Provost's Teaching & Learning Symposium Posters

Transformative Learning Experiences for Diversity & Inclusion

March 1, 2019, 11:45 a.m. – 12:15 p.m.

Poster Presentations   UC Ballroom

Abstracts for each numbered poster appear below

1. *Grand Challenge Scholars Program: Fostering Student Leadership Opportunities,* Maria Sanchez (Engineering and Information Technology), Connor Ganley (Chemical Engineering), Ciara Christian (Engineering and Information Technology/Peaceworker Alum), and Kiplyn Jones (Shriver Peaceworker Fellow)

   The UMBC Grand Challenges Scholars Program is designed for students from all majors who want to help solve important problems facing society. This structured program provides a vibrant interdisciplinary community to help tackle the National Academy of Engineering Grand Challenges, and gives students experience and skills to help create solutions to some of the most pressing challenges of the 21st century.

   Each Scholar will design a personalized program to engage with the Grand Challenges from research, interdisciplinary, entrepreneurship, global, and service perspectives, and will create an electronic portfolio of their accomplishments and activities, addressing both core (shared) learning objectives and personalized (individual) objectives. The program will be assessed through learning outcomes, student GPA and progression timelines, and pre- and post-surveys of participating students. A current scholar of the program will present the additional opportunities available to students created by students to foster and develop leadership skills. *(This abstract is not the final draft and may need to edited at a later date)

2. *Amazing Stories: UMBC's CoLab Investigation of Science Fiction Zines,* Donald Snyder (Media and Communication Studies) and students from IS, MCS, and Biochemistry

   The CoLab project centered around the mentoring of three interdisciplinary students completing a narrative based research project investigating a science fiction zine collection housed in UMBC's Library Special Collections. The project focused on research, collaboration, storytelling, and working for a client. The assessment of the project utilized rubrics, especially evaluating collaboration, and professionalism. The small group structure of the project was a definite strength, as was allowing the students to discover stories that were meaningful to them. The interdisciplinary focus allowed for a diverse range of academic training and perspectives to be shared among participants.

3. *Mi manual útil de expresiones en español.- My Useful Manual of Spanish Expressions: Reinforcing The Value of Language in Our Students' Future Careers,* Milvia Hernandez (Modern Languages, Linguistics, and Intercultural Communication)

This poster presents the SPAN 201 end-of-the-semester group project in which students create a manual of common Spanish expressions that will be used in their future professional careers with the Hispanic/Latinx community. This project reinforces the value of learning a foreign language and makes SPAN 201 more applicable to different majors. Group presentations and the groups' manuals are assessed through use of a detailed rubric.

This project is an excellent vehicle to apply immediately students' Spanish abilities beyond the classroom setting, and students finish this course with a "personal resource" (A Manual of Spanish Expressions) ready to be used in their future jobs. During the development of this manual, students open their eyes to how much they will/can connect their majors with this language course. Furthermore, it has helped students to think about the different situations in which they would encounter Spanish in their future jobs. This poster relates to the themes of diversity, inclusion, and transformation by encouraging more students in other majors to continue their language study.

4. *Teaching a Course Abroad,* Caylie Zidwick and David Di Maria (International Education Services)

The Office of International Education Services will provide information on how to conceive, develop, and propose an international faculty-led study abroad program at UMBC. The poster will cover how to choose a course and location, what considerations go into developing an international program, as opposed to an on-campus one, and the steps in the process. We will also cover the best practices of developing learning outcomes and connecting the experience with the UMBC strategic plan.

5. *Assessment of Student Practice Competencies: A Focus on Diversity,* Carolyn Tice, Adrienne Ekas-Mueting, and Shelly Wiechelt (Social Work)

The Council on Social Work Education, Educational Policy and Accreditation Standards, requires outcome assessments to determine how well social work programs prepare students in nine requisite competencies. A review of the in-course and field education evaluations shows that the benchmark (80%) for Competency 2: Engage Diversity and Difference in Practice, was met in the field placement (94.2%) but not in the in-class course measurement (64.5%). This finding suggests that students are not consistently recognizing the impact of diversity on their practice until they complete their field placement.

