



# EXCHANGE

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Volume 25 • Number 4 • Fall 2012

## “You must be the change you wish to see in the world.” ~Mahatma Gandhi

It seems that the older I get the more I realize how little I know and how few are the things I can change. I mean, I’m trying very hard to stay on top of things: reading, discussing, thinking, experimenting, but the improvements are more incremental than eventful. More “small steps than large ones”. Change is hard, very hard (most of the time). I guess that I understand this but wish that it was easier. I’m not really discouraged as I am maybe more patient and wiser now that I am older but I am very concerned. Is anyone else feeling this way too?

Maybe this would be something better discussed in a blog or other online forum but I bring it up here for good reason. We are seemingly at yet another critical point in higher education. The costs are too high, the results too disappointing and the net results are that our students are “academically adrift” (more below). The system, so says the “crowd”, is broke and we are being challenged to fix it... and change is hard, very hard.

We are, as a group, trying very hard to fix this. Faculty everywhere are changing the way they think about teaching

and concentrating more on learning; on getting students more active and engaged, on using technology (or not) to find the best way to reach our students and motivate them towards a deeper understanding of the disciplines. We are using new information on how people learn to focus our processes, strategies and tactics in the classroom and online. We are expanding the walls of our classrooms into the real world by literally and virtually bringing more project-based learning, service learning and real world activities to the students. Change is hard, very hard...but we are up to the task.

And, contrary to what the politicians say, we have been doing this for quite a while now. It often feels that we are trying to start an old lawnmower. You remember: you get it out of the garage or shed, fill it with gas and oil and start to pull on the cord. It rarely starts on the first pull. Sometimes it feels as if your shoulder is going to require physical therapy before this “thing” will ever start. But then, it starts. It runs rough at first and coughs a lot before finally settling into a steady run that will allow you to mow your lawn.

Metaphorically speaking, I think we’ve just got our old lawnmower started and we are still waiting to get that smooth combustion...the engine is warming up, we will be able to get this job done.

This November the NEFDC and the Colleges of Worcester Consortium (COWC) will hold our fall conference on Friday, November 16, 2012 at the College of the Holy Cross. Our theme is “Staying on Course through College!” and our keynote speaker is Dr. Josipa Roksa who co-authored “Academically Adrift: Limited Learning on College Campuses” (University of Chicago Press, 2011) with Richard Arum. Josipa will speak about the research behind the book and suggest ways to address two disturbing trends: loss of focus on academic rigor at many colleges and universities and declining academic performance of many undergraduates. Josipa is an Associate Professor of Sociology and Education at the University of Virginia. She is currently serving as Special Advisor to the Provost and Associate Director of the Center for Advanced Study of Teaching and Learning in Higher Education. Her keynote

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may give us another piece to the puzzle and help get closer to the answer of making a college education all that it needs to be.

This edition of The Exchange will help in that process as well. Karen St. Clair and Paul Hackett from Emerson College talk about defining academic challenge: the first step in keeping students on track. Kristine Larsen, Central Connecticut State University, ponders the age-old student question: Why are you making me do this? by discussing “buying into the 20/40 paradigm one step at a time”. Tracie M. Addy and Patricia Simmons

from Quinnipiac University investigate Enhancing Learning in STEM Fields by Hiring and Supporting Faculty and finally, James P. Gubbins from Salem State University writes about Creating a Culture of The board of the NEFDC hopes that the conference and the Exchange will combine to offer all faculty in New England a new opportunity to look at the state of higher education in the area and continue to improve its performance and value. We hope to see you at the conference and hear of a growing list of accolades from all of the improvements that you have made and will continue to make in the future.

Change is hard, very hard but it is not impossible to achieve.

**“A small group of thoughtful people could change the world. Indeed, it’s the only thing that ever has.” ~Margaret Mead**

*Tom Thibodeau  
NEFDC President*

## Colleges of Worcester Consortium Offers Certificate in College Teaching

The Colleges of Worcester Consortium offers a unique opportunity for faculty and aspiring faculty alike through its Certificate in College Teaching Program. The Certificate Program offers graduate credit courses in fully online, hybrid and face to face formats, and represents a collaborative institutional response to the ever-present challenges of promoting exemplary teaching in today’s complex higher education environments. According to Dr. Susan Wyckoff, Consortium Vice President for Academic Affairs, “Most college professors are experts in their particular disciplines, but perhaps less well trained to be effective teachers. Preparation for the college classroom involves more than a solid base of knowledge in a discipline; it requires a systematic inquiry into the pedagogies and processes that facilitate learning. Our certificate program is grounded in the latest educational research of best practices in college teaching, and is designed to enhance the teaching and learning experiences for faculty and students within higher education.”

The primary focus of the Certificate is to prepare graduate students, adjunct and full time faculty who aspire to, or who are currently engaged in a career in academia. The program is open to participants from within and beyond the Consortium’s 12 member institutions. Research has shown that graduate students with some formal preparation in college teaching have a substantial advantage in the academic job market. Once hired, the new faculty members are better prepared to assume their teaching duties, and are consequently more productive in developing their research programs. Similarly, more experienced college faculty can also benefit from such teaching certificate programs, as they may be very well prepared in their disciplines, but desire formal training in the pedagogy of teaching.

