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Invited Essay

Making a difference: Application of SoTL to enhance learning

Kathleen McKinney¹

Abstract: In this essay, I remind readers of the importance of using SoTL work in a range of ways and settings at different levels to increase our impact on student learning as well as institutional and disciplinary cultures. I briefly discuss and illustrate six strategies already in use on which we can build.

Keywords: application strategies, enhance learning, impact

I. Introduction.

Many have noted, informally, that the scholarship of teaching and learning (SoTL) is a social movement.² This movement would be a limited, probably reform, social movement as it is primarily in one social institution –education, affecting only certain segments of the population, and has a goal to improve but not replace the current educational system. We have seen the factors that are the impetus to the movement including renewed interest in teaching and learning in higher education, new knowledge about learning and the brain, pressures for accountability, increasing diversity of our students, and the need to understand the impact of rapidly changing technology. Frustration by members is another feature of social movements, for example, frustration with teaching-learning problems and not knowing what we need to know about learning, as well as with the reward structure in institutions of higher education. Members of social movements have a shared set of beliefs including that teaching and learning are important, that we can and should teach and change institutional cultures based on evidence about our students' learning, and that a teaching commons is critical to our work (Huber & Hutchings, 2005). Mobilization of resources and power is required for a social movement to coalesce and grow. SoTL has organizations, conferences, journals, and outspoken leaders. Our outside allies include foundations, accreditation agencies, and publishers. We are beyond the emergent stage of social movements and are probably functioning at the coalescence or bureaucratization stages but have not begun to decline³ --common stages in the life cycle of social movements.

My goal in this essay is to describe and illustrate strategies to make a greater difference with, and increase the impact of, SoTL in terms of enhancing learning at multiple levels and in multiple contexts...in and beyond an individual classroom (e.g., McKinney, 2007, 2010, 2012b). We want to make a difference and have a positive impact on teaching, student learning, and institutional and disciplinary cultures. As members of this social movement, we must be active social change agents using SoTL to create change. Though others have emphasized how cultural change within an institution is needed to support and grow SoTL (e.g., Cambridge, 2004;

¹ Cross Endowed Chair in SoTL and Professor of Sociology, Illinois State University, Box 6370, Normal, IL 61790, kmckinne@ilstu.edu.

² For readers interested in social movements and collective behavior more generally, there are many available classic works including, for example, Blumer, Herbert. 1969. "Collective Behavior" in *Principles of Sociology* (R.E. Park, ed.). NY: Barnes and Noble; Smelser, Neil. 1962. *Theory of Collective Behavior*. New York. Free Press; Tilly, Charles. 1978. *From Mobilization to Revolution*. Reading, MA: Addison-Wesley.

³ Decline is not, necessarily, a negative thing as it may mean the movement has succeeded and thus the movement is no longer necessary and/or has become an established part of the mainstream institution or society.

Ginsberg and Bernstein, 2011), my main focus is on how SoTL can promote change in teaching/learning, institutions, and disciplines.

As drawn from Louis Elton (2000) and noted by others (Hutchings, Huber, & Ciccone, 2011), we need to do things better and do better things. Some of the ways we can make a difference with SoTL fit each of these two goals. I will briefly discuss and illustrate six strategies to increase our impact and make a greater difference with the scholarship of teaching and learning. These strategies include: making our SoTL work public in innovative ways and to multiple audiences; engaging in a SoTL research agenda and connecting with others doing similar work; doing SoTL that fills the gaps in the extant SoTL literature; increasing student voices in SoTL; making applications of own or others' SoTL work at classroom and broader, more 'macro' levels; and being a social change agent in various contexts for SoTL and those doing SoTL.

II. Strategies.

A. By Making our SoTL Work Public.

To state the obvious, and by definition, we should be making our SoTL work public and doing a better job at that. What might that mean? Certainly we need to make our work public for multiple audiences using multiple mechanisms. That is, it is important to share our work with academic colleagues in our institution and our discipline as well as members of tenure and promotion committees using traditional mechanisms such as presentations and publications. SoTL, however, will not have the impact we desire, and our students deserve, without also reaching out to colleagues in other disciplines, students, accreditation staff, administrators, and members of the larger community or public. We can draw on traditional tools such as conferences, journal articles, or books but must also make greater use of public/press interviews, newsletters, web representations, performances, readings, videos, and structured conversations.

