Pharmacy

Rory Sallach-Ruma, PhD, PharmD Candidate, College of Pharmacy

Jackie Smith, College of Pharmacy

Kimberly Norman, MA, College of Pharmacy

Gout Racer:

Making Learning Fun

Most adults try to keep kids away from video games, as it takes away from study time. But doctors in the first cohort decided to combine the two and actually use video games to teach an important topic.

> *We continue to look for fun ways to engage the new generation of learners. Gout is a very high impact problem that lends itself to a video game format.*

James R. O'Dell, MD

The retro video game, Gout Racer, was developed for use in a blended learning environment to engage students in an entertaining way to better help them understand and effectively treat gout. In the game, students and their patients ride a dune buggy to navigate various landscapes through different aspects of the disease, symptoms, and treatment.

> *If we can impress basic principles of gout management on students who may become primary care practitioners, they can make a difference with this disease.*

Amy Cannella, MD

To help increase understanding of the disease, students are given immediate feedback on their results through easy-to-understand explanations, including visually rich graphics, after each question attempt. The final score is based on a combination of time, bonuses, and correctly answered questions.

Project Results

250
learners impacted

IMPROVED
learner assessment

POSITIVE IMPACT
on learner satisfaction

E-LEARNING TECHNIQUES

✓ **Quizzing**   ✓ **Gamification**   ✓ **Mouse interactions**

Particle Toss: The Physics of Radiation Interactions with Matter

Director: Joseph Driewer, PhD, College of Medicine

Members: Information Technology Outreach, University of Nebraska-Omaha

Grant Writing: Theory and Practice

Directors: Andrew Dudley, PhD, College of Medicine

Karen Gould, PhD, College of Medicine

Mechanical Ventilation

Director: Charity H. Evans, MD, MS, College of Medicine

Members: Geoffrey Talmon, MD, College of Medicine

PJ Schenarts, MD, College of Medicine

Keely Buesing, MD, College of Medicine

James Sullivan, MD, College of Medicine

Allison Hunt, University of Nebraska-Lincoln

Use of Prezi to Organize YouTube Lectures by Theme

Director: James Harper, MD, College of Medicine

Pathophysiology of Headache

Director: Paul D. Larsen, MD, College of Medicine

Member: Ben D. Greer, University of Nebraska-Omaha

Diagnosis of Renal Neoplasms

Director: Subodh M. Lele, MD, College of Medicine

Members: Lauren Murer, MD, College of Medicine

Amber Donnelly, PhD, MPH, SCT (ASCP), College of Allied Health Professions

☼ **National Presentation:**
United States and Canadian Academy of Pathology Annual Meeting, May 2014, San Diego, CA (poster presentation)

Introduction to the Trauma Patient

Director: Jyoti Mahapatra, MD, College of Medicine

Members: Michael Wadman, MD, College of Medicine

Richard Walker, MD, College of Medicine

Introduction to Biomedical Informatics

Director: Jim McClay, MD, College of Medicine

Invasive Pressure Monitoring: Arterial

Director: Connie Miller, PhD, RN, College of Nursing

Members: Suhasini Kotcherlakota, PhD, College of Nursing

Patrick Rejda, College of Nursing

Invasive Pressure Monitoring: Intracranial

Director: Connie Miller, PhD, RN, College of Nursing

Members: Suhasini Kotcherlakota, PhD, College of Nursing

Andrea Evans, College of Nursing

Patrick Rejda, College of Nursing

Fine Needle Aspiration Technique

Directors: Maheswari Mukherjee, PhD, MS, CT (ASCP)^{CM}, College of Allied Health Professions

Amber Donnelly, PhD, MPH, SCT (ASCP), College of Allied Health Professions

Members: Subodh Lele, MD, College of Medicine

Troy Matthias, CT (ASCP), Nebraska Medicine

Reviewers: Stanley J. Radio, MD, College of Medicine

William W. West, MD, College of Medicine

☼ **National Presentation:**
American Society of Cytopathology Annual Scientific Meeting, November 2015, Chicago, IL (poster presentation)

Biostatistics Primer

Director: Kendra Schmid, PhD, College of Public Health

Member: Gary C. Yee, PharmD, FCCP, BCOP, College of Pharmacy

☼ **National Presentations:**
Women in Statistics, May 2015, Cary, NC (poster presentation)