The poster relates to a theme of inclusion by mapping a diversity statement and goals to: the early introduction of diversity content; engagement in the Inclusive Excellence Initiative; updated information on diversity and revised pedagogical strategies; training on teaching diversity content to faculty; and, continuing education units (CEU) on the program's diversity statement and goals, with an accompanying evaluation of the session.

6. *Quantitative and Qualitative Assessments of Student Perspectives Regarding Competency Achievement in the Health Administration and Policy Program,* Jennifer Callaghan-Koru and Catherine Birger (Sociology, Anthropology, and Health Administration and Policy)

To support a program effort to review and map the competencies of the Health Administration and Policy Program (HAPP), we sought student perspectives of what competencies they developed through the HAPP coursework in two ways. First, we administered a web-based exit interview which asked graduating students to rate, according to a 1-to-5 scale, how prepared they are to perform 17 health sciences skills and 10 professional skills (with 1 being "not at all prepared" and 5 "very prepared"). Eighty students in three cohorts have completed the survey. Only three competencies received an average rating below 4 out of 5. Second, we held a focus group discussion with students that included a pile sort activity to better understand students' perspectives on which of the HAPP core courses addressed each competency. We are incorporating this student feedback as we complete the competency mapping and address curriculum overlaps and gaps.

7. *Universal Design for Instruction,* Michael Canale (Office of Access and Disability Services)

Institutions reported enrolling approximately 1.1 million students with disabilities during the 12-month 2016-2017 academic year. An increase of 28% from the 2006-2007 12-month academic year. The types of disabilities reported by institutions are 26% learning disabilities, 24% Attention Deficit Hyperactivity Disorder (ADHD), 15% Autism Spectrum Disorder, 20 % mental illness/psychological conditions, 11% Physical/health impairment, 4% sensory impairment. Only 1 in 4 will graduate with a bachelor's degree. These numbers only reflect those students who have registered with their student disability service office.

Universal Design of Instruction has been defined as: an approach to teaching that consists of the proactive design and use of inclusive instructional strategies that benefit a broad range of learners including students with disabilities. The nine Principles of UDI provide a framework for college faculty to use when designing or revising instruction to be responsive to diverse student learners and to minimize the need for "special" accommodations and retrofitted changes to the learning environment (Scott, McGuire, & Embry, 2002). This poster session will promote a Universal Design approach that can be applied to any course.

8. Making *Course Content Accessible: A Blackboard Ally Pilot,* Mariann Hawken (Instructional Technology)

Are your Blackboard courses are fully accessible? How would you know if your course materials are accessible to all students? Blackboard Ally is a tool that focuses on making digital course content more accessible. Integrated into the Blackboard system, Ally provides a robust toolkit to help remediate inaccessible content, provide alternate formats to students, and inform faculty about ways to improve accessibility of their materials. The FA2018 Ally pilot will provide participating faculty with an opportunity to evaluate the system, remediate course content for accessibility, and provide feedback support staff about Ally's future use at UMBC.

9. The *Road to Blackboard Ultra,* Mariann Hawken (Instructional Technology)

UMBC's current flavor of Blackboard has not changed significantly in many years, but that's about to change! The Ultra Experience is the first completely cloud-based system from Blackboard, representing years of development and research, a new focus on improved

workflows to increase efficiency, and deep integrations to support teaching and learning. Learn about the SP2018 pilot, get information about our anticipated timeline, pick up a training schedule, sign up for early access, ask questions, and more.