Sharing, of course, has the potential for impact in many ways including offering an informative literature review to others, providing an example of the use of theory, modeling questions and methodologies that might be replicated, contributing a study that is one piece of the larger puzzle, helping to place SoTL results in context (e.g., Gibbs, 2010), helping students learn how to learn, (see McKinney, 2012b for more on students as our audience), and triggering reflection by others about their teaching and/or learning.

Student-faculty structured conversations, or more formal seminars on learning, where members of your institutional community meet to share and discuss local or other appropriate SoTL results, is one example of doing this different/better. On my campus, another example is the use of a video documentary as both the method to study perceived learning from involvement in civic engagement experiences as well as to represent this work and make it public via presentations, on line access, and live showings of the video to multiple audiences in and outside the university. At the U. S. Air Force Academy, explicit invitations are made to groups of students to attend the papers and posters presented by faculty at their annual SoTL Forum. Venturing out of our disciplinary comfort zone to present or publish in a cross-discipline SoTL journal or a multi-discipline SoTL web repository is another general example.

B. By Engaging in a SoTL Research Agenda and Connecting with Others Doing Similar Work.

There have been wonderful presentations and publications about building the commons (Huber & Hutchings, 2005; Linkon & Roxa, 2011) and using technology to access and connect our work (Bass & Eynon, 2009). In addition, the International Society for the Scholarship of Teaching and Learning, and other organizations, encourage and support collaboration on SoTL projects in a variety of ways. Yet much SoTL work still occurs in various forms of isolation: the one SoTL scholar in each department; a scholar engaging in only one SoTL project or a series of unconnected projects; some departments or disciplines in an institution active in SoTL while others have little or no SoTL tradition. This isolation limits our impact as we fail to learn from applying and building on our own and others' work via connected and collaborative studies. This isolation stunts the growth of the SoTL commons.

Thus, to a greater degree than we are currently doing, we need to synthesize our SoTL work across individual efforts or projects, and replicate or adapt the SoTL work of others to new contexts. Many of us are experienced at collaborations, synthesis, and commons building within our discipline or institution. But we must apply and adapt those experiences to the field of SoTL both by being lifelong learners willing to develop expertise in this field and by doing SoTL that crosses classroom, institutional, national, and disciplinary boundaries.

Examples of building connections with others and across our own and others' work include the Indiana University Communities of Inquiry—for example, a group of Chemists studying how to enhance student achievement or a group of cross-discipline researchers focusing on the use of visual methods to enhance learning in general education classes. I have been working on a series of connected studies over a seven-year period about perceived and actual learning by our sociology majors. There are edited books that bring together the work of diverse scholars with distinct but related projects or ideas in the field such as SoTL on learning about citizenship (Smith, Nowacek, & Bernstein, 2010) or interdisciplinary SoTL (McKinney, in press), to name only two. The Carnegie Foundation, Randy Bass at Georgetown University, and others have worked to build online repositories of SoTL work that can enhance collaboration and synthesis.

C. By Doing SoTL that Helps Fill Gaps in the SoTL Literature.

As in any field, one way to move the field forward and increase impact is to engage in projects that help to fill the gaps in the existing literature and knowledge base. I urge you to think about the gaps you see in the field of SoTL both within your discipline and across disciplines. I have noted several that I believe are evident (McKinney, 2010). These include insufficient attention to the following: co- and extra-curricular learning experiences, learning by graduate students, the explicit use of “theory” (Hutchings & Huber, 2007), the intervening processes or why/how (see McKinney, 2012b for a more detailed discussion of this gap), and the ‘big’ or common questions (cross-discipline, cross-national, and cross-institutional).

