Challenges and Opportunities for Educators of the Future

Friday November 21, 2014 from 8:30 AM to 4:30 PM
College of the Holy Cross, Worcester, MA

What will the future hold for higher education professors? Students are changing, government oversight and accountability is increasing, parents are demanding value added, technology is growing exponentially, business and industry are calling for more soft skills training and the economy is in slow recovery. *We are in the perfect storm of educational change.* As that storm blows over higher education, what can faculty do to be proactive to take advantage of the opportunities inherent in these challenges? Looking at ten future factors of education in 2020, our keynote speaker, Dr. Donna Qualters, will explore how we can work together to plan for the future.

Donna Qualters is Director of the Center for Learning and Teaching (CELT) at Tufts University and Associate Professor of Public Health and Community Medicine and Adjunct Associate Professor of Education. She holds a Ph.D. in Educational Studies from Lesley University, where she adapted an innovative technique called Dialogue to facilitate change in faculty teaching practice. Donna has published in the area of assessment, teacher identity, creating faculty community, active learning, reflective practice, and ethical inquiry. Her books: *Jonas Chalk: Advice from a Legendary Teacher,* and *Experiential Education: Making the Most of Learning Outside the Classroom,* are written by teachers for teachers.

Save the Date!

NEFDC EXCHANGE

www.nefdc.org New England Faculty Development Consortium

Call for Article Submissions August 15, 2014

The NEFDC seeks submissions for the Fall 2014 issue of *The Exchange.* We are especially interested in articles related to the themes of the 2014 conferences: "Challenges and Opportunities for Educators of the Future" (Nov. 21, 2014 conference) and "From STEM to STEAM: What Really Works" (this conference). Submissions related to past conferences will be considered for a new feature of *The Exchange* called "Continuing the Conversation."

Submissions are due August 15, 2014 to the Editor, Susan Wyckoff. The NEFDC Board members serve as reviewers for all articles. Detailed instructions for authors are available at http://nefdc.org/exchange.html; Contact the Editor at susancwyckoff@gmail.com.

NEFDC

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"...enhancing professional development of faculty and administrators."

New England Faculty Development Consortium

Moving from STEM to STEAM: What Really Works

Conference Program

June 6, 2014

Roger Williams University

Bristol, Rhode Island

Conference Overview

8:30 – 9:00	Registration and Continental breakfast – GHH Atrium
9:00 – 9:15	Welcome and Introductions – GHH 01
9:15 – 10:25	Keynote Presentation – GHH 01
	Tom Pilecki Adjunct Professor, Roger Williams University Co-author of *From STEM to STEAM: Using Brain-Compatible Strategies to Integrate the Arts*
10:30 – 11:25	Session 1
11:30 – 12:15	Lunch
12:20 – 1:10	Keynote Workshop, Tom Pilecki – GHH 01
1:15 – 2:10	Session 2
2:15 – 2:25	Break – GHH Atrium
2:30 – 3:25	Session 3
3:30 – 4:30	Poster Session and Reception – GHH Atrium

9:00 – 9:15 Welcome and Introductions

Deborah Clark, NEFDC President
Linda Beith, NEFDC Board Member & Conference Chair
Andrew Workman, RWU Provost and Senior Vice President for Academic Affairs

9:15 – 10:25 Keynote Address by Tom Pilecki

Tom Pilecki's upbeat and entertaining keynote will address the fact and fiction surrounding the STEM to STEAM movement and will discuss successful STEAM projects from the field.

Science: It's Elementary! A Service-learning Collaboration

Jennifer Pearce, Roger Williams University, jpearce@rwu.edu
Keri Fournier, Nathaniel Greene Elementary School, fournierk@psdri.net
Tracey Kareemo, Nathaniel Greene Elementary School, kareemot@psdri.net
Kathleen Maher, Nathaniel Greene Elementary School, maherk@psdri.net
Adria Updike, Roger Williams University, aupdike@rwu.edu
Li-Ling Yang, Roger Williams University, lyang@rwu.edu

We report on a collaboration between RWU STEM and Education majors to assist fourth grade teachers with the implementation of a school STEM fair. The STEM students offered scientific knowledge and enthusiasm while gaining communication skills through video demonstrations and interactions with younger students. The Education students offered expertise in age-appropriate teaching methods while gaining in-depth content knowledge. RWU supplied the necessary equipment making a broader range of activities possible. The fourth graders engaged in inquiry activities that addressed grade-level science standards while also nurturing their inherent scientific curiosity.

