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Let me introduce myself…I'm the new president of NEFDC, having served on the board for the last five years. I'm also a professor of biology at Quinnipiac University, and have just completed my term as the founding director of the Collaborative for Excellence in Learning and Teaching. I am grateful for the strong role model provided by Tom Thibodeau, President of NEFDC for the last four years, and the executive functions skillfully executed by our clerk, Keith (KB) Barker, and our treasurer, Paul Charpentier. Thankfully, KB and Paul will continue to work in these roles, joined by Dakin Burdick in the role of Vice President, Marc Boots-Ebenfield as Chair of the website development team, and Karen St. Clair as *The Exchange* editor. We are all volunteers, and we have a great amount of fun working together! We are always open to new ideas, offers to help, and suggestions for improvement of our conferences or publications. Don't be shy if you have something to share!

On that same note, I'd like to report some of the results of our membership survey, conducted during last fall's conference at Holy Cross. We continue to attract new conference attendees, as half of those present were attending their first or second conference, while the other half had attended between 2-10 conferences in the last five years. The most important factors for influencing the decision to attend an NEFDC conference were the conference theme, joining a group of colleagues, and the location, with the date and registration price less important. In fact, having more opportunities to network with other members face-to-face was of considerable interest, and the NEFDC board members would welcome new ideas on how to make this happen. Currently, the best times to network are over the lunch break and at the end of the day during the poster presentations and wine and cheese reception. Should we schedule presentations with more time in between for networking? One conference attendee suggested having some of the session presenters prepare short videos and relevant readings in advance, so that attendees could come prepared to talk about challenges for implementing the new ideas, and share insights from their own institutions, i.e. network with each other. We welcome these and other ideas you might have for our conferences!

Two more results from our membership survey: many were interested in discipline-focused conferences and half-day pre-conference workshops. I am happy to announce that there are two conferences in the planning stages that are more discipline specific. The Spring 2014 conference, to be held on June 6th at Roger Williams University, will feature a keynote and presentations on the STEM to STEAM movement (see conference promo in this issue). Tom Pilecki, our keynote speaker, will also host a special afternoon workshop for those who pre-register. Finally, our Spring 2015 conference will be held at Endicott Col-

how collaborative learning methods such as peer instruction enhance learning, even in large lecture classes. Dr. Mazur's teaching method has developed a large following, both nationally and internationally, and has been adopted across many science and non-science disciplines. Conference presenters will share other techniques for stimulating interactivity in the classroom and assessing changes in student learning and/or faculty buy-in.

The conference theme of interactivity and assessment of learning is the focus of this issue. Assessment of student learning has always been one of the hardest tasks for individual faculty, programs and institutions. As faculty in higher education, I believe most of us have the luxury of having our performance evaluated not simply by student test scores, but also subjective evaluations by peers and students, evidence of innovations in teaching, and perhaps also scholarly endeavors and service to the institution and community. Dr. Mazur's methods employ frequent use of interactive sessions interspersed with lecture; this correlates positively with students' scores on standardized tests. This classic "pre" and "post" design isn't always possible, but as a one-time bench biochemist, I long to simplify research on learning to this level! I hope you all find examples for how to invigorate your own classrooms and document your students' learning at the fall conference.

The articles included in this issue provide examples of best practice for an interactive classroom, while discussing factors that affect students' ability to benefit from those practices. Dorothy Osterholt and Sophie Lampard Dennis of Landmark College share their interpretations and comments from students in a five-week intensive, flipped classroom employing peer instruction as the overarching methodology. Interestingly, they found exclusive use of this technique led to eventual student anxiety that diminished learning potential. The article by Genevieve Chandler presents her use of appreciative inquiry with peer interaction. Her New Knowledge Project coaches students to be innovative in their approach to solving problems. Students employ positive thinking to overcome the tendency to be discouraged by the complexity of authentic problems.

Two articles spotlight oft-neglected aspects that affect student learning. Yvonne Vissing, Michelle Solloway and Sharon Marama warn that if students are not in a "state of active, open attention on the present," i.e. state of mindfulness, they are likely to become a spectator, rather than a learner, no matter how innovative or engaging the instructor is. Another warning about classroom dynamics is provided by Randy Laist, who views student interactions through the lens of the psychological evolution of humans. The author suggests that optimizing individual motivation as well as social interactions can in fact encourage a "student-driven enterprise" in the classroom.

There is always a tremendous amount to plan when designing a course and thinking about student learning. Hopefully, you were inspired by our keynote speaker, Dr. Mazur, and acquired new ideas from colleagues at our fall conference; I hope you also find a nugget or two of helpful ideas in this issue.