Joint Statistics Meeting, August 2015, Seattle, WA (invited paper)

Bedside Procedure E-Module Series

Directors: Christopher J. Smith, MD, College of Medicine

David Gannon, MD, College of Medicine

Clinical Anatomy Learning Modules

Directors: Ryan Splittgerber, PhD, College of Medicine

Carrie Elzie, PhD, College of Medicine

Mechanical Ventilation:

The Spark that Ignited a Flurry of Activity

For Charity Evans, MD, the desire to use e-learning began before she arrived at UNMC. She identified the need for it during her clinical fellowship, but was unable to develop a project due to lack of resources. Then she came to UNMC and was given the opportunity to turn her idea into reality.

As a participant in the first cohort of faculty awardees, Dr. Evans and her team created 16 online modules centered on mechanical ventilation. The e-modules cover basic and advanced mechanical ventilation, and teach students how to think algorithmically about the mechanical ventilator and how to solve problems efficiently.

The Innovation Is Not Stopping

In the second faculty cohort, Dr. Evans turned a single two-hour lecture into seven modules. Given that success, the Department of Surgery agreed to convert the entire 27-lecture clerkship series into e-modules. By the time she is all done, **Dr. Evans will have created 43 modules**.

Words of Wisdom *from Dr. Evans*
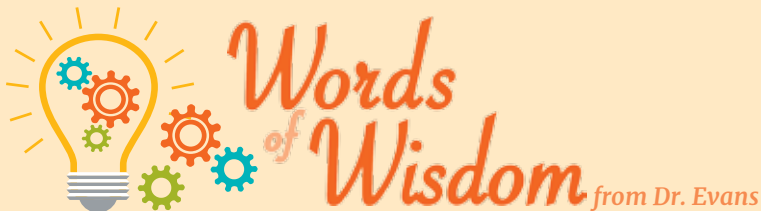
Do not do this on your own. Content experts should provide content, not act as IT experts — and hiring instructional designers was the best decision I made.

The project does not end once the modules are created. Some of our harder work has been what to do with classroom time, because it does not help the learner to just repeat what was said in the modules. You have to create activities that build on the basic information given in the online modules and activities that promote critical thinking.

Retaining the mentorship and guidance a classroom provides is important.

> *I am excited to be part of a university with such forward thinking. Contemporary learners prefer active learning, and the e-learning program provided me with the opportunity to create something that would appeal to them while also doing something beneficial for surgery clerkship. Fewer surgeons have time to teach, but online curricula mean the information is available 24/7 and is always consistent.*

Charity Evans, MD

MOOC: Health Literacy and Communication for Health Professionals

A Big Sigh of Relief — and a Job Well Done

It takes countless hours of work by a dedicated team to create a MOOC — and when your project is the very first of its kind at UNMC, there is an even greater pressure to succeed.

But Denise H. Britigan, PhD, and Analisa McMillan, MSEd, were up to the challenge. They led a team in creating "Health Literacy and Communication for Health Professionals," an eight-week long MOOC created through Coursera that featured quizzes, projects, and online discussion postings.

Denise H. Britigan, PhD, MA, CHES

There are a variety of strategies and skills that can be used in health communications, and the goal of this course is to share those skills so that we can serve the public more effectively. I am excited to be taking advantage of the MOOC format to make this important course content available to all students around the world who are interested.
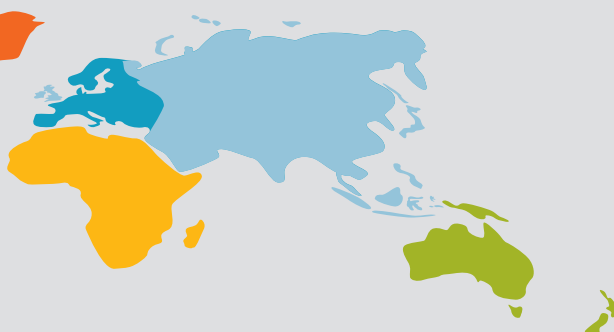
MOOC = Massive Open Online Course

10,151 learners

178 countries

6 continents

70+ professions

Months before the course began, the MOOC had almost 3,000 people from across the globe — and the numbers kept going up. By the time the course was done, there were over 10,000 learners enrolled across six continents.