What might such efforts to fill these gaps look like? A colleague and I are conducting an exploratory study of the perceived learning outcomes of a registered student organization sport club (The Illinois State University Equestrian Club and Team). Other colleagues have conducted a longitudinal (six years!) study of the impact on graduate student learning of working with undergraduates in a service learning activity (McCluskey-Titus & Troxel, 2011). One of the groups in the last two phases of the Carnegie Academy for the Scholarship of Teaching and

Learning (CASTL) has focused on cross-institutional and cross-national work on undergraduate research. We need more studies that measure the contextual and intervening processes (the how and why) between our teaching interventions and evidence of learning such as a study by Livshin (2011) who gathered qualitative data from students to measure both their learning of concepts related to social capital as well as to obtain student beliefs about how and why their work in groups facilitated this learning.

D. By Increasing Student Voices in SoTL.

Werder and Otis (2010) offer an edited volume focusing on engaging student voices in the study of teaching and learning. In the early years of SoTL, students were our research participants --the subjects of our projects. We have moved, and continue to move, toward involving students, and benefitting from their lived expertise, as research collaborators. This may involve a range of roles (McKinney, Jarvis, Creasey, & Herrmann, 2010) from providing basic research assistance to full partnerships to students as lead or sole SoTL researchers. And, as noted earlier, student voices can be better heard when we take students seriously as a primary audience for our SoTL work.

Thus, through various mechanisms such as eligibility requirements for internal SoTL grant applications, we can encourage and support SoTL research teams that include one or more student co-researchers. Institutions such as Elon University, for example, have serious efforts to engage faculty-student collaborations on course design or redesign. We can invite students to read, synthesize, apply, and react to SoTL work in their major program via orientation courses or student disciplinary clubs.

E. By Making Applications of Own or Others' SoTL Work at the Program, Department, College, or Institutional Levels.

Though the original nature, perhaps the heart, of SoTL was disciplinary and classroom based, another way to increase impact is to move beyond the classroom level to the program, department, college, and institutional levels. There are many existing mechanisms or processes as well as partnerships we can use to apply our SoTL work at these levels. Some of these include assessment, curriculum design/reform, accreditation, strategic planning, program review, faculty development, budget requests, general education, and student affairs. We can also make a greater difference by connecting our SoTL work, when appropriate, to existing, high priority institutional initiatives.

For example, at my (and many other) institutions, we are invested --as one major institutional initiative-- in the American Democracy Project and civic engagement experiences. Thus, we have internal funds for course redesign and for internal grants for SoTL studies of such experiences. Numerous people have discussed the connections (similarities, differences, value across) between assessment and SoTL projects (e.g., Hutchings, Huber, & Ciccone, 2011; McKinney, 2006). Sullivan (2011) discusses the role of SoTL in an institution-wide change agenda at an Irish university, including in new institutional policies. A SoTL project and its role in faculty development and collaboration within a dental school curriculum is presented by Hoover and Lyon (2011).

F. As a Social Change Agent in Your Institution and Discipline.

Finally, we can --and must if we want to make a greater difference and increase our impact-- take on the role of social change agent. We can each work to push the SoTL movement forward and use it to promote positive change in a wide range of ways. The two most likely settings for such activism are your institution and your discipline. Actions you can take in your institution include, for example, supporting junior faculty and graduate students in their SoTL work, co-opting respected colleagues as allies in the movement, pushing for more SoTL resources on your campus, helping with faculty development about SoTL, sending relevant SoTL citations and results to institutional decision makers, educating those making decisions about promotions and tenure about the nature and value of SoTL work, and volunteering to help rework the reward system to increase the value given to SoTL.

Similarly, we can take actions at the disciplinary level. You can help to connect people in your discipline to the larger, cross-discipline SoTL movement by sharing information on SoTL journals and conferences, and inviting disciplinary colleagues new to SoTL to attend such conferences or co-author presentations. You can volunteer to lead a workshop or organize a session on SoTL and/or push for a plenary or keynote on SoTL at your disciplinary conference. Consider the existing structures (or needed structures) within your disciplinary society and work to make sure SoTL is important in any 'teaching-learning' subgroup or interest group. Depending on the culture of your discipline, perhaps you can help establish an award or grant for SoTL work in your disciplinary organization. Write an essay about the current status of SoTL (and key findings, suggestions for important issues to study...) in your discipline and present or publish it in a disciplinary outlet.