10. *Identifying Effective Assessment Technologies,* Jennifer M. Harrison (Faculty Development Center) and Sherri N. Braxton (Instructional Technology)

Institutions need tools that integrate multiple measures of student success—especially direct evidence—to deepen insights about student learning. Assessment technologies can help contextualize learning analytics with student learning outcome evidence, but how can institutions integrate these data? Our research reviews technology solutions that help institutions systematize outcomes data so they can connect it to analytics and more effectively analyze student learning, identify and implement evidence-based interventions, and measure for effectiveness. To bridge student success and outcomes data, we need software that enables institutions to aggregate outcomes data by rolling up direct evidence to both the program and the institutional levels. We analyzed how institutions use technologies to manage assessment and created three tools to help you begin to systematize learning assessment data at your institution: a taxonomy, a process, and a rubric.

11. *Supplemental Instruction: Supporting Student Success in Difficult Courses,* Delana Gregg and Deborah Webb (Learning Resources Center)

This poster will share information about Supplemental Instruction at UMBC. Supplemental Instruction (SI) is an academic support model that utilizes Peer Assisted Study Sessions (PASS). The SI PASS program targets traditionally difficult academic courses and provides regularly scheduled, out-of-class review sessions. The sessions are informal seminars in which students compare notes, discuss readings and develop organizational tools and predict test items. The poster will include: SI history and mission; description of the types of practice used to engage students in SI sessions; courses supported at UMBC (high DFW courses) and attendance numbers; DFW rates of students who attend SI vs. those who do not attend; Propensity Score Matching research on the effects of SI on student success in courses; and highlights from student survey feedback about the benefits of SI for their learning.

12. *On the Road to Independent, Lifelong Learners: The Learning Resources Center—A Student-Centered Tutoring Practice,* Ira Fabri, Jordan White, and Elaine MacDougall (Learning Resources Center)

This poster will highlight current initiatives the LRC tutoring programs--namely the Writing Center, Math and Science Tutoring Center, and Appointment Tutoring--are implementing, which adhere to our values: Inclusive Excellence, Student-Centered Practice, and Collaboration. Part of our poster will look at feedback from students who have utilized our services, answering the question: What did students do differently after tutoring session(s)? We will also outline our tutor training courses, workshops, and process for observations of tutors. Some of our assessment methods include: survey information and grades for math students. We will highlight our work with SDS for Appointment Tutoring and our name change from Math Center to Math and Science Tutoring Center. We also have Safe Space training in the works with Mosaic, and we will emphasize that LRC programs are developed

and delivered in partnership with campus departments, to maximize learning success throughout UMBC.

13. *The Inclusion Imperative,* Jessica Berman (Dresher Center for the Humanities)

UMBC's Dresher Center for the Humanities and the College of Arts, Humanities, and Social Sciences (CAHSS) has launched The Inclusion Imperative, a five-year initiative to promote diversity and inclusion in the humanities, made possible by a major grant from the Andrew W. Mellon Foundation. The Inclusion Imperative's three programs: the Diversity Teaching Network in the Humanities, the Visiting Faculty Fellowship Program, and the Humanities Teaching Labs will support and expand community-engaged humanities research, teaching, and learning focused on issues of race, equity, inclusion, and justice. Through this initiative, UMBC in partnership with Bowie State University, Coppin State University, and Howard University, will also cultivate a regional network of scholars, who are committed to diversity and inclusion in the humanities. The Center is now accepting applications for Humanities Teaching Lab Course Transformation support grants. For more information, please see: https://dreshercenter.umbc.edu/news/?id=78188

14. *STEM Undergraduate Research Experiences: Student Veteran Perspectives,* Laura E. Ott (Natural and Mathematical Sciences) and William R. LaCourse (Natural and Mathematical Sciences and Chemistry and Biochemistry)

Students with military service are a growing population on college campuses, with greater than 40% of student veterans declaring as STEM majors. However, very little research attention has been given to student veterans in STEM programs. To explore student veterans' perspectives of an undergraduate research experience, we interviewed two military veterans who participated in a biomedical sciences-focused research internship through the STEM BUILD at UMBC Initiative to explore their perspectives of undergraduate research in the context of their military service. Insights that surfaced include: 1) synergies between their military experiences and being able to connect to other students within the internship cohort, 2) specific skills provided by the military, such as attention to detail and accountability, that helped them to achieve success, and 3) disconnections between the military chain of command and the structure of a research lab.