The purpose of the MOOC, Dr. Britigan said, was to invite anybody to the table who wanted to be a part of the conversation. The MOOC — with more than 70 professions enrolled — provided an opportunity for physicians, nurses, patients, radiologists, pharmacists, and others to engage in discussion. "From week one, I felt it was a success," she concluded.

How can you tell your course has global appeal?
Dr. Britigan already had a watch list of more than 1,000 people for the next class before they had even opened registration.

"I'm here just to thank you and all the staff who organized this course. I'm really enjoying it. If you organize new courses or events on this subject, I would like to participate again. Thank you!"
— MOOC Participant

82% – 91%
average weekly quiz scores
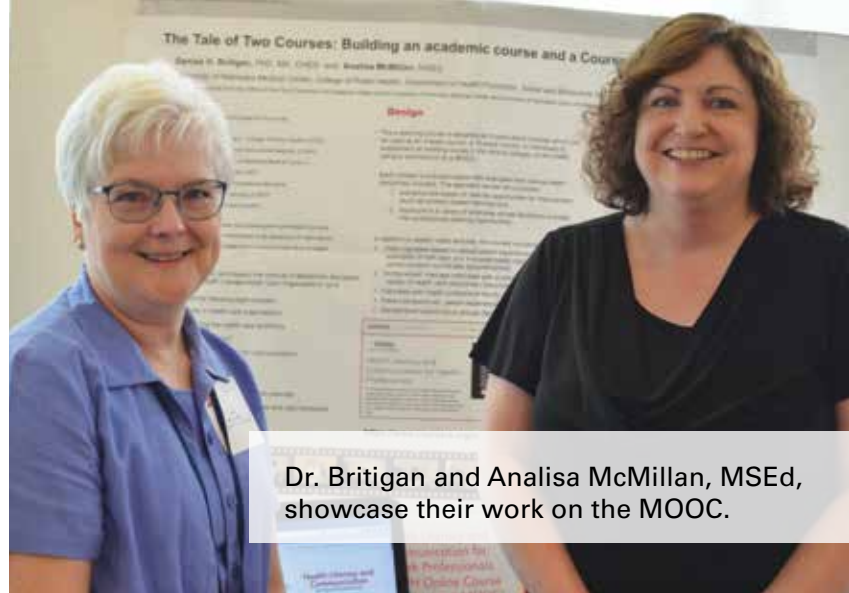
Dr. Britigan and Analisa McMillan, MSEd, showcase their work on the MOOC.

5 Lessons the Team Learned When Creating the Course

The MOOC was as much a learning experience for its creators as for the thousands who enrolled. Five key lessons the team learned include:

1. **Have a team approach:** The good ideas get even better when multiple talented people contribute.

2. **Have an instructional designer on the team:** This ensures a module design that has a good flow for learners and engages them.

3. **Have an attitude of flexibility:** Things happen that will not be in the plan, but nothing that will cause the world to stop turning.

4. **Have patience:** The peer-to-peer learning will happen "organically" if you give it some time and framework to grow.

5. **Have a plan to evaluate your efforts:** Be open to learners for their input; you can learn what does and does not work.

Faculty Cohort 2

building upon earlier successes to create engaging solutions

57 participants

34 e-modules

609 learners impacted

Endodontic Immunology: An Introduction of Classic to Current Evidence of Endotoxins

Director: Fahd Alsalleeh, BDS, MS, PhD, College of Dentistry

Members: Thomas Petro, PhD, College of Dentistry

J. Bruce Bavitz, DMD, College of Dentistry

⚙ **National Presentation:**
American Association of Endodontists Annual Session, May 2015, Seattle, WA (table clinic)

⚙ **National Publication:**
Endodontic Resource, www.endodonticresource.com, May 2015

Range of Motion and the Cervical Spine: Case Application

Director: Betsy J. Becker, PT, DPT, CLT-LANA, College of Allied Health Professions

Members: Information Technology Outreach, University of Nebraska-Omaha

Reviewer: Marisa Johnson, SPT, (Student) College of Allied Health Professions

⚙ **National Presentation:**
American Physical Therapy Association Combined Sections Meeting, February 2016, Anaheim, CA (poster presentation)