*Full program information can be found at <http://www.cowc.org/college-student-resources/certificate-college-teaching>. Dr. Wyckoff can be contacted at [swyckoff@cowc.org](mailto:swyckoff@cowc.org)*

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*A Publication of the New England Faculty Development Consortium*

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# Why are you making me do this? Buying into the 20/40 paradigm one step at a time

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One of the most important (and shocking) findings of Arum and Roksa's Academically Adrift is that despite the attention paid to developing First Year Seminars and other freshman-only courses over the past decade, students are only seeing a 0.18 standard deviation improvement in "critical thinking, complex reasoning, and writing" skills between their first and second years at our colleges (2011, p. 35). Such freshman-only courses can be costly to universities, both in terms of faculty load (as such courses are often taught in smaller sections) as well as supplementary resources (such as student support staff and funds for designated student activities). While research has demonstrated that such programs do in fact lead to higher retention and graduation rates (e.g. Barefoot, Warnock, Dickinson, Richardson, & Roberts, 1998; Schnell, Louis, & Doetkott, 2003), Arum and Roksa's research leads us to question whether or not they are as successful as they could be in improving the three skills mentioned above. Considering that these are the very skills that employers of our graduates often complain are not being effectively taught at our institutions, a new approach may be in order.

Among their other findings, Arum and Roksa note that student orientations focus on the social rather than the academic aspects of college life, and that this emphasis on the social aspect becomes ingrained in the freshman's mind as he or she becomes heavily influenced by peer interactions (2001, p. 67). This emphasis on the social dimension of college life becomes codified in the student's approach to time management, whereby students "spend far more time socializing than studying... [and] social and leisure activities appear much more important than academic pursuits" (Arum and Roksa 2011, p. 120). First Year Seminars can unwittingly perpetrate such choices through an emphasis on the social aspects of the collegiate experience, such as encouraging students to join clubs or attend on-campus events. Such courses indeed seem to fulfill their mission to increase a student's sense of being a part of the campus community, but as we develop the next generation of such courses, perhaps more attention should be paid to developing a habit of mind that will lead our students to become more critical thinkers, more proficient writers, and better able to engage in com-

plex reasoning, both in their academic careers and their future lives. To use the language of scientific revolutions, a paradigm shift is in order.

According to George Kuh (2003), a culture of "disengagement" has arisen in academia, wherein faculty assign less out-of-class work than in previous decades and students are therefore able to get good grades with relatively little effort (on either their part or on the part of their instructors in terms of grading). This is borne out in Arum and Roksa's findings that when asked about their previous semester's courses, half of the students reported that they had not taken any courses that required 20 or more pages of writing and a third had not taken any courses that mandated at least 40 pages of weekly reading (2001, p. 71). Given these results, it is not surprising that their study also found that the average student only spends a dozen hours per week studying, with more than a third spending less than 5 hours a week (2001, p. 69). Taken together, these results explain the lack of growth in our students' skills. We may be retaining and graduating students in higher numbers, but are we truly educating them?

Throughout their work, Arum and Roksa return to what I call the 20/40 Paradigm – a call for faculty to routinely assign 20 pages of writing per semester and 40 pages of readings per week. Their study suggests that both are important developing students' communication and reasoning skills (2011, p. 119). This would certainly be a change from the status quo, not only in many disciplines (for example in the sciences), but even from course to course and faculty member to faculty member. In pedagogy as well as physics, inertia is difficult to overcome, both on the side of the students and the faculty. A shift to a heavier reading and writing load (and the resulting increase in students' course preparation time and faculty members' grading time) could meet with great resistance. Students not only devote much of their out-of-class time to social events, but many work part or even full time. Faculty members are increasingly asked to devote time to assessment activities on top of their traditional teaching, research, service, and advising duties. An optimist might suggest that if faculty can document that they are teaching reading and writing intensive courses then they would be eligible for a

reduced teaching load, release time for course preparation, or the assistance of graduate students to aid in the grading. But this is 2012, and while it might not be the end of the world, it is certainly a time of scarce resources in the ivory tower. Faculty members are routinely asked to do more with less.

If I were to be so bold as to suggest that we wholesale add the 20/40 paradigm to all our classrooms, I risk being run out on a rail. So instead I ask that faculty consider taking a first step - to honestly examine how much work they assign in their classes and, more importantly, why they assign the work they do. Is it because Arum and Roksa or some other influential study suggests a certain quantity or type of assignment? Is it simply because our department or university has a policy about homework expectations or total numbers of pages read or pages written per semester? Are we motivated by a need to have a certain quantity of student "artifacts" for the next cycle of assessment, or to document high quality pedagogy for promotion and tenure? While these are all reasons for choosing a particular quality or quantity of out-of-class assignments, I am confident that we can reach a consensus that these leave out the most important reason of all - to aid our students in acquiring the content knowledge and skills relevant to our course's learning outcomes, and, equally important, to aid us in assessing that mastery.

Given the constraints on both our and our students' time, assignments must be highly leveraged; if they do not directly relate to these goals (achieving student mastery and assessing mastery), they are nothing but busy work. By taking the time to craft highly leveraged assignments, faculty achieve their pedagogical goals while at the same time maximizing the efficiency of their valuable grading time. However, at the same time we must not forget that what appears to be an obviously well-crafted assignment to us (give our privileged position as course creator and grade assigner) can still appear as busy work to our students. If we are to hold our students to high academic standards from their first semester, it is not sufficient to explain to them why general education requirements are an important part of their curriculum, or even why they are being required to do a particular quantity of reading or writing. Rather, we must meet the students where they are, at a far more concrete and utilitarian level than the average faculty member. By including a statement of relevance in each assignment, not only will students be informed as to how a particular set of work will increase their academic success, but the faculty member is given another opportunity to reflect upon course design - if the faculty member cannot explain the importance of an assignment, how can he or she expect students to buy into the nebulous argument that all assigned work is for their own academic good?