Enhancing Group Working Skills by Integrating Clay and Drawing Techniques

Julienne Ugalde, Anna Maria College, jugalde@annamaria.edu

Manipulating clay in a small group format offers students and faculty a cathartic experience. Students and faculty will relax and "let go" and share their feelings as they are manipulating the clay. It creates moments of mindfulness and in essence, it is a return to basics. By experimenting with clay students and faculty release their tensions, and begin to open up to each other creating an inclusive and effective learning environment that integrates intrapersonal and interpersonal experiences.

The New England Faculty Development Consortium (NEFDC) was founded in 1998 as a not-for-profit, regional organization dedicated to enhancing the professional development of faculty and administrators committed to excellence in teaching and learning. The consortium membership includes individuals and institutions, and both private and public colleges and universities throughout New England and beyond.

Education for Critical Thinking in a Knowledge Economy

Thomas Williams, Quinnipiac University, thomas.williams@quinnipiac.edu
Betsy Rosenblum, Quinnipiac University, betsy.rosenblum@quinnipiac.edu

Meeting the needs of today's globalized knowledge economy requires a fresh approach to how we foster intellectual curiosity and develop critical thinking across Quinnipiac's diverse technical, pre-professional, and humanities majors. Our General Education seminar blended two common business concepts (Design Thinking and Knowledge Management) with Problem Based Learning to focus classrooms on insight generation, shared understanding, and a *desire* for content in the pursuit of sense-making.

Engaging Campus Resources in an NSF Grant for Underrepresented Students in STEM

Karen Bilotti, Roger Williams University, kbilotti@rwu.edu
Cheryl Francis, Roger Williams University, cfrancis@rwu.edu

Participants who view our poster will learn about the programming our committee provided for students receiving scholarship funds through a grant received by RWU for underrepresented students in STEM majors. Through our poster and interaction with participants, we will explain how the program incorporates science and non-science faculty in their role as advisors, mentors, and instructors; the support services (tutoring, peer mentors, and intercultural staff advisors); ongoing interaction with the grant office to ensure compliance; committee members from the Intercultural Leadership Ambassador program (the basis upon which the grant was originally written and which provides the cohort of students from which the NSF Scholars are chosen); and faculty PI's who serve as vital links to faculty as well as resources for the committee. The presenters will offer an overview of the history of the process, from the initial grant submission through this year, the second full year of supporting students through the grant.

Assisting Students with Presentation Anxiety using Screencasting and more!

Eric Matte, Landmark College, ematte@landmark.edu

Screencasting software creates a digital recording of computer screen output which includes both visual and audio components. This software application has many uses in today's classroom for both the student to demonstrate learning and for instructors to create a more effective teaching environment. This session will discuss the purpose of screen casting and focus on its many applications for both students and teachers across all academic disciplines. Additionally, student and instructor examples will be shown, and qualitative comments from students who have used this software will be shared.

Concurrent Session Planning Grid

10:30-11:25 - Concurrent Session 1	**Room GHH 05**	**Room GHH 106 – Teaching tips**	
		Flipped Classroom Application	
	Creating Short Video Podcasts to Enhance Classroom Learning	Strategies for Assessing Creative Work in Media Production	
	Room GHH 101		
	Scientific Illustrations Improved through Visual Arts Intervention		
	Room GHH 105		
	Introduction to S.T.E.A.M		
12:20-1:10 – Keynote Workshop – Room GHH 01			
1:15-2:10 – Concurrent Session 2	**Room GHH 05**	**Room GHH 106**	
	From Paper Diamonds to Elastegrities: An Example of STEAM	Building Community around Teaching & Learning Events - What Works	
	Room GHH 101		
	The Art and Science of Collaborative Interprofessional Learning		
	Room GHH 105		
	Supporting Faculty In Transition To Online Delivery		
2:15-2:25 – Break			
2:30-3:25 – Concurrent Session 3	**Room GHH 05**	**Room GHH 106 – Teaching tips**	
	A Community Non-profit as an Interdisciplinary Learning Laboratory	Collaborative Learning Groups with Non-traditional Students	
	Room GHH 101	Integrating Think-Pair-Share with Whiteboarding	
	Implementing Problem-Based Learning in Science Courses		
	Room GHH 105		
	Learning Catalytics: Moving Beyond Clickers for Student Responses		
3:30-4:30 – Poster Sessions and Reception - Atrium			
	Educational Programs in System Dynamics at WPI	Education for Critical Thinking in a Knowledge Economy	
	Increasing Collaboration on the Doctoral Dissertation	Science: It's Elementary! A Service-learning Collaboration	Enhancing Group Working Skills by Integrating Clay and Drawing Techniques
	Assisting Students with Presentation Anxiety using Screencasting and more!		
	Engaging Campus Resources in an NSF Grant for Underrepresented Students in STEM		