Range of Motion Examination of the Shoulder

Director: Betsy J. Becker, PT, DPT, CLT-LANA, College of Allied Health Professions

Reviewers: (Peer)
Cody Sasek, MPAS, PA-C, College of Allied Health Professions

Karen Honeycutt, MEd, MLS(ASCP)CMSMCM, College of Allied Health Professions

Grace C. Johnson, PT, DPT, MS, OCS, College of Allied Health Professions

Nikki Sleddens, PT, MPT, CEEAA, College of Allied Health Professions

Ian Thompson, PTA, Southeast Community College, Lincoln, NE

Jill Sand, MEd, RRT, Southeast Community College, Lincoln, NE

Jason Shaw, PT, PhD, Brigham Young University, Rexberg, ID

Contributors: (Student)
Emily Kindvall, SPT, College of Allied Health Professions

Marisa Johnson, SPT, College of Allied Health Professions

Taylor Majerus, SPT, College of Allied Health Professions

⚙ **Regional Presentation:**
University of Nebraska Innovation in Pedagogy and Technology Symposium, May 2015, Lincoln, NE (oral presentation)

Range of Motion:
Putting a New Twist on an Old Topic

Accurate examination of range of motion is a fundamental skill all physical therapy students must learn — yet it can also be difficult to grasp.

That is why Betsy Becker, PT, DPT, CLT-LANA, chose to participate in the E-Learning Program. She knew it was a challenging topic students struggled with and one that had a lack of existing resources for students to review outside of the formal faculty led class/lab time. Through the E-Learning Program, Dr. Becker was able to improve the educational experience for her students through new techniques that may enhance topic retention.

Dr. Betsy Becker's

4 Tips for Success

1 Communication is key: It is important to clearly communicate to the collaboration team the goals and times, and delineate everyone's role.

2 Get input: Gather a group of peer reviewers for honest feedback. Include students because they offer practical advice about utilization, and it is a way for them to get involved in educational scholarship.

3 It takes time: There can be a steep learning curve with new software, but the more comfortable you get with a new technology the faster and easier it is to use.

4 Plan ahead: Plan the implementation and assessment of the modules as the project is created. It is important to study the e-module utilization and effectiveness.

Together, Dr. Becker and her team developed interactive modules designed to engage learners outside of class, so lab time could focus on collaboration and active learning using case-based application, role playing, and peer assessment to practice psychomotor skills and professional interactions.

In addition to creating her own modules, Dr. Becker also served as the faculty advisor in the student program. In fact, she and her students were invited to present an abstract on e-learning at the American Physical Therapy Association Combined Sections Meeting.

This example from **Range of Motion and the Cervical Spine: Case Application** shows alignment of the tool (goniometer) on an avatar and recording the measurement for the medical record for one of six case studies.

This example from **Range of Motion Examination of the Shoulder** shows a question about estimating range of motion during a functional task.

Trauma Evaluation, Resuscitation and Management

Director: Charity Evans, MD, MHCM, College of Medicine

Member: Walt Hamilton, MSEd, College of Medicine

Open Wide: Extra/Intraoral Dental Screening Examination — You Can't Find It Unless You Look for It

Director: Mary Lynn Froeschle, DDS, MBA, College of Dentistry

Members: Joan Sivers, DDS, College of Dentistry

Gwen Hlava, RDH, MS, College of Dentistry

Nagamani Narayana, DDS, MS, College of Dentistry

Sheela Premaraj, DDS, PhD, College of Dentistry

Myhanh Phan-Rinne, DDS, College of Dentistry

Bongok Kim, DMD, MS, College of Dentistry

Julie Marshall, DDS, MS, College of Dentistry

⚙ **National Presentation:**
American Dental Education Association Session and Exhibition, March 2016, Denver, CO (poster presentation)

Community Leadership Development Course: For Undergraduate Students in RHOP, KHOP or PHEAST

Director: Brandon Grimm, PhD, MPH, College of Public Health

Members: Patrik Johansson, MD, MPH, College of Public Health

Katie Brandert, MPH, CHES, College of Public Health

The MAPP Process: Addressing Rural Childhood Obesity Through Community Collaboration in Public Health