What I am suggesting here is nothing more complicated than a sentence or two, or even a short list, as part of each assignment describing how this work either fits into the learning outcomes of the course, or will prepare the students for future assignments. For example, this semester I am teaching a First Year Seminar course on the topic of the 2012 apocalypse scenarios. The first out-of-class assignment was to read a 9-page peer-reviewed article I published in 2008 concerning the importance of using words such as "theory" and "belief" correctly (Larsen 2008). The assignment asks the students to write a 400-500 word summary of the article, incorporating 2 correctly-cited quotations and a properly formatted bibliographic entry for the paper. The assignment was to be submitted using the internal email function of the course management system, Blackboard Vista. The assignment instructions concluded with the following statement of purpose: "To make sure you know how to follow assignment directions, cite properly, and use Blackboard email, as well as to prepare you for our next in-class discussion [on the nature of science]." There was additional reason for this assignment that I did not disclose to the students: it will also set them up for a question to be asked on the take-home midterm exam. I will explain this to the students when the assignment is graded and handed back. The second assignment asked students to describe an urban legend that they are interested in learning the truth about. It was explained that the purpose of this short assignment was to prepare them for in-class discussion (on pseudoscience) as well as "for the next homework assignment." That next assignment in turn asked the students to debunk the urban legends they had previously suggested, using both internet sources and their own critical thinking skills. The assignment rationale explained that the assignment allows students to demonstrate the level of their understanding of the debunking processes (as well as their ability to discern the quality of internet sources) as well as become aware of any gaps in that understanding well ahead of the midterm exam.

Through a continuous process of assignments building on each other and the course material, students will be led to a greater mastery of the required content and skills, and will demonstrate both their level of competence as well as where their individual understanding is lagging behind. In addition, by monitoring the overall level of student performance on these assignments I will gain a clearer picture of the efficacy of the course and assignment design and pedagogical methods used. Finally, since this is a First Year Seminar course, students will learn by example that assignments have relevance, and will hopefully continue to expect to be challenged by an appropriate level of out-of-class work in future classes, even if the faculty member does not take the time to explicitly motivate each individual assignment.

As with any curricular change, there is a level of additional effort up front in setting up the assignments for an entire semester before it begins. This is not to say that the faculty member cannot make adjustments as needed while the semester is in session, but it is easier to align the assignments with each other if the entire plan is mapped out ahead of time. By making sure that each and every assignment is aligned to the course learning outcomes as well as the more inclusive goal of increasing our students' critical thinking, writing, and complex reasoning skills, we will use our students' and our own time most efficiently. And if this leads us to adopt the 20/40 paradigm, then we will understand that it is because we can effectively use it in our classrooms, not merely because it is the latest in a long line of pedagogical fads.

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## Teaching and Learning Collaborative of the Colleges of the Fenway Invites Participation in Programs to Enhance College Teaching and Learning

The Colleges of the Fenway's Teaching and Learning Collaborative (TLC) focuses on supporting faculty and academic staff in its six colleges to "be the teacher you want to be." According to Founding Director, Dr. Suzanne Pasch, "All TLC programs are designed and delivered collaboratively; emphasize relationships between learning, teaching and scholarship; and result in implementation of teaching action plans. Three TLC programs are offered on an ongoing basis and we invite faculty from the NEFDC to join us as participants and contributors."

The two-day, face-to-face *Faculty Teaching Institute* integrates effective teaching strategies, meeting the needs of all learners, and thoughtful use of technology in support of learner-focused teaching. Participants across disciplines and

ranks learn together as they interact with teaching staff and mentors drawn from COF colleges. Each person leaves with an action plan and mentors to support its implementation. Exhibits at events during the academic year allow participants to share progress in putting their projects into practice.

The four-course online *Effective College Teaching Certificate Program* focuses on achieving learning outcomes whether in fully online, blended, or face to face environments. Courses reflect current research in learning, teaching and computer-mediated instruction. A Foundations course precedes three elective courses as participants complete an electronic portfolio of work across courses. Elective topics include *Course Design*; *Assessment of Learning Outcomes*;

*Building Community; and Advanced Technology Tools*.

The annual *Fall Teaching and Learning Conference* attracts faculty from the COF and beyond for a keynote address with related workshops and resource-sharing on relevant topics, e.g., *Engaged Learners and Teachers*. The TLC also provides consultative services for institutions to create collaborative faculty development programs or to evaluate efficacy of current faculty development initiatives.

*More information and registrations for current and anticipated programs are available on the TLC website at <http://www.colleges-fenway.org/TLC>. Certificate courses are offered as courses are filled. Also, you may contact Dr. Pasch at [spasch@colleges-fenway.org](mailto:spasch@colleges-fenway.org). A Davis Educational Foundation grant partially funds the TLC.*

# Defining academic challenge: the first step in keeping students on track

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Can an academically challenging curriculum ensure that students stay on track, rather than ending up adrift in higher education? The adrift allusion is to Arum's and Roksa's *Academically Adrift: Limited Learning on College Campuses* (2011), a summary of research that suggests limited learning in today's higher education institutions. Arum and Roksa offer solutions to the phenomenon. A focus on learning, through academic challenge, or rigor, is one solution.

What does it mean if an institution, or a curriculum, or a course is academically challenging? Institutions may depict their curricula as challenging, or rigorous, but those terms are undefined, or defined in contextualized ways that prevent comparisons across courses, curricula, and institutions. Exaltations that academic challenge is forthcoming do not guarantee that students will have the desired academic knowledge and skills upon completion. When academic challenge is operationally defined in a way that leads to standardized outcome measurement, institutions are better equipped to determine if challenge helps students stay on track.