NEFDC President

Peer-Instruction in your Classroom: A Balancing Act

Dorothy A. Osterholt - Associate Professor First Year Studies Department
Landmark College

Sophie Lampard Dennis - Associate Professor First Year Studies Department
Landmark College

We believe that peer-instruction in the higher education classroom, an evidence-based, interactive teaching method developed by Eric Mazur in the 1990's, supports an environment in which all students, no matter what their barriers, can participate equally. Giving students opportunities to process information in such a way that they can each bring their background knowledge to bear, as well as to be able to consider points from various angles without the teacher directing the flow of the conversation, is critical in any classroom in which one hopes students will move beyond surface learning and memorization. The research on this student-centered approach describes how it improves conceptual reasoning and problem-solving abilities (Couch & Mazur, 2001; Lasry, Mazur & Watkins, 2008; Turpen & Finkelstein, 2010). Peer-instruction, according to Turpen & Finkelstein (2010), allows students to practice making sense of questions over just answering questions, or articulating reasoning instead of providing merely the right answer. But, how much class time devoted to this teaching method is too much, and how important is it to strike the right balance among lecture, independent in-class work, and peer-instruction?

Last summer, we discovered first-hand how much is too much peer-instruction. We co-taught a five-week-long, required course for ten students who failed the course the first time, and therefore were taking it again. As we reflected about current thinking around peer-instruction, we decided to totally rework the course's content and delivery. Coincidental to the re-development of our course, *The Chronicle of Higher Education* had just published an article by staff writer Dan Berrett. It highlighted the work of Harvard University's Physics Professor Eric Mazur's model for peer-instruction. Upon further investigation, we saw in the work of Lasry, Mazur & Watkins (2008), that when peer-instruction was used in the community college setting with students who have less background knowledge, the students made notable gains in the areas of conceptual-learning and problem-solving. Because in some ways this profile mirrored the students we were working with, we decided to imbed discussion related to Berrett's article into the first week of class in an effort to support the students' understanding of peer-instruction, as well as to solicit their feedback as they experienced it over the next several weeks. To facilitate this process we assigned an in-class activity in which students paired up to work on a comment to post to *The Chronicle*.

The class met daily for two-and-one-half-hours, and because we had decided to design the course as a lab with a peer-instruction focus, our plan was to build collaborative learning groups into each day's lesson and to finish each week with a student-run symposium on that week's theme. We were excited by this opportunity to design a whole course around the principle of peer-instruction. With Berrett's article under their belts, the students had a strong understanding of our rationale to try it.

We expected that over the first few days some students would be reluctant to jump into pairs and triads because they were unfamiliar with the system. By the end of the first week most understood and accepted the concept of digging in together on course topics in small groups, and the first symposium went as well as could be expected, given that we had only worked together for five days. There was also a notable increase in their overall understanding of the material and their ability to apply it to the different contexts that we presented to them. During the second week, we asked students to increase the expectations in their groups, and a few began to rise to the occasion by exhibiting enthusiasm for working with fellow students, and thereby motivating others. Additionally, their background knowledge and shared vocabulary was improving. By the end of week two and the second symposium we were really encouraged by our summer lab!

It was towards the end of the third week that we began to notice some fatigue. Students began to vocalize about wishing they had more time to just work quietly. They seemed to be tired of the daily routine. For the third symposium on the fifteenth day of class, two of the students who had exhibited the most motivation

didn't arrive to share their research. We then began to wonder if there is such a thing as too much peer-instruction.

We reflected back to comments on the Berrett article that the students posted during week one. From their comments, we realized that some of our observations had actually been expressed by students at that time. In particular, a comment written by a pair of students highlighted a key concern: "While a class using a large amount of group work has its merits, working with others can be both difficult and anxiety provoking for some to the point of negating any benefits." As we processed issues related to our peer-instruction we determined that anxiety was at the forefront of the students' absences, and quite possibly also the source of their initial failure with this curriculum.

We began to listen directly to our students and to observe their body language. After consideration of our goals for the class, we rethought our plan for weeks four and five. We decided to create more equitable balance between students' time with others and time alone to process course concepts. Using peer-instruction had allowed us to observe students who were beginning to clearly articulate course concepts through the process of expressing their ideas with each other, and who were maturing academically. We wanted to retain these aspects of the course, and we also wanted to honor more opportunities for independent work. To that end, we reconsidered our final symposium that was scheduled for the last day and decided to replace it with a traditional final exam. By utilizing an individual assessment we were able to evaluate each student's learning outcomes. Success with our peer-instruction model was ultimately measured by student success rates in passing the class. Students had a ninety percent pass rate, with most earning a C or better.

Without sacrificing the gains of any teaching method, it is difficult, but important, to find the right balance among peer-instruction, lecture, and independent work time. We discovered how one-sided things can be when only one teaching and learning method is employed. As wonderful a technique as peer-instruction can be, we learned that there can be too much of a good thing!

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Call for Proposals for the Spring 2014 Conference

The NEFDC welcomes proposals for interactive workshops, teaching tips and poster sessions related to effective programming that reflects how we are designing pedagogy and documenting our approaches to successful learning outcomes for engaged learning.

Topics might include:

- **peer instruction**
- **collaborative, interdisciplinary and/or engaged learning**
- **learning in the disciplines as well as approaches to general education**
- **blended and online learning**
- **transfer and continuation options from high school to higher education (as well as from two-to four-year institutions)**
- **documenting student outcomes inside and outside the classroom**

Watch our website for guidelines and deadlines.