Director: Patrik Johansson, MD, MPH, College of Public Health

Members: Kyle Ryan, PhD, Peru State College, Peru, NE

Jane Ford Witthoff, MBA, Public Health Solutions District Health Department, Nebraska

Shirley Delair, MD, College of Medicine

Creating Instructor Presence in Asynchronous, Online Learning Environments

Director: Suhasini Kotcherlakota, PhD, College of Nursing: Omaha Division

Members: Beth Burbach, RN, PhD, College of Nursing: Norfolk Division

Joyce Black, RN, PhD, FAAN, College of Nursing: Omaha Division

Patrick Rejda, MSEd, College of Nursing: Omaha Division

⚙ **Regional Presentation:**
University of Nebraska Innovation in Pedagogy and Technology Symposium, May 2015, Lincoln, NE (podium presentation)

Open Wide: Extra/Intraoral Dental Screening Examination

Adapting to Students' Changing Needs

It is no secret — students want information to be readily available when they need it. But the accuracy of that information is not always guaranteed, especially if the source is the Internet.

The solution? Create an e-learning module that provides students with an individualized review on demand — and that is exactly what Mary Lynn Froeschle, DDS, MBA, did.

Dr. Froeschle and her team developed a self-paced e-module that reviewed basic science material, demonstrated its clinical application and provided immediate feedback. Students were then able to apply the information immediately in clinical situations.

One of the main strategies of this e-module is for use in interprofessional education, as it demonstrates to nondental health care providers the extra/intraoral dental screening process so they feel more comfortable performing the exams. In fact, faculty outside of the College of Dentistry have requested to use the modules.

Not only is the e-module a great resource for students, but it also allowed Dr. Froeschle to explore new technologies and teaching methods, ones that she will highlight when she presents at the annual American Dental Education Association Session and Exhibition next year.

The Project Development Team
Front Row (from left): Drs. Myhanh Phan-Rinne and Nagamani Narayana; Back Row (from left): Drs. Julie Marshall, Joan Sivers and Mary Lynn Froeschle, Ms. Gwen Hlava

"It is important to create a team of diverse, engaged, positive, and hardworking people because you need expertise and support from a wide range of talents as well as multiple ideas from different sources to work through challenges."

**Mary Lynn Froeschle,
DDS, MBA**

The Extraoral Exam is the first e-module. Students can view the demonstration in its entirety or select a specific section.

Project Results

110 LEARNERS impacted

POSITIVE IMPACT on learner satisfaction

IMPROVED learner assessment

How to Prepare for an International Elective

Director:	Oveys Mansuri, MD, FACS, College of Public Health and College of Medicine
Members:	Sara Pirtle, MBA, College of Public Health
	Alexis Bowder, College of Medicine

Healthcare Finance for Clinicians in the Era of Healthcare Reform

Directors:	Oveys Mansuri, MD, FACS, College of Public Health and College of Medicine
	Fernando Wilson, PhD, College of Public Health

Family Medicine Community Preceptorship Orientation Meeting E–Module Development Project

Director:	Paul Paulman, MD, College of Medicine
Members:	Tom Birk, PhD, Information Technology Services
	Jolene Wees, College of Medicine
	Mindy Lacey, MD, College of Medicine
	Monty Mathews, MD, College of Medicine
	William Hay, MD, College of Medicine

Clinic Management of an Infant in Respiratory Distress

Directors:	Peggy Pelish, PhD, APRN-NP, College of Nursing
	Katherine Hoffman, MSN, APRN-NP, College of Nursing
Members:	Sina Linman, DNP, ARNP, College of Nursing
	Suhasini Kotcherlakota, PhD, College of Nursing
	Patrick Rejda, MSEd, College of Nursing

Putting Patients First: Strategies to Enhance Provider Communication Skills to Improve the Patient Experience

Director:	Sarah Richards, MD, College of Medicine
Members:	Christopher Smith, MD, College of Medicine
	Katherine Kueny, PhD, LIMFT, LIMHP, College of Medicine

Making the Healthy Choice the Easy Choice

Director:	Jim P. Stimpson, PhD, College of Public Health

Creating Instructor Presence in Asynchronous, Online Learning Environments

Teaching the Teacher

Connecting with students is key to ensuring learner engagement and positive outcomes. But how do you form that connection in an online environment where there is a lack of face-to-face contact? This is a problem many educators face when transitioning to an online classroom — and one that Suhasini Kotcherlakota, PhD, set out to solve.