How can academic challenge be defined? In response to an undercurrent of questions about the level of academic challenge at our institution, we conducted an investigation into the meaning of academic challenge. After reviewing the literature and finding contextualized, but no common definition, we developed a questionnaire to investigate common per-

ceptions about the meaning of academic challenge and to determine differences in responses between students and faculty. We made no predictions regarding what our questionnaire would reveal about the perceptions of academic challenge. For this exploratory work we focused on determining the perceptions of academic challenge in order to suggest a way to develop an operational definition. And, we suggested future research options for developing ways to measure academic challenge. We believe that once defined, academic challenge can contribute to keeping students on track throughout their careers in higher education. A full report of this work on academic challenge will be published in *The Journal on Centers for Teaching and Learning* in fall of 2012 (St.Clair & Hackett, in press)

## *Academic Challenge in the Literature*

There are few published studies that have empirically investigated the concept of academic challenge, or rigor. Each reflects the contextualized nature of academic challenge. Based on perceptions of academic challenge between on-campus and off-campus courses, Miller and Shih (1999) characterized academic challenge as demanding high achievement and challenging student to strive for excellence. Another study (Graham & Essex, 2001) conducted interviews with faculty and graduate assistants about personal definitions for academic challenge. Common elements of the definitions included critical thinking and high standards, less common elements included content coverage and student involvement. The

authors emphasized that the sample size was small and from only one institution.

The National Survey of Student Engagement (2012) (NSSE) is a prominent survey which provides higher education institutions with student reflections on their learning, including academic challenge, and on their participation in education-related programs and activities. Payne, Kleine, Purcell, and Carter (2005) interviewed faculty and students about academic challenge on their campus and about the appropriateness of the NSSE items for measuring the concept. Finding disagreement between faculty and students about what academic challenge is, and about whether or not the NSSE reflects the concept adequately, they planned to develop an instrument to monitor academic challenge at their institution. Furthermore, in 2009, Porter, Rumann, and Pontius reported that the NSSE has poor validity, and uses educational jargon that students do not necessarily understand.

These claims support our belief that it is impossible to accurately measure the level of academic challenge without a commonly accepted definition for it, and that the contextualized nature of academic challenge must be recognized. Our findings about perceptions of academic challenge are contextualized. But, they can lead to a definition that brings uniformity to the curriculum, especially when academic challenge is presumed to keep students on track academically. Definition is, however, the first step.

## Method

### Participants

In 2009 and 2010 we administered questionnaires to 138 students and 31 faculty. Students and faculty were identified as such, but no other identifying or demographic information was collected. The Institutional Review Board waived the requirement to obtain informed consent.

### Questionnaire Design and Procedure

The questionnaire consisted of an open-ended item asking participants to define academic challenge in their own words, and 10 scaled-items that asked for participants' judgments as to how likely a possible aspect of academic challenge would be included in their own definitions of the concept. The items included the number of assigned course readings, amount of time studying, and others that can be found in the academic challenge portion of the NSSE. The questionnaire was completed online and responses were sent to an electronic database that kept student responses separate from faculty responses.

## Results

### Scaled Item Analysis

Scaled-items demonstrated acceptable levels of consistency, suggesting the questionnaire measured one concept, with faculty responses being significantly more consistent than students, and more consistent than faculty and students combined. This supports the notion that academic challenge can be defined in a way that can be consistently understood by students and faculty, and in a way that shows different perceptions of its meaning for faculty and students. Differences in faculty and student responses were further investigated through Smallest Space Analysis (Canter, 1985; Guttman, 1968).

### Student results

The Smallest Space Analysis of the student sample (n = 138) revealed 2 facets: a

*process* facet and a *focus* facet. The *process* facet differentiated items in terms of three elements: input (the number of assigned course readings, pages written per course or per assignment; time studying, preparing for class, etc.); output (e.g., taking challenging examinations, exceeding perceived ability when undertaking course work); and process (analyzing or judging course material or content). Thus, the input element contained items referring to the time and effort with course preparation. The output element contained items related to the end point of a course and its assessment. The process element constituted questions focusing upon the need for the analysis and judgment of course materials. The arrangement of elements in this facet suggested that differences between items and elements were qualitative in nature.

The *focus* facet differentiated items into two elements: central and peripheral (items central or peripheral to participants' perceptions of academic challenge). The *central* element comprised a question that asked how likely time spent would be part of their definition of academic challenge. Analyses of student responses suggested that the amount of time spent studying, reading, writing, or rehearsing for class was central to their definitions of academic challenge.

### Faculty results

The faculty (n = 31) SSA revealed a facet structure with similarities and differences to students. Their *process* facet revealed the same element structure and arrangement: input, output, and process. However, there was no *focus* facet with central or peripheral elements. Therefore, it appeared that no aspects of academic challenge were defined as being more central for faculty.

### Open-ended Item Analysis

Student and faculty open-ended defini-

tions of academic challenge showed that students' responses included "something that challenges my mind," or "how challenging or difficult a course is." These responses were labeled as *challenge*.

Other definitions were labeled as *cognitive* ("learning new material" or "critical thinking"), *physical* ("stretch my capacity to understand" or "pushing students past their limits"), or *educational* ("amount of work required" or "how hard a class is"). All responses were categorized according to their correspondence to one of above four labels with the relative frequency of responses being: *challenge* (14.6% of the responses fitted into the category), *cognitive* (42%), *physical* (15.4%), *educational* (27.7%). For faculty the rates were: *challenge* (1%), *cognitive* (56%), *physical* (16.6%), *educational* (25.7%).