10:30 – 11:25 Concurrent Session 1

Room 105

Introduction to S.T.E.A.M
Richard Biffle, Thomas College, biffler@thomas.edu

STEAM is an initiative to add Art and Design to the national agenda of *STEM* (Science, Technology, Engineering, and Math) education and research in America. *STEM* + Art = *STEAM.* The goal is to foster the true innovation that comes with combining the mind of a scientist or technologist with that of an artist or designer. *STEAM* education is the model of collaboration. The world is connected in so many ways that this allows for the collaboration to work together, and to solve problems as a model for education. Thinking skills, research, imagination, craftsmanship and innovation cross all disciplines.

Room 05

Creating Short Video Podcasts to Enhance Classroom Learning
Kevin Shea, Smith College, kshea@smith.edu

This session will highlight the use of short video podcasts to enhance student learning in introductory organic chemistry courses. I will describe how video podcasts became an integral component of my teaching and discuss my assessment of this teaching strategy through written evaluations and student focus groups. I will demonstrate the hardware and software I use to make these videos and enable participants to practice making their own videos. This strategy is an efficient method for improving student learning in challenging gateway STEM courses populated by large numbers of students.

Room 101

Scientific Illustrations Improved through Visual Arts Intervention
Lisa Delissio, Salem State University, ldelissio@salemstate.edu
Rebecca Plummer Rohloff, Salem State University, rrohloff@salemstate.edu

Scientific illustration, which represents an authentic connection between STEM and the Arts, plays an important role in university science courses. Students must truly observe their subjects and accurately illustrate those observations. We report on a study whereby students were given brief visual instruction by an arts professor in a science lab before embarking on the act of botanical illustration. We show that visual arts instruction is crucial to the rendering scientific knowledge, and results in a dramatic improvement of outcomes. Session participants will view students' plant illustrations, learn and practice drawing principles and techniques, and discuss art/science collaborations.

3:30 – 4:30 Poster Session and Reception – GHH Atrium

Use of Digital Case Studies to Promote Critical Thinking Abilities
Sheri Kiami, Northeastern University, s.kiami@neu.edu

Critical thinking (CT) is a multifaceted, complex process that is difficult to teach, learn and evaluate. Educators are tasked with developing and utilizing pedagogies that are effective in fostering these skills and need to afford students opportunities to engage in multiple methodologies, repeated practice and reflection in order to most effectively develop CT capabilities. Research supports the use of digital case studies and simulation to cultivate these skills among allied health students. Educators will have the opportunity to learn more about how this pedagogy can be used as both a teaching tool and assessment method within their courses.

Increasing Collaboration on the Doctoral Dissertation
Nadine Bonda, American International College, nbonda@comcast.net
Linda Denault, American International College, Becker College, ledenault@aol.com

Collaboration is critical for the success of doctoral candidates in completing original research and writing the dissertation. However, for students working independently rather than in programs organized in cohorts, the process often occurs in isolation. In particular, on-line and hybrid doctoral programs present the challenge of finding ways for doctoral students to share their research ideas with other students and get feedback from them. This poster session will explore a course in qualitative research that does just that. It will present a course model that is specifically geared to each person sharing, in a controlled setting, every key aspect of their dissertation planning and writing process: focus, driving questions, methodology, data collection, data analysis, and data interpretation.