> *Instructor presence is of paramount importance in online courses. Educators need to develop and enhance their online personas in order to establish meaningful connections with the students and achieve better learning outcomes.*

Suhasini Kotcherlakota, PhD

The animated e-module begins with the story of Ms. Lucy, who is struggling to teach an online course and facing challenges with student disengagement and dissatisfaction and evaluating student learning. Learners watching the narrative gain insights from the dialogue between Ms. Lucy and two of her colleagues, who provide guidance on how to facilitate effective learning.

Learners hear important techniques of personalization, ways of reducing cognitive load and establishing effective communication, and guidance methods when teaching via the new online modality. Learners also use critical thinking skills and check their knowledge on the concepts via interactive quizzes, feedback, and examples (good/bad) at various times in the e-module.

Picture showing Ms. Lucy (middle) receiving advice from an expert colleague.
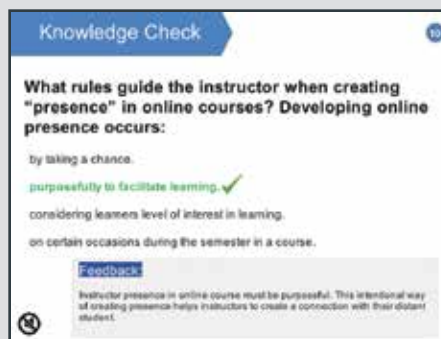
Picture showing quiz question and correct answer with feedback.

Only Animated Project in Faculty Cohort 2

Software Used

✓ **GoAnimate** for animation

✓ **Articulate Storyline** for design and publishing

✓ **Adobe Premiere** for video editing

✓ **Google Docs** for collaboration

Student Cohort 1

a unique perspective to shape the future of education

49 participants

14 e-modules

155 learners impacted

> *I am honored to have attended a university that is not only actively pursuing and exploring how to best educate their students, but is also **openly inviting students to participate** in this conversation. I cannot think of a better person to ask how to improve the learning environment for a course of study than the student that just completed it for the first time.*
>
> *The E-Learning Program **opens the door for UNMC** to have superior educational strategies that will enable greater success of our students after they leave UNMC, or improve their experience while they are still on campus.*

Alicia M. Schiller, PhD
Former Student Senate
Vice President

Former E-Learning Steering
Committee Member

A Face of Care: A Patient's Journey Through Breast Cancer Therapy

Student Directors:	Tyler Chonis, College of Medicine
	Michaela Klesitz, College of Medicine
	Jackson Wagoner, College of Medicine
Faculty Advisor:	Geoffrey Talmon, MD, College of Medicine

Defeating Antibiotic Resistance: Mastering Drugs and Bugs

Student Directors:	Caitlin Fee, College of Medicine
	Beau Ehlers, College of Pharmacy
Faculty Advisor:	David McMillan, PhD, College of Medicine

Preparatory Techniques in Cytology

Student Directors:	Arixa Herrera, College of Allied Health Professions
	Halah Alhawil, College of Allied Health Professions
Members:	Amber Donnelly, PhD, MPH, SCT(ASCP), College of Allied Health Professions
	Troy Matthias, CT(ASCP), Nebraska Medicine
	Jessica Holmstrom, Nebraska Medicine
	Jean Lien, Nebraska Medicine
Faculty Advisor:	Maheswari Mukherjee, PhD, MS, CT(ASCP)CM, College of Allied Health Professions

A Face of Care: A Patient's Journey Through Breast Cancer Therapy

Treating a Patient Involves More than Science

Just like there are two sides to every story, there are two sides to treating a patient, especially when it comes to cancer. Tyler Chonis, Michaela Klesitz, and Jackson Wagoner set out to address this topic with the goal of having students gain a better understanding not just of the science and etiology of breast cancer, but also the physical and emotional tolls it places on the patient — things that are harder to teach.

Tyler Chonis

Creating the module not only challenged us to think from a different perspective about our topic, but also greatly improved our understanding of the content all the while doing something that was beneficial to others.