Spring Conference

June 6, 2014

"Moving from STEM to STEAM: What Really Works"

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. A follow-up workshop will be offered later in the day entitled: "How to Generate STEAM: Authentic Integration and How It's Done." This hands-on, practical workshop will help educators establish a formula for creating lesson plans that will assist in authentic integration of the arts into STEM and other areas of the curriculum.

Tom Pilecki has been an innovator in arts education since 1970. He founded a non-magnet, arts-based elementary school in the South Bronx where every child had choral and instrumental music as well as art, dance and piano. This work was featured on The Today Show, McNeil-Lehrer Report and 60 Minutes and was the subject of the Sundance Award- winning documentary "Something Within Me." In 2013, Tom co-authored From STEM to STEAM: Using Brain-Compatible Strategies to Integrate the Arts with internationally recognized author David Sousa.

While in the Bronx, Tom won numerous awards including the Readers' Digest "American Hero in Education" award. Through the years, Tom has done countless professional development workshops around the country on curriculum, school administration, classroom management, arts-integration, school law issues, and many other topics. As an active artist, Tom is the Artistic Director for "Voices of Pride" in West Palm Beach and is a consultant and trainer for Nonprofits First, in Palm Beach County. Currently, Tom is the lead coach for Nonprofits First Sustainability and Social Enterprise Institute where he assists non-profit organizations in board development and management. He is an adjunct professor at Roger Williams University in Rhode Island teaching online courses in community development through the arts.

Build Tomorrow's Problem Solvers Today: Develop Positive Deviants!

Genevieve E. Chandler - Associate Professor
School of Nursing, University of Massachusetts-Amherst

We need new ways of thinking about old problems. Recognizing strengths, learning from past success, and designing a preferred future can lead to new knowledge. For example, when teams were sent to Vietnam to address the problem of childhood malnutrition they found that certain community members knew how to solve the problem. By studying undernourished children the staff discovered that some families, living in the same conditions with the same lack of resources, had thriving, well-nourished children. These positive deviants were parents who, while working in the rice paddies, were adding tiny shrimp and greens to their babies' meals. This practice went against tradition, but it built better babies (Marsh, Schroeder, Dearden, Sternin, & Sternin, 2004). To prepare our future graduates to be active problem solvers, rather than wait to find positive deviants, we can teach students how to deviate from the usual deficit problem focus and cultivate strength-based solutions through an interactive student-centered project.

At my institution the *New Knowledge Project* is a multi-week assignment that is designed to engage students in analyzing problems using *appreciative inquiry* (Whitney & Trosten-Bloom, 2003). As a strategy for problem solving, appreciative inquiry employs a philosophical approach that is built on what works, rather than what is wrong. An assumption of appreciative inquiry is that language creates one's reality. If one's language is problem-saturated or negative, so is one's view. Thus, the language used to ask questions can influence the type of response. In other words, if one asks about problems, one receives information about problems. If one asks about strengths, one hears stories of successes. The five-step process in the New Knowledge Project is designed to create solutions based on successes. The project has been well-received in four formats: over a 14-week semester, in a two-week intensive course, through a hybrid course, and through an on-line course. What follows is a description of the five steps to building new knowledge, instructions on how to implement the steps, and a case example. Each step involves small group interactions among students, followed by a report back to all students in the class. Small group membership can be assigned in advance, or spontaneously formed. Students stay within the same group throughout the project. The New Knowledge Project can be individually based, where students have their own projects and are supported by the small group interactions. Or, the project can be small group based, where the group chooses to focus on one project. The following description is based on individually based projects that are supported by the small group interactions, and the context is the face-to-face class.

The New Knowledge Project

Step 1 Recognize Passionate Knowing. What Do We Know?

Our students have lived in the world for at least 18 years. They know what it is like to live in their families, in our society, and on this planet. It is likely that they are aware of systems problems that get in the way of a better future. The first step in the New Knowledge Project is to tap into students' knowledge and experiences by having them describe what they know in free writing. Students write for ten minutes about a problem related to the course content. They respond to a question or prompt such as, "From your experience, describe a health (or political, ethical, psychological, historical, depending on the course) issue you have noticed, but to your knowledge, is not being addressed." Examples of problems students have identified in a nursing leadership class include integrating families into critical care, improving hospital communication, lack of exercise in the elderly, and patients' poor sleep patterns.

Students share their writing in their small groups by reading their words as written. To move forward through the steps, students write responses for each step and prepare individual, final papers. (If the project is based in small groups, each group member assumes the responsibility for one of the steps.)

Step 2 Build on Evidence. What Do the Experts Say?

Following the problem identification step, students conduct a database search to find at least six resources to compare what is known to their own experiences. A matrix can help to organize the resources by including the five required elements of the

resources: the full citation, the research question or hypothesis, the method, the results, and the student's own comments. The findings of the review are then synthesized into a summary paragraph. Students address whether or not the expert-based evidence fits with their experiences with the problems, and they identify the gaps between expert knowledge and their own experiences. With this information the students work in their small groups to assess their problems using the appreciative inquiry process.