Educational Programs in System Dynamics at WPI
Oleg Pavlov, Worcester Polytechnic Institute, opavlov@wpi.edu

This session will describe the design and rationale for undergraduate and graduate programs in system dynamics at Worcester Polytechnic Institute (WPI). WPI is a private technological university in Central Massachusetts that has become known as a center of excellence for system dynamics education. System dynamics is a computational modeling method that has roots in modern control engineering but is now widely used by social scientists as well as health policy and business researchers. In that sense, the field of system dynamics is a true example of cross-fertilization between engineering and social sciences. These programs have been running since 1998 with heavy reliance on distinguished adjunct faculty – an approach that clearly has its pluses and minuses.

Room 101 **Implementing Problem-Based Learning in Science Courses**

Tracie Addy, Quinnipiac University, tracie.addy@quinnipiac.edu
Linda Chicoine, Quinnipiac University, linda.chicoine@quinnipiac.edu
Michael Vieth, Quinnipiac University, michael.vieth@quinnipiac.edu

This interactive session will focus on the integration of problem-based learning (PBL) in undergraduate science courses. This teaching and learning ideology can be used to enhance student learning outcomes and engagement within science courses. During this workshop, facilitators will describe how PBL can be implemented in the classroom, guide participants in modeling a PBL lesson, and assist attendees in designing their own PBL scenario for a particular course. Additional resources will be provided to workshop participants for future reference.

Room 106 **Collaborative Learning Groups with Non-traditional Students (Teaching Tip)**

Rebecca Mirick, Salem State University, rmirick@salemstate.edu

This session will look at the use of a small group collaborative learning model in a research methods class of non-traditional social work students. The benefits of using this pedagogical approach in the classroom have been identified in the literature: enhanced critical thinking, active problem solving, increased content learning and increasing student engagement. Due to this, faculty are often encouraged to use groups in class, although preparation is often inadequate and resistance from students is common. This approach is often used to teach non-science students required science and math topics like research methods and statistics. Little has been written about the use of this pedagogical approach with non-traditional college students who have different needs from traditional students. They are often older, more diverse and have more work/life experience.

Room 106 **Integrating Think-Pair-Share with Whiteboarding (Teaching Tip)**

Jennifer Pearce, Roger Williams University, jpearce@rwu.edu

Think-Pair-Share (TPS) questions and whiteboarding in the classroom have both been shown to improve student learning. TPS questions give students an opportunity to think about a question, form an opinion, and then discuss that opinion with a neighbor. The class as a whole then discusses the question in the "share" part of the strategy. Whiteboarding is similar in that small groups of students work on a problem together, then share their solution with the class as a whole. These two strategies can be successfully integrated and utilized concurrently in the classroom. This talk will discuss that integration in an introductory physics course.

Room 106 **Flipped Classroom Application (Teaching Tip)**

Margaret Costello, Simmons College, margaret.costello@simmons.edu

The flipped classroom is a method of instruction designed to encourage active student learning. In the flipped classroom the students come prepared to work together on class projects with their peers. The idea behind the flipped classroom is that students apply knowledge that they learned in online educational instruction prior to coming to the class. This interactive workshop will provide an overview of the flipped classroom and include current literature on the effectiveness of the flipped classroom as an effective teaching strategy. The workshop will provide the participants with a concrete example of the flipped classroom as a method to engage students in an active student centered learning environment.

Room 106 **Strategies for Assessing Creative Work in Media Production (Teaching Tip)**

Mary Baker, Fitchburg State University, mbaker1@fitchburgstate.edu
Kevin McCarthy, Fitchburg State University, kmccar13@fitchburgstate.edu

In media production classes, the assessment of student learning focuses on two areas: technical proficiency and artistic quality. These two components are equally important. The process of assessing technical skills can be clearly defined. However, assessing the artistic quality of student work is often more complex. The presenters will discuss different strategies for assessing creative work used in their own media production classes and the effectiveness of these grading methods.

11:30 – 12:15 **Lunch- GHH Atrium**

12:20 – 1:10 **Keynote Workshop: "How to Generate STEAM: Authentic Integration and How It's Done"**

Tom Pilecki, Roger Williams University
Room GHH 01

This hands-on, practical workshop will help educators establish a formula for creating lessons that will assist in authentic integration of the arts into STEM and other areas of the curriculum.