This made me realize how difficult it can be to present things in a manner that is easy for learners to understand. I now have a greater appreciation for all of my professors!

Michaela Klesitz

Jackson Wagoner

Modules are designed to be interactive. Learning is an iterative process that happens in skips and jumps; thus teaching is not as simple as presenting material "X" and generating output "Y."
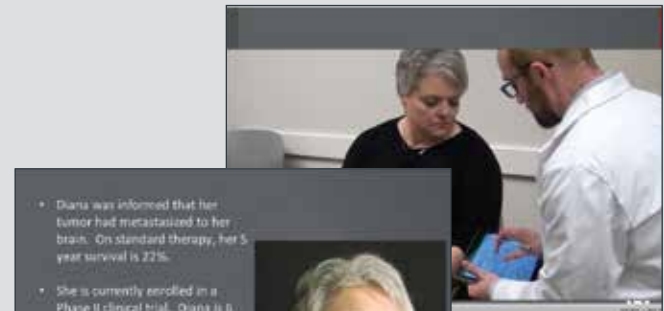
Project Results

120 learners impacted

POSITIVE IMPACT on learner satisfaction

IMPROVED learner assessment

What To Do Next: An Interactive Journey Combining Behavioral Health and Medical–Surgical Nursing

Student Director: **Amanda Hug,** College of Nursing

Student Members: **Lauren Awe,** College of Nursing

Crystal Epstein, MSN, APRN-NP, PMHNP-BC, College of Nursing

Faculty Advisors: **Heidi Keeler, PhD, RN,** College of Nursing

Lyndsay Dean, MSN, FNP, APPMH, College of Nursing

Marlene Lindeman, MSN, RN, CNS, College of Nursing

Range of Motion Examination of the Cervical Spine

Student Directors: **Marisa Johnson, SPT,** College of Allied Health Professions

Taylor Majerus, SPT, College of Allied Health Professions

Faculty Advisor: **Betsy J. Becker, PT, DPT, CLT-LANA,** College of Allied Health Professions

⚙ **National Presentation:**
American Physical Therapy Association Combined Sections Meeting, February 2016, Anaheim, CA (poster presentation)

Rheumatology Remedy Stand

Student Director: **Tate Johnson,** College of Medicine

Members: **Kaleb Michaud, PhD,** College of Medicine

Zac Fowler, MS, University of Nebraska-Omaha

Brett Bass, University of Nebraska-Omaha

Myron Toews, PhD, College of Medicine

Jessica Downes, PharmD, BCACP, College of Pharmacy

Darwin Brown, MPH, PA-C, College of Allied Health Professions

Laura Bilek, PT, PhD, College of Allied Health Professions

Faculty Advisor: **Amy Cannella, MD, MS,** College of Medicine

EKGs: Basics of Rate & Rhythm

Student Director: **Cory Rohlfsen,** College of Medicine

Faculty Advisor: **David O'Dell, MD,** College of Medicine

Defeating Antibiotic Resistance:
Mastering Drugs and Bugs

"It only makes sense to start now."

That was the thought process behind forming an interprofessional student team. Caitlin Fee, a medical student, and Beau Ehlers, a pharmacy student, understood how closely their two professions work, so it was easy for them to decide to work together starting now.

Caitlin Fee

> *"It was great to work with someone from a different college because we each brought a unique perspective and expertise to the project, especially when it came to understanding what our classmates had trouble comprehending and what they needed to know for their licensing exams.*

In fact, Caitlin and Beau formed the **only student team that had students from different colleges**, a collaboration that was highlighted during a video interview with the team and Chancellor Jeffrey P. Gold, MD.

Caitlin and Beau participated in the program because it was a great opportunity to help their peers learn a different topic in a new way.

Caitlin and Beau's

2 Tips for Student Developers

> *E-learning is the future of education, and this was an opportunity for us to contribute.*

Beau Ehlers

1 **It is a big time commitment,** so get started as early as possible and plan on it taking longer than you anticipate.