Step 3 Use Appreciative Inquiry. What Is the Miracle Question?

Appreciative inquiry encourages a new way of thinking about a problem. The process shifts the focus from recognizing that there is something not working to asking, in spite of the problem, what is working. An assumption in appreciative inquiry is that for any problem there are solutions already at work. For example, when the parents added nutritious plants and shrimp to the baby's food, the problem was solved. Using appreciative inquiry shifts the conversation from limitations to successes and how to build on strengths. Within their small groups students consider their problems, describe what is working well by looking for small moments that work now, and they identify what has worked in the past.

Next, students imagine a future without the problems. They consider the miracle question, "What if you went to sleep tonight and woke up tomorrow to find that the problem is gone?" (Whitney & Trosten-Bloom, 2003). Students free write a brief paragraph about what differences they would notice if the problems no longer existed. Their answers to the miracle question provide the basis for developing the future the students would prefer. This is when this project gets exciting and new ways of thinking begin to emerge!

Step 4 Define a Preferred Future. What Is Your Preferred Future?

Now students describe their preferred futures, and they identify potential barriers, as well as the assets to reach them. To identify assets, students help each other describe the information that is required, the skills that are necessary, and the relationships that need to be cultivated to provide support for sustaining the preferred futures.

Step 5 Construct New Knowledge. What Is a New Way of Thinking about This Problem?

Now students consider the small group feedback, and describe the new knowledge about their problems. When we focus on what works rather than what is wrong we invite a different conversation and we are more likely see different results. Using the five steps to develop new knowledge challenges students to actively engage in solving real world problems, build on strengths, and design the futures they would prefer.

A Case Example

Jen used the five steps to develop new knowledge about a problem she identified. In the first, Jen wrote about her concern that hospitalized patients do not get enough sleep. Therefore, their ability to heal and regain their health is compromised, which may delay discharge.

Next, to learn from the experts, Jen used a table to organize her review of six articles and her comparison of the evidence to her experience. In a summary of the review she wrote:

Neonatal Intensive Care Units (NICUs) and pediatric units have developed routines to encourage sleep for infants and children, but from my review this knowledge has not been transferred to adult settings. In the literature a few studies suggested environmental solutions yet, in my experience, the individual is the focus and only sleep medications are prescribed. There is a gap in what is known and my experience. From my review adult units have not tried the strategies that work for infants and children.

In the third step, using appreciative inquiry to recognize what works, Jen observed:
[S]ome units I have been on are quieter and more restful, what are they doing? [B]ut I don't think it is not just noise, why aren't people sleeping? Are they worried? Lonely? Afraid of the future? I looked into habits that supported sleep in the past such as bed time routines, calming environments, attention to worries, physical and mental relaxation. So my answer to the miracle question of what if I woke up tomorrow and the problem was gone is that if hospitalized patients could sleep better they would be well rested, heal faster and be discharged sooner.

For the fourth step, Jen defined a future she would prefer for her patients: Reflecting on my experience with sleep deprived patients, and the evidence that documents environmental solutions in NICUs' and pediatric units, I'd say my preferred future would be an environment where patients could sleep well. The barriers to my future are hospital routine, lack of time to listen to patient concerns and unit noise. The assets needed to sustain a preferred future would be to adapt NICU strategies that would work on an adult unit, provide pre-hospital information

that recommends patients bring what they need to support their bedtime routine, i.e. earplugs, eye mask and music and, as on the pediatric unit, provide a support person to address patient's night time worries.

After designing a preferred future, Jen shared her observations with her small group and used their feedback to construct new knowledge:
The small group recommended patient and staff education on patient sleep hygiene, addressing patient's concerns and staff and patients creating a sleep inducing environment. We recommended a new role, similar to the child life specialist on pediatric units, to help adult patients prepare for sleep and to investigate using NICU environmental strategies with adults.

Reflecting on her learning Jen noted that:
[I]f the usual problem solving method was used to address the lack of sleep in acute care, the team probably would have focused on the patient's deficits and recommended sleep medication. They may have looked at the unit environment, but may not have looked at units that have successfully promoted sleep hygiene.

Results of the New Knowledge Project
For the New Knowledge Project's final paper students describe their learning experiences. Two hundred responses about the New Knowledge Project were subjected to a content analysis. Students reported that they developed self-knowledge, motivation, problem solving skills, and a sense of empowerment.
By reflecting on their awareness of their strengths and weaknesses, one student wrote, "I learned about my perceptions, leadership qualities and areas of weakness." Another reported that "this experience has taught me a lot about the preconceived notions and knee jerk reactions that exist within myself and other students."

By learning an approach to making a positive impact on real life problems, students reported feeling motivated. One student wrote, "[T]his lit my fire!" Another wrote, "I've been sparked to think about thinking. This was an empowering experience that made me realize the way things are doesn't necessarily mean that's how they have to be."