15. *Development and Assessment of a Six-Week, Authentic, Group Research Experience for Community College Students at a Research Intensive University,* Laura E. Ott (Natural and Mathematical Sciences), Kathleen Stolle-McAllister (Psychology), Jennifer Hosler (Psychology), Kathy Lee Sutphin (Natural and Mathematical Sciences), Philip Farabaugh (Biological Sciences), Kenneth Maton (Psychology), Philip Rous (Provost and Physics), and William R. LaCourse (Natural and Mathematical Sciences and Chemistry and Biochemistry)

Pre-transfer community college (CC) students often have difficulty obtaining authentic research experiences, putting them at risk of not persisting in STEM. To increase their preparedness and competitiveness, as well as explore mechanisms to increase the capacity of students engaged in research, we developed the BUILD a Bridge to STEM Internship. This internship is a six-week, group-based, summer internship for pre-transfer students from UMBC's top sending CCs as well as students from Gallaudet University and Morgan State

University. A unique aspect of the internship is that students work in teams of 3-4 on authentic research experiences mentored by UMBC faculty or industry partners. Four cohorts of students have participated in the internship and an evaluation has revealed that participants make significant gains in their science identity and research self-efficacy. Further, students report that this internship helps to clarify their career path and inspires some students to continue in research careers.

16. *Student Mindset in General Education STEM Classes,* Suzanne Braunschweig (Geography and Environmental Systems), John Fritz, (Information Technology), Kalman Nanes (Mathematics and Statistics), and Liz Stanwyck (Mathematics and Statistics)

As instructors of general education STEM courses targeting non-STEM majors, we want to help students master scientific and mathematical concepts. This poster reports on the first step of a long-term project focused on student mindset. Participating students enrolled in SCI 100 or MATH 104 in fall 2016 took a pre and post survey at the start and again at the end of the semester. Each question was ranked on a Likert scale of 1-5 from strongly disagree (1) to strongly agree (5). For SCI 100 there were statistically significant increases in scores for motivation, determination, attitude and mindset. In MATH 104, increases were statistically significant for mindset. We continue to analyze the data to determine if survey responses are tied to course grades and if survey responses differ with respect to major, GPA, or demographics. We hope to design course interventions to improve student attitudes and outcomes in these general education courses.

17. *Encouraging Metacognition by Asking Students to Predict Exam Questions AND Answers,* John Fritz (Information Technology) and Suzanne Braunschweig (Geography and Environmental Systems)

In this IHU assignment, students were asked to develop a study guide for midterm and final exams in their companion content course, SCI 100 "Water: An Interdisciplinary Study." Based on what they knew about the course and instructor to date, they were asked to predict plausible questions AND answers they would expect to see. Then, they were asked to reflect on how prepared they were to answer their own and other students' Q&A sets. Finally, they were asked to identify the best Q&A sets in the class and explain why. In addition to submitting study guides before the midterm, students were asked to submit a one-page reflection about their preparation and performance after receiving their actual midterm exam score. They prepared for the final exam in the same way and reflected on what they learned about their learning before taking it. More info & results: umbc.box.com/sci100fritzbraunschweig.

18. *Examining Affective Dimension of Learning Using Ubiquitous Sensing and Computing Systems,* Jiaqi Gong (Information Systems)

This project is to study student affect, which has been found to correlate with short- and long-term learning outcomes, including college attendance, as well as interest and involvement in Science, Technology, Engineering, and Mathematics (STEM) careers. We will leverage the advances in ubiquitous sensing and computing systems (e.g., blackboard system, smartphones, wearable sensors) to capture the learning behavior data of students

and study the affect dynamics during their learning processes. We have developed a computational modeling technique on existing dataset from the University of Pennsylvania and demonstrated improved performance to infer four types of affective states (e.g., concentration, confusion, frustration, and boredom). Affective dimension of learning via ubiquitous sensing and computing systems will enhance our understanding of students' learning behavior in a diverse context and empower the transformation from pedagogy knowledge to just-in-time interventions.