## Discussion

Using Smallest Space Analysis, this research was able to develop an understanding of what academic challenge means to the students and faculty in our study. In the results it was also possible to identify both similarities and differences between the students' and faculty's definitions of academic challenge. The implications of these findings are that faculty and students had similar perceptions of the different forms of learning that are typically represented by academically challenging material. For students, the length of time each academically challenging learning activity will take was important. Faculty did not differentiate academic challenging activities by using temporal referents.

Analysis of the open-ended responses showed some correspondence with Bloom's Taxonomy (Anderson & Krathwohl, 2001). Responses categorized as cognitive included terms similar to Bloom's cognitive educational goals. Examples of responses include "understanding in an academic discipline," "gather



data as part of analysis,” and “critically analyzing material.” Our findings, then, support the use of Bloom’s Taxonomy as a starting point for operationally defining academic challenge in cognitive terms. It would be prudent to take this understanding forward by including time requirements within a future definition.

Besides considering Bloom’s Taxonomy as a starting point for operationally defining academic challenge, future research should focus on developing a tool to facilitate generating an operational definition in a contextual setting. The tool would incorporate parameters, such as relevant features of Bloom’s Taxonomy or the NSSE, to guide institutions toward a definition that relies on extant literature. Eventually, as more research is conducted and the academic challenge concept is more clearly understood, institutions will be better able to address academic challenge issues and will be better able to articulate their academic claims.

Future research will undoubtedly contribute to alleviating some of the limitations of our research. Our research was exploratory; it sought to investigate how to develop an operational definition, but not necessarily establish one. Other limitations include: the research reflected the circumstances at one institution, the sample sizes were small, the faculty sample had fewer participants than the student sample, and specific characteristics of the samples were not included in

the analysis. Is it likely that fourth year students would respond differently than first year students? Does the student’s major matter? Do faculty disciplines make a difference in how they define academic challenge?

We believe that our opening question – Can an academically challenging curriculum ensure that student stay on track, rather than ending up adrift in higher education? – cannot be answered without establishing an operational definition for academic challenge. Further, we do not know what it means if an institution, or a curriculum, or a course is academically challenging because operational definitions are highly contextualized. We maintain, however, that academic challenge can be operationally defined within a given context. Furthermore, a definition can be used to facilitate alignment between students’ and faculty’s perceptions about academic challenge. Once clarification is established, discussions about how challenge will be incorporated into courses and curricula can lead to definitive statements about challenge levels. Then, and only then, can institutions be sure about how well students stay on track in academic challenging environments.

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## Using online virtual worlds to enhance students’ engagement and learning in online classes

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Finding ways to effectively engage and motivate students is a perennial quest for educators, and with the dramatic increase in online course offerings, this becomes even more challenging. More students are seeking the greater flexibility of online classes, which in turn has driven greater numbers of colleges and universities to offer them (Allen & Seaman, 2010). However, students in online courses are at an initial disadvantage compared with students in face-to-face classes. Many interactions naturally occur during in-person classes that do not in online classes, such as having lecture material presented both orally and visually, getting real-time feedback to questions and



comments, and even simply seeing and talking to instructors and classmates. Without opportunities for interaction, students in online classes are at greater risk for lower levels of engagement with course material and subsequent lower learning (Urtel, 2008). As such, instructors of online courses must go to extra effort to promote student interactions.

Instructors of online courses use a variety of methods to promote interactions between and with students, including discussion boards, journals, group projects and activities, and holding online office hours (during which the instructor is available via email or chat programs to give real-time feedback). However, some scholars still maintain that email and discussion boards never will be truly equivalent to either the experience or the learning outcomes garnered in real-time face-to-face interactions (Driscoll, Jicha, Hunt, Tichavsky, & Thompson, 2012; Summers, Waigandt, & Whittaker, 2005). Therefore, finding new creative ways to encourage interactions and learning experiences in online courses becomes pivotal to the success of the course and, consequently, of its students (Nandi, Hamilton, & Harland, 2012).

#### *Promoting Engagement through eeLearning*

One recently proposed technique for increasing student engagement and improving student performance is “eeLearning,” or combining electronic learning (eLearning) with experiential learning (Trevitte & Eskow, 2007). Broadly speaking, experiential learning revolves around moving students from a passive role in learning (receiving information from instructors) to a more active one (learning information via their own experience). Experiential learning traditionally has been the domain of in-person courses and occurred via students engaging in real-world activities (e.g., dissecting a frog to learn about anatomy, rather than just studying a picture in a book). As noted by Zull (2002, p. 145), “One of the most important and powerful aspects of experiential learning is that the images in our brains come from the experience itself.” However, such activities can be costly in terms of both time and money, sometimes prohibitively so, and some experiences are unethical or physically impossible to arrange for students. Fortunately, advances in technology and the growing popularity and complexity of video games, computer simulations, and social media now provide vast opportunities for experiential learning to occur within online or virtual realms (eeLearning), either as a more convenient substitute for a real world experience or to simulate experiences not achievable in the real world. Here, I briefly discuss a series of assignments involving the Online Virtual World Second Life™, given to students in an online course, as an example of one such eeLearning tool.