By articulating their views about their chosen problems, students learned they could develop new solutions. A student commented, "[T]his assignment has helped me to think independently on a problem, think of ways I could help fix this problem and break it down into pieces that are doable."

Another wrote, "I have learned innovative new ways to look at problems and solutions and the value of having critical dialogue with others."

By engaging in appreciative inquiry, students believed they could make a difference. One student wrote, "I learned I don't have to sit and wait for others to fix healthcare. I can be an agent for change and part of the solution." Another wrote, "I have succeeded at voicing my concerns (in the past), [but] I have not taken the necessary steps to assist in the process of implementing a plan for the change."

Students reported that from the New Knowledge Project they experienced the characteristics that their future employers are looking for. Future employers want an increase in self-knowledge, motivation to actively engage in problem solving, and an understanding how to participate on a team. One limitation was that during the evidence gathering step, the students were required to find and review only six resources. Time constraints prevented requiring more. Nonetheless, across the majority of the projects, sources cited were critical studies that could lead to finding more evidence.

As faculty, we can create an exciting environment for active learning by coaching students in developing problem solving skills to address real world issues. Building on strengths by identifying current successes, recognizing past accomplishments, and designing preferred futures all pose exciting possibilities. As one student commented, "[W]e are taught to research but where are we taught how to innovate?" The New Knowledge Project is an assignment that provides students with a different approach to problem solving. It makes it possible to deviate from the usual practices and expect innovative results.

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Engaged Learning and the Art of Mindfulness in Higher Education

Yvonne Vissing - Professor and
Sharon Marrama - Independent Researcher
Salem State University

Michelle Solloway - Researcher
Greater Los Angeles VA Health Care System

For a decade we taught a semester-long course at the University of New Hampshire on alternative medicine that emphasized the relationship of mindfulness, well-being, and learning. Qualitative data obtained from 202 undergraduate students who had taken the course indicated that for twenty-five percent of them it was a life-changing course that helped them to acquire skills to focus on their education, health, and relationships in a positive manner. Benefits in academic performance, health, fitness, relationships, and decreased substance use were common themes in the students' responses. The biggest benefit cited, however, was a shift in their way of thinking. Students wrote the following about their experiences:

After taking this course I know that taking 15 minutes to center myself or meditate is not robbing myself of 15 minutes of work, but gives me the ability to give what I am doing a higher level of concentration.

This semester I learned how the different choices I make in my life affect me, from what I eat for dinner, what friends I hang out with, what I will study, how I will study, and whether I will sit down for a few minutes and focus and bring my energy back.

I have learned that I am capable of so much more if I open my mind and listen to myself.

Of all my classes, this one taught me the most.

We are convinced that students are more likely to engage in their learning in a positive manner when they are mindful. Mindfulness is a contemporary term for an age-old phenomenon (Astin, 1997). Mindfulness is a state of active, open attention on the present which enables people to observe thoughts and feelings, and to actively experience each moment of life. Students have many things to learn and do. Therefore, being focused is especially important in higher education (Brahm, 2005; Gunaratana, 2002; Hanh, 1996; Siegel, 2010). According to Gunaratana (2011), there are three basic types of mindfulness: mindfulness of what we are supposed to be doing, mindfulness to help us see things as they really are, and mindfulness that reflects the true nature of things. Sometimes mindfulness is referred to as having right mind, where people look upon reality without an emotional overlay upon them (Davids, 1881). Sometimes meditative techniques, such as focusing on one's breath, can help a person to maintain attention and refocus the mind when it starts to wander. When one becomes mindful, it can be tremendously empowering as one sees the relationship between what one is learning as it intersects with one's internal and external environments (Weiss 2004). Scientific research indicates that there are a variety of positive effects associated with mindfulness. Those effects include less stress, greater health, increased learning, greater insight, and more personal control (Barnes, et. al., 2007; Brown & Ryan, 2003; Carlson & Garland, 2005; Evans, et. al., 2007; Gordhamer, 2012; Kingston, et. al., 2007; Proulx, 2008). Mindfulness has been found to produce a host of positive benefits for students (Roberts & Danoff-Burg, 2010).

Robert Thurman (2011), Professor of Religion at Columbia University, stated that student engagement, or mindfulness, is virtually indispensable if wisdom is to become fully transformative. For a higher education institution, it is not a question of adding a desirable frill to a vast smorgasbord of offerings. It is a matter of the institution effectively fulfilling its duty to provide a liberal, liberating, and empowering education. Marga Odahowski (2011), Director of Studies for the International Residential College at the University of Virginia in Charlottesville, stated that it is the responsibility of educational leaders to plant the seeds of mindfulness and compassion throughout their work, schools, and culture. Many disciplines in higher education, such as science, medicine, psychology, religious studies, and the arts have tools that can assist in this intention because they can help the individual recognize the calmness of

mind, and with keen awareness notice stress, and shift to calm in order to make wise choices. The disciplines also contribute to the development and awareness of a spirit of community, where we understand how our behavior contributes for the benefit of the whole.