19. *Multidisciplinary Research and Education on Big Data + High Performance Computing + Atmospheric Sciences,* Jianwu Wang (Information Systems), Matthias K. Gobbert (Mathematics and Statistics), Zhibo Zhang (Physics), and Aryya Gangopadhyay (Information Systems)

We present a new initiative to create a training program or graduate-level course (cybertraining.umbc.edu) in big data applied to atmospheric sciences as application area and using high-performance computing as an indispensable tool. The training consists of instruction in all three areas of "Big Data + HPC + Atmospheric Sciences" supported by teaching assistants and followed by faculty-guided project research in a multidisciplinary team of participants from each area. Participating graduate students, post-docs, and junior faculty from around the nation will be exposed to multidisciplinary research and have the opportunity for significant career impact. The poster discusses the challenges, proposed solutions, practical issues of the initiative, and how to integrate high-quality developmental program evaluation into the improvement of the initiative from the start to aid in ongoing development of the program.

20. *Cell Phone Surrender: A Policy to Increase Student Engagement,* Sarah Leupen (Biological Sciences)

In an upper-level Biology class of 93 students, I implemented a Cell Phone Surrender Policy in which students received a small amount of credit added to their lowest exam score in exchange for voluntarily surrendering their cell phones during class. Administration was eased by preparing poster-size sheets of paper with each student's name written on a cell-phone-sized place; a teaching assistant photographed the array during class and awarded credit appropriately. In an anonymous end-of-semester survey, students reported that their classmates spent less time on their phones in class than other classes (83.1% Strongly Agree), that they themselves did the same (86.4% Strongly Agree), that when on one's phone one occasionally misses class material (90% Strongly Agree or Agree), and that they appreciated not having the distraction of their own, or another's phone during class. Thus, such a policy may increase student engagement during class, transforming the classroom environment.

21. *Interactive Computer Simulations as Pedagogical Tools for Biology Labs,* Mauricio Bustos (Biological Sciences), Sarah Leupen (Biological Sciences), Karen Whitworth (Biological Sciences), and Christopher Rakes (Education)

Student learning in biology may be impaired by instructional environments that emphasize technical methodology over analysis. We experimented with accurate computer simulations as tools to engage students in analytical, creative learning. The effects of hybrid treatments

that combined simulated experiments with standard lab instruction were examined using a controlled design with random assignment of lab sections. Hierarchical linear modeling (HLM) analysis was used to account for possible clustering within sections. Data from a large sample of students (515) revealed a significant increase (1.59 standard deviations) in posttest scores for the hybrid instruction groups over the control group. A plausible explanation for the effect is reinforcement of standard psychomotor learning due to strong engagement of cognitive processes enabled by the computer simulation. A manuscript detailing this study is currently in print in *CBE Life Sciences*. It supports a wider use of computer simulations as learning tools in laboratory courses.

22. *Infographic Posters in Cell Biology: An Exercise in Non-Wet Bench Research,* Javier Rivera Guzman (Biological Sciences)

Engaging students in scientific research within large classrooms can be problematic but would presumably give students insights into the discipline they are actively studying. I have now twice implemented the creation of scientific infographic posters in Cell Biology (n=182-196) by small student groups (n=5-8/group). Students performed research of current scientific literature based on specific assigned cell types, worked with a graphic artist consultant, and were provided assessment rubrics in order to ensure standardized expectations, with at least 3 different assessors to better ensure fair grading of the final products.