2 **Utilize your faculty advisors.** They are truly the experts and have a lot of knowledge they are willing to share.
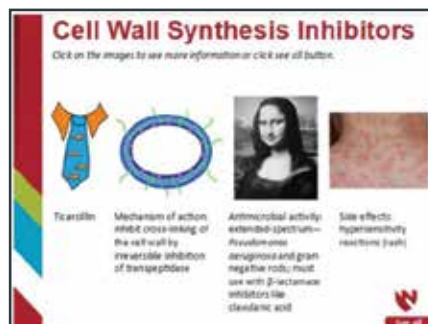
With memorable images and relevant colors, the module creates associations that assist students to recall the information and apply it to clinical cases.

RESPECT Clinic: A "Crash Course" in STDs

Student Director:	**Cory Rohlfsen,** College of Medicine
Faculty Advisors:	**Jim Medder, MD, MPH,** College of Medicine
	Paul Paulman, MD, College of Medicine

Abdominal Aortic Aneurysm

Student Director:	**Alizabeth Truhe, BS, RT(R),** College of Allied Health Professions
Member:	**Tanya Custer, MS, RT(R)(T),** College of Allied Health Professions
Faculty Advisor:	**Kim Michael, MA, RT(R), RDMS, RVT,** College of Allied Health Professions

⚙ **National Presentation:**
   Anatomage Table Users Group Meeting, August 2015, San Francisco, CA

ABCs of Chest X-Ray for Health Professionals

Student Director:	**Alex Walker,** College of Medicine
Faculty Advisor:	**Matthew DeVries, MD,** College of Medicine

A Practical Guide to Lease Financing Decisions Within Health Services Organizations

Student Director:	**Yang Wang,** College of Public Health
Student Members:	**Rajvi Wani,** College of Public Health
	Sankeerth Rampa, College of Public Health
	He Zhu, College of Public Health
Consultant:	**Analisa McMillan, MSEd,** College of Public Health
Faculty Advisors:	**Fernando A. Wilson, PhD,** College of Public Health
	Jim P. Stimpson, PhD, College of Public Health

What to Do Next: An Interactive Journey Combining Behavioral Health and Medical-Surgical Nursing

A Unique Collaboration Across All Levels of Education

It is not often undergraduate and doctoral nursing students get to collaborate with each other, yet it is a highly effective way to enhance learning, as the team members developing an e-module for the College of Nursing discovered.

Amanda Hug and Lauren Awe, BSN students, were able to benefit from the expertise of Crystal Epstein, a PhD student, who in turn practiced her mentoring and teaching skills. Together with their faculty advisors, the students created an e-module designed for student nurses to recognize that physical factors can precipitate mental health problems, and likewise, mental health problems can complicate physical conditions. The project gives students the skills to recognize, assess, and respond to mental health problems outside of traditional mental health care settings.

Crystal Epstein, PhD Student

My participation in the e-learning program has enhanced my experience of being a student at UNMC. It made me feel that I had something valuable to contribute to the university, and that I could have an impact on the way future nurses provide care to patients — even though I am still a student myself. As I become part of the next generation of nurse educators, I look forward to pushing the boundaries of traditional educational approaches by using technology.

What To Do Next?
An interactive journey combining behavioral health and medical-surgical nursing

Key Takeaways

- When it comes to using technology for education, the possibilities are endless.

- Faculty guidance and feedback is critical.

- Frequent communication is important to stay on track and meet goals.

- Overestimate the amount of time you think it will take.

Program Leadership
ensuring our dedication and position as national leaders

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“UNMC understands infrastructure pulls innovation, and they are continually working to create a safe space for faculty with new groundbreaking ideas.”

Nicholas Lorenzo, MD, MHCM, CPE
Alumnus, University of Nebraska Medical Center

Founder, CEO and Chief Medical Officer, PHLT Consultants

Chief Medical Officer, MeMD Inc.

“UNMC has shown by its enthusiastic participation (both students and faculty) in the E-Learning Program that it is ready to become a national and international leader in this arena.”

Ray Schroeder
Associate Vice Chancellor for Online Learning, University of Illinois Springfield

“UNMC has launched an impressive initiative to enhance teaching and learning through the application of new pedagogies and technologies. I look forward to continuing to collaborate with those working on this project.”

unmc.edu/elearning | 402-559-8082

"**E-learning is the present and future of health care education.**"

— **Nicholas Lorenzo, MD, MHCM, CPE**

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