A higher education institution might define student engagement as merely participation, and shy away from the concept of mindfulness because it has been associated with a Buddhist practice. Religion and spirituality have become hot-button issues in contemporary society and potential sources of conflict. It is therefore understandable that the academy, which values scientific rigor, carefully considers the place for concepts such as mindfulness. Historically, the roots of higher education in the West can be traced back to the cathedral schools and monasteries of the 12th century. Education in Asia was seen as inseparable from religious and spiritual life. While some institutions continue to be affiliated directly, or indirectly, with particular religious organizations, public higher education has walked a more judicious secular path. But, the scientific community now substantiates a wide range of benefits by using a broader view of engagement to mean mindfulness.

Many institutions of higher education realize that mindfulness courses instill far more than academic credentials. They offer students a way to understand themselves and survive the challenges of adulthood. When students realize that the way they think influence their choices, which in turn influences their outcomes in life, they make better personal and professional decisions.

Student engagement in learning is fundamentally necessary for successful pursuit of knowledge. As higher educators we must move past perceptions that engagement in learning is merely about student participation, and more toward an understanding that desirable engagement involves students being caught up in, and empowered by their learning (University of British Columbia, 2013). Student engagement in learning is associated with the development of good habits of mind, or mindfulness. Former students in our course have gone on to become medical practitioners and policy makers. Others report improved ways of living that they attribute to the class. Recently, a student we had almost a decade ago contacted us because his father was given a terminal diagnosis and the former student wanted to be reminded on what he could do to help his family, and himself, to mindfully survive this challenging situation. He was not a student who found the course to be life-changing at the time. But, even after a graduate degree, he was still embracing what he had learned.

Websites for more information about mindfulness in higher education

The Association for Contemplative Mind in Higher Education (ACMHE)
www.acmhe.org

The Mindfulness in Education Network
www.mindfuled.org

The Mind and Life Institute
www.mindandlife.org

Mindful
www.mindful.org

The Centre for Research on Mindful Engagement (CRME)
ubc.ca/okanagan/education/research/CRME.html

The University of Massachusetts-Amherst Medical School's Center for Mindfulness in Medicine, Health Care, and Society
www.umassmed.edu/content.aspx?id=41252

The University of Virginia
faculty.virginia.edu/odahowski/moddocs/MindfulnessinHigherEd.pdf.

Bilborough College in England
rsandphilosophy.blogspot.com/2011/02/guided-mindfulness-meditation-for.html

Wheaton College
wheatoncollege.edu/education/mindfulness-students/
The college also makes available downloadable meditations soundcloud.com/meditation-for-students.

Institutions of higher education have additional options for supporting mindfulness. An institution might not provide mindfulness services, but instead give students links to organizations where they can learn about mindfulness. Some allow community groups to use campus rooms to provide informational, discussion, or experiential programs, or they might support student-led groups under the supervision of a faculty sponsor. Short-term or long-term workshops and workshop series, as well as forums are other options for campuses to promote mindfulness. Campuses can provide readings on mindfulness through orientation materials, on college websites, on health center pamphlets, or in readings that are provided

at counseling centers. Informational meetings can occur in residence halls, at health centers, or in the campus center. A speaker may present educational materials and engage students in dialogue on an aspect of mindfulness. These opportunities may focus on stress management, but can promote mindfulness, as well.

Academic courses, such as ours, provide mindfulness instruction over an extended period of time. Some colleges offer six, eight, or 15-week courses which provide detailed content and conceptualization. A study at Appalachian State University in North Carolina, found that students who participated in a 15-week course improved self-efficacy, sleep, mood, and stress was decreased (Caldwell, et. al., 2010).

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What Can Evolutionary Psychology Teach Us about Pedagogy?

Randy Laist - Associate Professor
Goodwin College

Evolutionary psychology is a way of understanding human motivation and behavior from the point of view of a genetic heritage that has been shaped over the course of millions of years. Psychological applications of evolutionary theory have had a rocky career since Darwin's *Origin of Species* was published in 1859. Accusations about the evolutionary theory ranged from it representing a blasphemous abomination, to its appropriation by conservative and fascist causes in the first half of the twentieth century, to being vilified in the latter half of that century as materialist, essentializing, and patriarchal. Since the 1970s, however, a wave of popular science authors has persuasively argued for the value of evolutionary psychology as a window into significant aspects of what it means and how it feels to be a human being. E.O. Wilson (2000), Desmond Morris (1969), Richard Dawkins (1996, 2006), Robert Wright (1994), and Matt Ridley (1993) have all written best-selling books that attempt to dispel the stigma of sociobiological approaches to

human psychology, and recent advances in genetic science, in behavioral primatology, and in computer modeling have come together to establish evolutionary psychology as a powerful source of insight into individual and group behavior.

I am a teacher, not an evolutionary psychologist, and so I have no authority to make any truth claims about how the behavior of teachers and students may or may not be related to their evolutionary heritage. Some concepts from the domain of evolutionary psychology are, however, applicable to the classroom. Among the most prominent is the concept of social status in small groups. Teacher-centered pedagogy is effective in its crude way in large part because it establishes a very simplified status hierarchy. The teacher is the alpha member and the students are consigned to an undifferentiated subordinate-level status. This is an effective arrangement for conveying information in a direct and unfiltered way. In the modern world, where electronic media are capable of transmitting data to a passive audience, however, the teacher-centered model of pedagogy has become largely obsolete.