#### *Manipulating Self-Presentations in Second Life™*

The assignments described here were given to 45 students enrolled in two online sections of a general education class entitled Close Relationships Across the Lifespan. Given the small sample, this is best viewed as a pilot study, one which will be further validated and replicated in future online courses (both this specific course and other courses at the university; a second course in another department currently is in the process of developing assignments using Second Life). One topic covered in Close Relationships is attractiveness, i.e., what physical characteristics society deems attractive, and how people’s relative attractiveness influences their social interactions. Students read and heard in the online lectures about these topics and these topics are ones most people are familiar with and have some personal experience with. However, it is difficult to manipulate physical attractiveness in real world situations to allow students to experience the reactions of others to different levels of physical attractiveness. Online Virtual Worlds, however, make it possible for students to have such experiences in a virtual (and thus more controlled and less personally threatening) realm. As such, students were given a series of assignments designed to elicit experiences (and therefore learning) regarding the ways in which differences in physical attractiveness affect social interactions.

Students were asked to create an account in Second Life™, an online 3D world where tens of thousands of individuals log-on every day. Students first created three avatars (the graphical representations of self that one uses in Second Life™), the appearance of which can be extensively manipulated. Users can adjust their overall body shape and size as well as the appearance of every body part and accessory. Students first created an “attractive” avatar that matched societal definitions of attractiveness, and then modified this avatar to create a second “unattractive” avatar, where at least two prominent characteristics did not match societal definitions of attractiveness. Finally, students were asked to download a “generic” avatar from the site that was the other gender from how the student identified (e.g., male students downloaded a female avatar).

Once the three avatars were created, students next were asked to visit a designated public location within Second Life™ three different times, using a different avatar each time. With each avatar, students engaged in conversations with at least three other Second Life™ users (not classmates) for a period of at least twenty minutes. After each experience, students wrote a reflection paper regarding how they felt about presenting themselves as the avatar and how others reacted to them. Finally, students engaged in an online group discussion, describing pros and cons and any memorable experiences.



Interacting with “real” others in a virtual realm allowed students to experience for themselves the differences in social interactions that resulted from presenting to those others with different physical characteristics. A full discussion of students’ experiences and feedback is beyond the scope of this paper. However, generally speaking responses to these assignments were overwhelmingly positive and demonstrated that students did, in fact, experience a higher level of motivation and ultimately obtained a deeper understanding of the topic of attractiveness after engaging in the Second Life assignments. Generally speaking, students experienced greater confidence and more positive interactions using the attractive avatar; and more hesitation, lower self-esteem, and fewer/briefer interactions with the unattractive avatar. Interestingly, most students reported that they felt the most uncomfortable using the cross-sex avatar. They worried someone would discover who they “really” were and would wonder why they were pretending to be the other sex. In many cases, students said they learned lessons that they would carry forward with them and use outside of class (e.g., the importance of confidence during interactions). Some students experienced technical difficulties with getting the Second Life™ program to work properly (by far the most common critique of the assignment), but this is a common challenge faced when using any program and one that will be rectified or at least minimized in future iterations.

Despite the limitations of the current assignments (relating to only a single content area, technical difficulties), the use of Second Life™ as an eeLearning tool was an effective way of promoting student learning in an online course. Students reported that the assignments were “creative” and much different than their usual assignments, and as such, much more engaging, interesting, and enjoyable (not something they dreaded “having” to do). They reported that the assignments were “effective” in teaching them about the importance of physical attractiveness and gender in interactions. Many students reported being surprised at just how different their experiences were with the different avatars, despite the fact that this was what they already had “learned” should be the case via the lectures, clearly demonstrating that the use of Second Life as an eeLearning tool truly enhanced their learning outcomes above that which they had achieved through lecture materials alone. Students also were surprised by the depth of their emotional reactions to their experiences, even though they knew “it wasn’t real,” demonstrating the impact that eeLearning can have in making lasting connections and impressions on students. Students also were able to experience lessons virtually that would be impossible to replicate in the real world. These virtual experiences built upon their own previous real-life

experiences interacting with others to create new experiential knowledge, representing a truly innovative and effective use of technology in the online classroom.

The possible ways in which academic institutions can use OVWs like Second Life are limited only by the creativity of instructors. In one particularly innovative example, UC Davis created a Virtual Hallucination Island that allows nursing students to experience the world from the point of view of a person with schizophrenia; users see objects flying by, hear voices, and read “thoughts” written on the walls that might occur to a schizophrenic individual. Given the vast possibilities and the impact of even the relatively simple assignments described here, the use of Online Virtual Worlds to enhance students’ learning in online classes should be further explored.

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# Enhancing Learning in STEM Fields by Hiring and Supporting Faculty with Educational Expertise

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Colleges and universities across the nation are becoming more aware of the importance of the scholarship of teaching and learning (SoTL) in undergraduate science. A deeper reflection of what is contributing to the low performance of students within the sciences is needed as high numbers of students continue to “fall off” the science pipeline at different levels of their education. This is particularly important as scientific literacy is seen as a major political concern with regards to the global advancement of our nation. Thus, it is imperative that colleges and universities use creativity and devise holistic strategies to address this conundrum.

One factor that may counter the declining quality of learning and the lack of academic rigor in undergraduate science (Arum and Roska, 2011), is the hiring of versatile teaching faculty that have expertise both within their specialized discipline, and in educational theory and research. Many science departments who embrace SoTL have employed such faculty. Bush et al. (2006, 2008, 2011) described these science faculty as individuals with education specialties. They are full-time faculty holding diverse roles within their particular science department including, but not limited to: conducting research in science education, teaching science to undergraduate science majors or non-majors, teaching science and/or methods courses to pre-service science teachers, participating in curriculum development, and/or performing scientific research. Science Faculty with Education Specialties (SFES) may have either been hired initially because of their teaching and learning focus, or they may have become more focused on education efforts later in their careers, after pursuing a path such as scientific research.