1:15 – 2:10 Concurrent Session 2

Room 105 **Supporting Faculty in Transition to Online Delivery**
Tom Thibodeau, New England Institute of Technology, tthibodeau@neit.edu
Adrienne Phelps-Coco, New England Institute of Technology, aphelpscoco@neit.edu
Larry Bouthillier, New England Institute of Technology, lbouthlillier@neit.edu

Teaching in STEM or STEAM requires a greater reliance upon technology both for content and delivery method. Online education cannot be ignored as part of the process. Online education however can simply not be the result of the posting of f2f content and activities into the online environment. This session will begin to explore and practice the preparation necessary for making the transition from a f2f face into an online course through the use of group discussion, group activities and sharing.

Room 05 **From Paper Diamonds to Elastegrities: An Example of STEAM**
Eleftherios Pavlides, Roger Williams University, epavlides@rwu.edu

Thirty-five years ago I first wove a rigid paper diamond which led to folding a variety of shapes into both rigid and elastic parts. These shapes have an unusual property: when squeezed, they compress moving helically into solid structure, but when released, they spring back to their original form. The internal elastic forces maintain the shape's integrity, which led to the descriptive term "elastegrity." This presentation will discuss the course that has grown out of my years of research: *Morphology, Materials, Structure & the Architecture of Form* where my students explore the architecture of form with tactile experimentations using a range of materials. The form-making experiments help the students connect the findings to various fields of knowledge including architecture, chemistry, engineering, biology, philosophy and mathematics. Participants will have an opportunity to try their hand at paper weaving.

Room 101 **The Art and Science of Collaborative Interprofessional Learning**
Maureen Nardella, North Shore Community College, mnardell@northshore.edu
Mary Beth McKenna, North Shore Community College, mmckenna@northshore.edu
Anne Jerome, North Shore Community College, ajerome@northshore.edu
Mary M. Malone, North Shore Community College, mmalone@northshore.edu
Madelyn O'Reilly, North Shore Community College, moreilly01@northshore.edu

This session demonstrates scholarly teaching (including assessment) involving interprofessional collaboration, and models effective teaching by engaging participants in a modified approach to the collaborative learning activity experienced by nursing and occupational therapy assistant (OTA) students involving simulation. This session also exemplifies "collaborative, interdisciplinary and/or engaged learning." Participants will be afforded an opportunity to explore potential ideas for interprofessional collaboration within their own curricula, adding personal value for enhancing their own practices.

Room 106 **Building Community around Teaching & Learning Events - What Works**
Dakin Burdick, Endicott College, dburdick@endicott.edu
Tim Doherty, Rivier College, tdoherty@rivier.edu
Naomi Schoenfield, River College, nschoenfeld@rivier.edu

This session will share the analysis of a survey of 228 faculty members at small colleges who were asked how much various attributes of teaching and learning events and initiatives influenced their willingness to attend. Participants will discuss these results and how they might be used to augment attendance at sessions at their own institutions. Participants will leave with specific guidelines to improve attendance at such events.

2:15 – 2:25 Break - Atrium

2:30 – 3:25 Concurrent Session 3

Room 105 **Learning Catalytics: Moving Beyond Clickers for Student Responses**
Kevin Shea, Smith College, Kshea@smith.edu

This session will focus on the use of Learning Catalytics (LC) as a student response system in large introductory chemistry courses. This software is a dramatic improvement over traditional clicker technology and enables students to answer concept-based and graphical questions in a large lecture course. Participants will discuss the utility of student response systems and see how LC is used in general and organic chemistry courses. Participants will actively answer questions using LC then design their own questions. This tool is a novel and effective technology to enhance learning in STEM gateway courses.

Room 05 **A Community Non-profit as an Interdisciplinary Learning Laboratory**
Peter Bortolotti, Peter.Bortolotti@jwu.edu; Elizabeth A. Carey, elizabeth.carey@jwu.edu; Laura Gabiger, laura.gabiger@jwu.edu; Deana Marzocchi, deana.marzocchi@jwu.edu, all from Johnson & Wales University; Richardson Ogidan, rdogidan@cox.net; Southside Cultural Center

The executive director of the Southside Cultural Center, a non-profit arts education complex in Providence, RI, joins four faculty members from three colleges at Johnson & Wales University to lead participants in an exploration of strategies for integrating community needs into university course curriculum to provide advanced authentic collaborative, interdisciplinary inquiry-driven learning opportunities. Participants will learn how to conduct concurrent inventories of community needs and course objectives to achieve efficiency in curricular integration of approaches to community problem-solving. A resource sheet and bibliography will be provided.