For more than a generation, student-centered pedagogy has been touted as an alternative to the teacher-centered model. The flaw of the student-centered model, however, is in its name. Which student is at the center? Are all of them at the center? How can twenty out of twenty-one people be considered the center? And what is the role of the teacher as the twenty-first person? What can that person do from the peripheral situation she inhabits in this mirror world paradigm? Of course, many student-centered classrooms negotiate their own answers to these questions very successfully. At the same time, however, the words and spatial imagery we use to define our classroom practice have a systemic and largely invisible effect on our intellectual assumptions. Evolutionary psychology, by teaching us to imagine the classroom as a gathering of social animals, makes it easy to see that the students are not a collective geographical point that can be relocated. They are not an undifferentiated mass of numerically equivalent entities; rather, they are primates who are genetically programmed to establish complex spoken and unspoken interrelationships with one another and to position themselves advantageously in a social ecology.

Hierarchy is not a monolithic institution. Hierarchy and status may be misleading labels because they may cause us to think of the relationships signified by these labels as absolutes rather than as multifactorial negotiations. In fact, except in extreme situations such as a desperate struggle for survival among a small band of stranded primates, totalitarian political rule, or a teacher-centered classroom, a single-scale pecking order is unusual among human beings. Rather, the fabric of human relationships tends to be characterized by a complex interplay of differential hierarchies. You are good at weaving mats; I am good at building fire. We both enjoy status within the scale of our chosen specialization. Indeed, it is not unlikely that this zero-sum solution to the status problem is the reason large human aggregates of people develop codified divisions of labor. Rather than thinking of the students in a student-centered classroom as a relocated point in a geometrical diagram, it might be more productive to think of the student-centered classroom as one in which students can negotiate their own network of differential hierarchies, discovering and exploiting different social niches and working together in a way that maximizes the value of status-achieving as a basic component of human identity.

Most good teachers are concerned with treating students as individuals, supporting their self-esteem, and providing them with a sense of empowerment. The best methods for doing so, however, remain elusive as long as we have such a shadowy grasp of what an individual human being wants and needs, what causes human beings to esteem themselves or to devalue themselves, and what power or empowerment means for a social animal. Such complex questions lend themselves to many different kinds of answers. But, when we look at these questions from the perspective of evolutionary psychology, it can facilitate viewing the classroom as a contrived but passable microcosm of a tribal band, and to see issues of individuality, self-esteem, and empowerment as differently nuanced variations on the theme of relative social status. If we provisionally accept this perspective, we can visualize the social constellations of students as a non-zero-sum arrangement where differential scales of status can provide every member of the group with his or her own individualized claim to social prestige. In such a classroom, every student would have his or her own area of expertise, the coin of status in a functional academic setting. Every student would have a role to play that is specifically identified with his or her own identity as a member of the group.

Many student-centered teachers use team-based pedagogy. Evolutionary psychology can shed light on the effectiveness of small-group work, in which students can fit themselves into temporary alliances in an intimate, family-sized cluster as both a way of differentiating themselves from the less approachable

multitude of other students, as well as of achieving a specific identity as members of an intimate human unit. The common practice of assigning each member of a small group a particular area of authority (facilitator, timekeeper, and recorder, for example) invests every member of the small-group sub-tribe with his or her own specialized claim to high status in a particular sub-specialization. Such an activity dispels the anonymity that frequently characterizes the student's role in the student-centered classroom by assigning everyone, including the teacher, with his or her own esteemed function in the work of the social group.

Understanding why the small-group sub-specialization model of student learning is effective from the standpoint of evolutionary psychology helps us to recognize other pedagogical arrangements that take advantage of the same genetic incentives. The negotiation of status relies on two variables: the individual and the group. Without individuality, there is no one who can claim status, and without the group, there is no one to confer it. If our goal is to foster a group dynamic in which all students will be able to share their own claim to social importance while simultaneously conferring due acknowledgement to their peers, both the value of the individual and the solidarity of the group must be affirmed. Many educators encourage student engagement, which can equate to alertness. But, an authentically engaging classroom will provide students with something to be engaged *in*. Team-based learning and project-based learning are effective precisely to the degree that they cultivate this fusion of individual motivation to establish a unique kind of expertise with the group objective of accomplishing a collective task. A pedagogical rule of thumb in this regard would be that whenever it is logistically possible, teachers should encourage students to specialize in some particular aspect of the curriculum. It is a commonplace notion among educators that the best way to learn something is to teach it to someone else. From the perspective of evolutionary psychology, this is so because the status associated with the role of teacher in a classroom conflates mastery of the subject matter being taught with the psychological motivations that drive individuals to manipulate symbolic cues for the purpose of establishing a claim to social value. Teachers harness the pedagogical potential of this effect when they encourage students to become the class experts in their sub-field and to collaborate with their peers to discover what is unique about their own sub-field, as well as how their area of specialization relates to the sub-fields of others.