III. Conclusion.

As we move to do things better and do better things in SoTL --in an effort to make a greater difference and increase our impact-- we move beyond our discipline and classroom. Thus, questions about the identity of SoTL, the nature of the commons, the size of the tent, and whether SoTL 'travels' are raised (e.g., Huber, 2009; Huber, Hutchings, & Ciccone, 2011; Huber & Hutchings, 2005; Linkon & Roxa, 2011). As we move to program, institutional or cross-institutional work, how is this SoTL distinct from assessment or traditional educational research? And does that matter? When is SoTL beyond the classroom no longer SoTL? Thus, as we continue to develop as a field and as we work to make a difference, we must also continue to think about our identity, and the role or place of identity in the social movement of SoTL.

References

Bass, R., & Eynon, B. (Eds.) (2009). *New Media Technologies and the Scholarship of Teaching and Learning*. Special issue of *Academic Commons*. January. Retrieved October 27, 2011, from <http://www.academiccommons.org/issue/january-2009>.

Cambridge, B. L. (2004). *Campus Progress: Supporting the Scholarship of Teaching and Learning*. Sterling, VA: Stylus Publishing.

Elton, L. (2000). Danger of doing the wrong thing righter. *Evaluate and Improve: Teaching in the Arts and Humanities, Humanities and Arts Higher Education Network (HAN) October 1999 conference proceedings*. Milton Keynes, UK: Institute of Educational Technology, Open University.

Gibbs, G. (2010). The importance of context in understanding teaching and learning: Reflections on thirty-five Years of pedagogic research. Keynote presentation at the International Society for the Scholarship of Teaching and Learning, October, Liverpool, England.

Ginsberg, S. M., & Bernstein, J. L. (2011). Growing the scholarship of teaching and learning through institutional culture change. *Journal of the Scholarship of Teaching and Learning*, 11(1), 1-12. Retrieved October 29, 2011, from https://www.iupui.edu/~josotl/archive/vol_11/no_1/v11n1ginsberg.pdf.

Hoover, T. E., & Lyon, L. J. (2011). Collateral opportunity for increased faculty collaboration and Development through a mentored critical thinking and writing exercise in a dental school curriculum. *Journal of the Scholarship of Teaching and Learning*, 11(2), 52-63. Retrieved October 29, 2011, from https://www.iupui.edu/~josotl/archive/vol_11/no_2/v11n2hoover.pdf.

Huber, M. T. (2009). Teaching travels: Reflections on the social life of classroom inquiry and innovation. *International Journal for the Scholarship of Teaching and Learning* 3(2). Retrieved December 12, 2010, from <http://www.georgiasouthern.edu.ijstol>.

Huber, M. T., & Hutchings, P. (2005). *The Advancement of Learning: Building the Teaching Commons*. San Francisco: Jossey-Bass.

Hutchings, P., & Huber, M. T. (2007). Placing theory in the scholarship of teaching and learning. Featured Session at International Society for the Scholarship of Teaching and Learning, July, Sydney.

Hutchings, P., Huber, M. T., & T. Ciccone, T. (2011). *The Scholarship of Teaching and Learning Reconsidered: Institutional Integration and Impact*. San Francisco: Jossey-Bass.

Linkon, S., & Roxa, T. (2011). Theorizing the teaching commons. Plenary at the International Society for the Scholarship of Teaching and Learning, October, Milwaukee, Wisconsin.

Livshin, A. (2011). Learning about social capital in a nonprofit and philanthropy management class. *International Journal for the Scholarship of Teaching and Learning*, 5(2). Retrieved October 27, 2011, from <http://academics.georgiasouthern.edu/ijstol/v5n2/articles/PDFs/Livshin.pdf>.

McKinney, K. (Ed.). (in press). *The Scholarship of Teaching and Learning in and across the Disciplines*. Bloomington, IN: Indiana University Press.

McKinney, K.

McKinney, K. (2012). Increasing the impact of SoTL: Two sometimes neglected opportunities. *International Journal of the Scholarship of Teaching and Learning*, 6(1). Retrieved March 15, 2012, from http://academics.georgiasouthern.edu/ijsofl/v6n1/invited_essays/PDFs/IE_McKinney.pdf.

McKinney, K. (2010). Making a difference: Application of SoTL beyond the classroom to enhance learning. Invited Keynote Presentation. International SoTL Commons Conference, March, Statesboro, GA.