These posters were a group effort in biological research and ideally demonstrated to them that research takes multiple forms. They were expected to use the multiple perspectives and be inclusive within the groups which tended to vary by age, gender, background, ethnicity, etc., in order to achieve a final creative product.

23. *Increasing Student Participation, Interest, and Recruitment in Engineering and Science (INSPIRES),* Tory Williams, Jonathan Singer, Christopher Rakes, and Jacqueline Krikorian (Education)

INSPIRES is an interdisciplinary educative curriculum for high school Biology and Technology Education classrooms. NSF supports a 4-year endeavor using INSPIRES to strengthen teachers' ability to integrate engineering principles and practices with science learning to support a local public school district in preparing globally competitive students and meeting Next Generation Science Standards. Present research focuses on growth in teacher pedagogy and infusion of engineering design principles/practices over three consecutive years. Quantitative and qualitative data are measured using tools that capture pedagogical reform and engineering-focused concepts and practices. Analyses indicate that teachers show significant gains in adopting reformed pedagogy as a result of INSPIRES curriculum implementation. Further, results indicate that a well-designed engineering lesson lends itself to reformed teaching practices. INSPIRES is an "engineering for all" approach to enhancing student learning opportunities, and thus is based on UDL principles and meeting the needs of a diverse classroom.

24. *Infusing Ethical Considerations in a Data Science Curriculum,* Vandana P. Janeja (Information Systems) and Susan M. Sterett (Public Policy)

Data Science deals with the discovery of hidden and non-trivial knowledge from massive, heterogeneous datasets. It is essential to carefully consider the ethical perspectives during the knowledge discovery as this can impact the communities where the data is collected. As data science is taught, these considerations should be brought to the forefront, at every point in the data life cycle from data cleaning, selection, mining, thresholding and pattern evaluation, for the students who are the next generation of decision makers.

Through the graduate and undergraduate classes in the IS department exercises are discussed to demonstrate how ethical perspectives of data science are embedded in the curriculum. At a recent Data8 workshop at UC Berkeley (https://data.berkeley.edu/undergraduate-ds-pedagogy), which the author participated in, infusing ethics in such a manner was identified as a key strength of the curriculum and it was emphasized that documentation of such practices will benefit the data science community at large.

25. *Enhancing Interest in Cybersecurity Careers through Peer Mentoring,* Vandana P. Janeja, Carolyn Seaman, and Aryya Gangopadhyay (Information Systems)

The focus of this project is an evaluation of our peer mentoring framework designed to encourage more students to seek cybersecurity career pathways through encouraging peer interactions. We compare results from two years (Spring 2016 and 2017) of interaction between students in an introductory Information Systems class (IS 300: Management of Information Systems) and upper-level elective Cybersecurity course (IS 471: Data Analytics for Cybersecurity). The students who receive peer mentoring show more interest in cybersecurity issues and careers and gain more overall knowledge throughout the semester. This is reflected in the results of anonymous survey analysis and overall grade improvements. These students show more variations regarding their choice of cybersecurity as a career compared to students who did not receive any mentoring, demonstrating that they are able to make more informed decisions. Female students exhibit more pronounced responses to peer mentoring in contrast to their male counterparts.

26. *Collaborative Transformation of Teaching and Learning in the Library: A Follow-up on the Reflective Portfolio Project,* Joanna Gadsby and Lindsey Loeper (Albin O. Kuhn Library & Gallery)

This poster presents a follow-up study of our reflective portfolio project. This project takes a department-wide, collaborative approach to track programmatic learning outcomes, share active learning techniques, and manage teaching resources in order to transform our teaching practices. After two years of pilot implementation, the library's teaching and learning team learned that the portfolio project is a way to enhance knowledge management and program continuity as well as a method for documenting ongoing reflection and formative assessment. The individual teaching portfolios are also linked to a map of learning outcomes and a bank of teaching exercises that correlate with the outcomes. Our team is also using the portfolios as documentation aids in our newly developing peer coaching model.