A shared curricular focus is essential to maintaining the coherence of the class as a whole. On the one hand, if a student's area of expertise is to have an existential meaning, as opposed to merely an academic one, it should be chosen by the student herself, rather than being arbitrarily assigned. The more closely students identify with their research subjects, the more likely they are to associate mastery of those subjects with their social identities and their self-understanding. Ideally, students should be encouraged to select research topics that align with their sense of their own personalities, their biographical experiences, their enduring preoccupations, or their long-term goals for self-actualization. As they consider a research topic to focus on, they should ask themselves what they are uniquely qualified to do based on who they are as people and what perspectives they can supply that nobody else could supply in quite the same way. In short, a student is asking herself to determine what makes her special. Asking a classroom of twenty students to follow their hearts could be an invitation to chaos, unless each student's specialization is integrated within a curricular agenda that allows the students to speak to each other–and hence, to share the acceptance and conferral of social status–across their areas of specialization. In a humanities class, students may specialize in different cultural perspectives from which to consider the historical eras, cultural artifacts, or literary texts that the class as a whole is discussing. In a science class, students can consider scientific problems from an array of specialized perspectives and, in the same way that professional scientists operate, work with their peers in other sub-specializations to combine their perspectives in order to generate new solutions and hypotheses. When students are able to make an individualized contribution to a common group effort, they experience the built-in hormonal and neurochemical rewards that come with demonstrating social importance in a small group.

In my undergraduate writing classes, my effort to provide each student with a unique claim to expertise informs the way I organize individual assignments, small-group work, and whole-class activities. At the beginning of the semester, students identify an area of expertise. I encourage them to pick a topic that is broadly accessible and easy to personalize. Examples include gender relations, friendship, parenthood, the overlooked moments of everyday life, etc. Students write blogs in my classes. Student blogs can facilitate the evolutionary-psychological benefit of positioning each student as a published expert in some particular domain of human

experience. I encourage my students to do what successful bloggers in the real world do, which is to develop a niche for themselves that is a unique reflection of their own individual personality. Rather than simply a dumping ground for their coursework, the blog becomes an opportunity for students to develop brand identities for themselves that both distinguish their voices and their perspectives as unique, while simultaneously situating themselves within the constellation of similar blogs maintained by other students and other writers across the globe.

In small groups, two or three bloggers collaborate on a particular style of writing that will be posted on their blogs. They have to work together to locate the points of intersection among their individual areas of expertise, thereby identifying a third sub-area of expertise to which they each contribute. Depending on the curricular objective of the unit, I expect persuasive, research-based, and narrative-based blogs. If one student who is blogging about cooking collaborates with another student whose blog is about friendship, they may work together to write blog post about how cooking together can strengthen friendships, or about how friendship can be expressed through the preparation of food, or about any other topic that brings together their two areas of expertise. If they are joined by a third blogger who writes about environmental issues, they may further refine the subject of their essay to describe how friends can cook together in an environmentally responsible manner. These kinds of collaborative writing projects fulfill the evolutionary-psychological imperative of providing each student with a specific role to play that is rooted in his or her own area of expertise, even as they mimic the collaborative conditions under which working writers regularly operate. The surprising combinations of subject matter result in creative and novel perspectives that reflect both the individual identities of the co-authors and the cooperative synthesis achieved by the group.

When we meet as a whole class, the dynamic is neither teacher-centered nor student-centered. Instead, we come together as a panel of experts and professional writers who, although we each specialize in an individual sub-field, are all equally concerned with, committed to, and experienced in the techniques and principles of effective writing. Once the students begin to think of themselves as writers and experts, the writing skills that are the content of the class become organically embedded in their personal projects of expressing their expertise as authentically as possible. In class discussions, students are able to see how the rhetorical strategies and critical moves that characterize a particular genre can be manipulated in different directions by different writers.

My thinking in evolutionary-psychological terms has encouraged me to recognize and exploit the manner in which the students' desires for self-respect and social importance provide an inherently motivating pedagogical momentum. This perspective has provoked me to design academic assignments that begin from the premise that the students on my roster constitute actors in a multi-dimensional social network. Evolutionary psychology will undoubtedly continue to contribute insights into our understanding of classroom dynamics. My reflections on the role of differential status negotiation in the classroom represent an intuitive application of some concepts from evolutionary psychology to the pedagogical situation. Conscientious educators are familiar with the pedagogical value of a thriving classroom environment, one in which every student feels that he or she has something significant to contribute, in which the instructor plays the role of facilitating a student-driven enterprise, and in which a collective purpose provides a sense of educational incentive. By provoking new ways to think about human motivation and group dynamics, evolutionary psychology can help us move toward a better understanding of why successful pedagogical practices are successful, and may suggest strategies for making them even more effective.

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Board of Directors

NEFDC EXCHANGE
Karen St.Clair
PO Box 961273
Boston, MA 02196