McKinney, K. (2007). *Enhancing Learning through the Scholarship of Teaching and Learning: The Challenges and Joys of Juggling*. San Francisco: Jossey-Bass.

McKinney, K. (2006). Attitudinal and structural factors contributing to challenges in the work of the scholarship of teaching and learning. In J.M. Braxton (Ed.). *Analyzing Faculty Work and Rewards: Using Boyer's Four Domains of Scholarship- New Directions in Institutional Research*, #129, pp.37-50. San Francisco: Jossey Bass.

McKinney, K., Jarvis, P., Creasey, G., & Herrmann, D. (2010). A range of student voices in the scholarship of teaching and learning." In C. Werder and M. Otis (Eds.) *Engaging Student Voices in the Study of Teaching and Learning*. Sterling, VA: Stylus.

Smith, M. B., Nowacek, R. S., & Bernstein, J. L. (Eds.). (2010). *Citizenship Across the Curriculum*. Bloomington, IN: Indiana University Press.

Sullivan, S. (2011). A stimulus for change: The impact of SoTL work at university college Dublin. Paper presentation at International Society for the Scholarship of Teaching and Learning, October, Milwaukee, Wisconsin.

Troxel, W., & McCluskey-Titus, P. (2011). Transforming learning: A longitudinal examination of a collaborative service project involving graduate and undergraduate students. Poster presentation at International Society for the Scholarship of Teaching and Learning, October, Milwaukee, Wisconsin.

Werder, C., & Otis, M. (Eds.) (2010). *Engaging Student Voices in the Study of Teaching and Learning*. Sterling, VA: Stylus.

Graduate student development through the Scholarship of Teaching and Learning

Laura N. Schram¹ and Michelle G. Allendoerfer²

Abstract: The scholarship of teaching and learning (SoTL) can be a valuable tool in preparing graduate students as future faculty. Yet, graduate students are often warned that the academic job market does not value SoTL research. We present results of a survey of current and former graduate students who conducted SoTL research. Respondents overwhelmingly perceived positive reactions to their SoTL work while on the academic job market, and reported that SoTL played an important role in their professional development. These findings have important implications for those who seek to encourage graduate student involvement in the scholarship of teaching and learning.

Keywords: graduate student development, academic job market

Since Boyer's (1990) seminal book on the work of the professoriate, in which he coined the term the scholarship of teaching, there is a growing interest in the scholarship of teaching and learning (SoTL) in higher education. Broadly defined, SoTL sees "the work of the classroom as a site for inquiry, asking and answering questions about students' learning in ways that can improve one's own classroom and also advance the larger profession of teaching" (Huber & Hutchings, 2005, p. 1). SoTL is teaching-as-research that aims to improve student learning, and with respect to graduate students, SoTL arguably broadens research and scholarly teaching training and prepares them as future faculty (McKinney, 2007, p. 14). Lee Shulman argues that, "institutions of higher education must make sure that novice colleagues learn content knowledge, pedagogical content knowledge, and how to document evidence that learning happens" (Chick, 2006, p. 7). As a tool for preparing future faculty, SoTL has the potential to concurrently train graduate students to be reflective teachers, gain research experience, and integrate their teaching and research skills. In this paper, we explore SoTL's reported impact on graduate students' professional development and academic job searches.

At the same time that the SoTL movement has grown, what it means to be a future faculty member has changed. Tenure-track academic jobs at research universities are becoming harder for recent Ph.D.'s to find. Cross and Goldenberg's (2009) research on hiring at elite research universities over the past decade shows that tenure-track job numbers at these institutions are flat or falling, while non-tenure track faculty numbers are increasing. In addition, Finkelstein (2006) finds that several new models for academic careers have emerged over the last decade, including non-tenure track faculty careers, part-time faculty careers, and faculty careers with more specialized roles, "i.e., teaching OR research OR administration" (pp. 202-203). Training for graduate students has not caught up with these trends. Top research universities continue to train doctoral students, particularly in the arts and sciences, for traditional academic careers, and faculty mentors measure the success of their graduate programs by their mentees'