There are several potential impacts of investing in SFES within science departments. Such faculty members are more likely to perform SoTL research within their classrooms to encourage student learning in science courses. For example, because of their training and experiences, SFES can bring their knowledge of educational research into their classrooms. The latter may entail espousing a particular science teaching methodology and conducting a study within the classroom to examine its influences on student learning. Results from their studies can be shared with the department and the university or college

community at large, as a means to encourage an atmosphere of strong science teaching. Often science courses are perceived of as quite challenging by students. Espousing a philosophy that places student learning at the focus can help create a positive dynamic between students and instructors and help students achieve a higher potential along the science pipeline to stay on course through college.

Additionally, SFES likely have knowledge of sound educational theory and the current literature to allow them to play a role in curriculum development within their departments. For example, national calls to improve science teaching and learning, such as principles described in *Vision and Change in Undergraduate Biology Education: A Call to Action* (AAAS, 2009) and *Scientific Teaching* (Handelsman et al., 2004) are a few of several initiatives known within the science education community. SFES can share this type of knowledge in the field with other faculty in their departments. Because of this knowledge and expertise, SFES can also write educational grants to support departmental science teaching initiatives. They can serve as mentors to new faculty within their respective departments. All and all, SFES can help science departments develop the high level of academic rigor in a manner consistent with theories of student learning.

Despite the potential impact of SFES on the improvement of undergraduate science teaching and learning, Bush et al. (2011) found that 40% of the 59 faculty who participated in their study were dissatisfied with, and considered leaving their current positions for probable reasons that included lack of support within the infrastructure of their department. Such SFES are in an awkward position; while they are contributing members of their respective science department, their roles and responsibilities may not be valued by their colleagues. The unique circumstance of SFES begs the larger question of the teaching culture of the department in which they are housed. Even though more weight is being given to teaching scholarship as displayed through the employment of SFES, tensions have been reported within university science departments (Serow, 2000; Seymour, 2003). Serow (2000) described the division of departments on their definitions of scholarship, with institutional rewards systems fa-

voring research scholarship over that of teaching. Policy groups such as the National Research Council (2003) have publically described the hazards of lack of emphasis on teaching scholarship within departments, one of which is ineffective undergraduate teaching.

I write this article from the perspective of an SFES currently at a remarkable institution truly invested in teaching and the learning of students, with much support for those in my position. Prior to arriving to Quinnipiac I became intrigued with SFES during doctoral research in science education and subsequently chose them as the focus of my studies. Part of my study investigated the perceived departmental teaching cultures of SFES from multiple universities and scientific disciplines (these SFES were not from my current institution). The rationale behind this study was that negative perceptions of departmental teaching culture and lack of generalized support may hinder SFES from implementing change in undergraduate science education advocated by the National Research Council (NRC, 2003). Twenty-five science faculty with education specialties from 12 United States institutions and four scientific disciplines biology [n=5], chemistry [n=12], physics [n=5], and geology [n=3] volunteered to participate in this study. Participants were full-time faculty housed within a science department and held a doctorate either in a scientific discipline or in science education. Their position titles included: lecturer, assistant professor, associate professor, full professor, distinguished professor, and associate dean. The majority were tenured or tenure-track (n =18 or 72%). The average number of years tenured was 18. Eighteen (72%) of the faculty members were male, and the remaining 7 (28%) were female. The courses they taught ranged from large introductory lectures for majors and non-majors, to upper-level courses for majors within the disciplines of biology, chemistry, physics and geology.

The participants were interviewed by phone or in-person and were asked about the culture of their department and institution with regards to teaching scholarship. The interviews were semi-structured; further probing questions were asked by the interviewer if elaboration was deemed necessary. The interviews were transcribed verbatim. The responses of the SFES were categorized according to whether or not they perceived their departments to be supportive of teaching scholarship, and major themes were extracted. A holistic approach was taken in the categorization of support. Negative perceptions of SFES concerning their department and/or institution, were categorized overall as unsupportive. All faculty members were given pseudonyms and their identities were held confidential to encourage honesty in answering questions.

Of the 25 SFES, 52% described generalized support for their efforts in teaching scholarship. The evidence for this support included: (1) the hiring of faculty focused upon education efforts such as lecturers or teaching professors, (2) respect in their departments for educational researchers as having more expertise compared to faculty lacking educational backgrounds, (3) the involvement of faculty in curriculum development, and (4) support from the departmental chair (*Figure 1*).

As an example, Dr. Ficuld was a senior non-tenure-track lecturer who held a doctorate in chemistry and taught general chemistry at a comprehensive doctoral-granting institution with very high research activity. He taught a large-sized general chemistry lecture. He made several positive comments about his department, including:

*“There are other people here, my colleagues are all great, talented....educators and do a lot of curriculum development, methodology development...educational software development and that kind of stuff... But there are quite a lot of people involved in it and the value of that is recognized.”*

Despite many faculty describing positive departmental cultures with regards to teaching scholarship, twelve of the twenty five (48%) SFES perceived limited value placed on such efforts. Four main themes categorized this lack of support including: (1) research scholarship as emphasized more heavily than teaching scholarship, (2) more focus upon monetary grant funding generated from scientific research endeavors rather than teaching, (3) division amongst the departments concerning definitions of scholarship, and (4) disinterest in improving teaching practices.