¹ Center for Research on Learning and Teaching, University of Michigan, 1071 Palmer Commons, 100 Washtenaw Avenue, Ann Arbor, MI 48109-2218, lnschram@umich.edu

² Women's Leadership Program, George Washington University, 2100 Foxhall Rd, NW, Washington, DC 20007, mallendo@gwu.edu

placement in prestigious institutions (Cross & Goldenberg, 2009). Despite changes in the academic career and the increasingly tight job market, Nettles and Millet (2006) report that the majority of graduate students in the arts and sciences – 73% in the humanities, 59% in math and sciences, and 55% in social sciences – plan to seek postdoctoral or academic appointments. Given that the diversification of academic careers is in tension with the expectations of faculty mentors and their graduate student protégés, we should critically explore what skills SoTL develops for future faculty and its potential as a professional development tool.

While it is extremely important to prepare graduate students with teaching and research experience for traditional tenure-track faculty careers, it is unclear whether advanced scholarly teaching training, such as SoTL, is an asset for academic job search candidates, particularly given the shifting trends in academic careers. Several empirical studies of job advertisements and search committees suggest that while teaching effectiveness and research experience are important keys to success on the academic job market, SoTL does not appear to be on the radar of search committees as a consistent criterion for evaluating a candidate's teaching or research abilities. In their study of academic job postings in the United States and Canada in 2002, Schönwetter, Taylor, and Ellis (2006) found that over 60% of job advertisements for positions in the United States requested some information on teaching experience, and requests for research experience were made by 17% of American job ads. However, though SoTL work could be a reflection of both teaching credibility and research proficiency, no job advertisements specifically called for SoTL experience (D. Schönwetter, personal communication, October 7, 2010). Similarly, Meizlish and Kaplan (2008) examined job advertisements and surveyed job search committee chairs during the 2004-2005 academic year, and found that teaching ability is crucial to the hiring process; 91.5% of job search committee respondents ranked teaching ability as important or very important to the academic hiring process (p. 495). However, in open-ended responses, job search committees never mentioned SoTL as a tool to evaluate teaching effectiveness (D. Meizlish, personal communication, September 30, 2010). In his study of academic hiring in the STEM fields, Hernandez (2007) found that department chairs placed different value on job candidates' participation in formal teacher preparation programs (such as university teaching certificate programs for graduate students, which sometimes require SoTL) depending on their disciplinary and institutional context. The NSF-funded "Longitudinal Study of Future STEM Faculty" (<http://lsff.wceruw.org/>) at the University of Wisconsin-Madison is currently exploring how participation in teaching-focused professional development activities affects STEM doctoral students' careers, but the findings of this study are still forthcoming.

Several studies discuss the potential role of SoTL experience during graduate school in developing future faculty and their career goals. Sublett, Walsh, McKinney, and Faigao (2010) found that students who were involved in the Illinois State University SoTL grant program reported that their experience with SoTL during graduate school led them to consider a teaching career, and that they became better researchers as a result. Given that SoTL integrates research and teaching, it is unclear whether these graduate students saw their participation in SoTL projects as professional development more broadly beyond teaching. Huber's (2001, 2004) research on the career paths of four SoTL scholars suggests that graduate school was a formative period for scholars' intellectual interest in research on teaching and learning. Pescosolido et al. (2004) argue that because SoTL has the potential to develop the skills necessary for "complete scholars" who are excellent at teaching, instructional scholarship, public service and research, there may be no other vehicle to better fulfill the goals of doctoral training than SoTL (p. 156).

McKinney, Jarvis, Creasey, and Herrmann (2010) encourage faculty to involve students in SoTL, but in their informative discussion of the ethical concerns of involving students in SoTL, they do not address the potential opportunity costs of or career ramifications for graduate student engagement in this type of scholarship. Despite assertions about SoTL's potential for graduate student development, as Pescosolido et al. (2004) report, many graduate students' faculty mentors worry that spending time on new forms of scholarship, such as SoTL, takes time away from what they perceive to be more important graduate student development experiences, such as dissertation and disciplinary research. Austin (2002) found in her study of graduate student socialization that graduate student development emphasizes the importance of traditional disciplinary research over other forms of scholarship, such as those related to teaching or service. In his study on participation in formal teacher preparation programs by STEM academic job candidates, Hernandez (2007) found that department chairs at some institution types (e.g., research universities) and disciplines placed little value on formal teaching qualifications compared to less formal teaching experiences, research credentials or postdoctoral experience. In her study of faculty who conduct SoTL work, Huber (2001) found that faculty colleagues warned junior faculty that working on SoTL rather than traditional disciplinary research "wouldn't serve the goal of getting promoted" (p. 27).