Dr. Hanna was a non-tenure track lecturer that taught large introductory biology courses. She held a doctorate in a biological science discipline.

*“I don’t feel like we’re necessarily rewarded for [teaching scholarship] in our department. [I]t’s mostly research faculty who have all been doing the same kind of teaching the way we all have been taught with lecturing, you know, a few instructors doing more, but majority are happy with status quo and the assessment within I don’t feel like it’s done in a way that we really care what the outcome for the student learning is. So, I don’t think that the teaching scholarship is emphasized well.”*

There were five cases in which two faculty from the same science department were interviewed. In two of these circumstances faculty held seemingly incongruous perceptions on support. One faculty member, Dr. Kittner, described his physics depart-

ment as being divided between research and teaching scholarship, while the other, Dr. Hampton, described his colleagues with the department as invested in teaching efforts. Notably, the faculty member with more negative perceptions was hired as a teaching professor, while the other was a tenured full-professor who transitioned into his education specialty and played a pivotal role early in his career in various education efforts for the department.

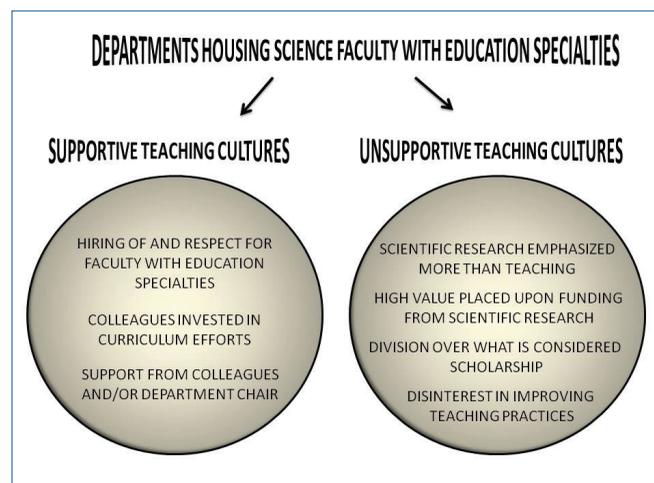


Figure 1 Perceptions of Departmental Teaching Culture of Twenty-five Science Faculty with Education Specialties from Twelve U.S. Institutions

The purpose of this study was to delineate the perceived departmental and institutional support of a cohort of 25 science faculty with education specialties with regards to teaching scholarship. Nearly half of the SFES espoused negative generalized perceptions of their department with regards to the value of teaching scholarship. While steps are being taken to improve undergraduate teaching such as hiring science faculty who focus upon education efforts, not all departments and institutions who house SFES are perceived of by their faculty as supportive of their roles and responsibilities. The results of this study are congruent with the findings of Bush et al. (2011) who found that 40% of the SFES in their study were dissatisfied with their jobs due to minimal support and high demands placed upon them in their positions. The current study includes faculty from several university systems suggesting a more widespread phenomenon than Bush et al. (2011) who focused upon faculty solely within the California State University system. Additionally, the current study includes full-time lecturers, some of which were found to hold significant responsibilities in teaching and learning within their respective departments. Bush et al. focuses upon tenure-track or tenured professors.

Limited departmental support for science faculty with education specialties is problematic as these individuals impact undergraduate education by educating the next generation of scientists as well as prospective science teachers. In addition, because of their unique interests and involvement in educational efforts, SFES are more likely to implement reform-based practices in their classrooms as described by the National Research Council (NRC, 2003). Understanding how to improve science teaching practices to promote student learning is critical, and the decisions that departments and institutions of higher education make concerning who to employ to enact such change are also important. To encourage our students to stay on track through college and achieve various learning outcomes, the quality of teaching and expertise of faculty must also be recognized and supported. We must recognize the valuable niche that individuals such as science faculty with education specialties fill within our university educational systems.

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## Conferences



*Friday, November 16, 2012*

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### **Staying on Course Through College!**

Josipa Roksa is Associate Professor of Sociology and Education at the University of Virginia. She is currently serving as Special Advisor to the Provost and Associate Director of the Center for Advanced Study of Teaching and Learning in Higher Education.

Professor Roksa is co-author of *Academically Adrift: Limited Learning on College Campuses* (University of Chicago Press, 2011). Moreover, her research has been published in a range of peer-reviewed journals, including *Social Forces*, *Sociology of Education*, *Research in Social Stratification and Mobility*, *Educational Evaluation and Policy Analysis*, *Teachers College Record*, *Review of Higher Education*, *Research in Higher Education*, and *Social Science Research*.

Professor Roksa teaches courses at the undergraduate and graduate levels in social stratification, education, research methods, and statistics. She was named a University Teaching Fellow (UTF, 2008-2009), a Mead Honored Faculty (2010-2011), and a Fellow of the National Forum on the Future of Liberal Education (2009-2012).



*Friday, June 14, 2012*

*NEFDC Spring 2013 Conference*

### **Engaged Learning: Impacts and Implications**

The New England Faculty Development Consortium holds its Spring Conference on Friday, June 14, 2013. It will be held at the Westford Conference Center, Westford, Massachusetts from 8:00 a.m. to 5:00 p.m.

Our keynote speaker, Dr. John Saltmarsh, the Co-Director of the New England Resource Center for Higher Education (NERCHE) at the University of Massachusetts, will explore what happens to students when they are engaged in learning, particularly when they are engaged as experiential learners and participate in experiences in local communities. He will also explore the implications for faculty practice to create engaged teaching and learning environments and the institutional changes needed to support engaged teaching and learning.

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