Given these studies discussed above suggest job search committees do not appear to be seeking candidates with SoTL experience and that scholars may not be rewarded for pursuing non-traditional scholarship, faculty mentors may be correct to caution their graduate students about spending their resources of time and talents during graduate school on SoTL. Due to the lack of research on the empirical questions of whether SoTL is a successful tool for graduate student professional development and whether SoTL is valued on the academic job market, we explore the following questions in this paper. Broadly speaking, what do candidates for academic positions feel is the impact of SoTL experience on their job market success and professional development? More specifically, first, how is SoTL reportedly received on the academic job market? Second, to explain this perceived impact, how do graduate students perceive that SoTL affects their professional development, including progress in graduate school, publication experience, collaborative research experience, experience receiving research grants, and conference presentations?

I. Methods.

While the research highlighted in the previous section suggests that job search committees do not explicitly seek out candidates with SoTL experience (Meizlish & Kaplan, 2008; Schönwetter et al., 2006), this is not to say that a candidate's SoTL involvement is irrelevant to job market success and graduate student development. Here, we explore the perceived role that SoTL played in the professional development of graduate students and in their academic job searches by surveying those who conducted SoTL during their graduate student careers. In this section, we will discuss the recruitment of respondents and the survey instrument.

The population of potential respondents was people who conducted SoTL research as graduate students. We used a snowball sampling technique to identify this sample. We reached out to a variety of email group-lists to identify respondents who took part in SoTL research as graduate students. The email group-lists were national – the ISSOTL and POD listservs and the CIRTL Cafe website – and institution-specific, including recipients of the Investigating Student Learning grants at University of Michigan, the Graduate Teaching Consultants at University of

Michigan, and the graduate teaching certificate program participants at Vanderbilt University (SoTL is a requirement of the certificate program). We asked respondents to forward the survey to other colleagues who also conducted SoTL research as graduate students, and directly contacted our own colleagues who we knew had conducted SoTL during graduate school. Through this technique of snowball sampling, we hoped to reach a wider range of respondents than our original group-lists. The survey was launched in April 2009, and the data presented here reflect 97 responses that we gathered from April-October 2009. Two respondents reported that they did graduate study in Canada, and the rest of respondents did graduate work in the United States. Qualitative responses were also solicited, and illustrative quotes are presented.

Since there is not a readily identifiable population of graduate students who do SoTL from which we could draw for a pure, externally valid random sample, our targeted snowball survey design was appropriate for exploring our research question. We acknowledge the weaknesses in this approach. In particular, our results do not explain why some graduate students do not pursue SoTL work. If some students were discouraged from conducting SoTL work by faculty advisors, we might expect such students to have a less positive view of SoTL as a vehicle for graduate student development. Since we surveyed only those who did conduct SoTL work as graduate students, these students may be the population most predisposed to having favorable perceptions of the role of SoTL work in graduate student development and the academic job search. Despite these weaknesses, the results of this exploratory survey provide a useful snapshot of the perceived role that SoTL work plays in graduate student development and the academic job search. This research design allows us to learn from the cases of graduate students who had successfully incorporated SoTL into their graduate training. Huber's (2001, 2004) work on designing faculty careers around SoTL is a useful comparison here. Huber (2001) takes lessons from faculty who successfully balanced SoTL work in their faculty careers, and argues that these "encouraging stories may prove even more useful than cautionary tales to those who undertake such work themselves or advise others who want to make new kinds of scholarship a significant part of their academic careers" (p. 22).

Our survey asked a variety of questions to capture the respondents' experiences with SoTL conducted during their graduate school careers and their experiences on the job market. In particular, we were interested in how respondents felt their experiences with SoTL impacted their professional development and job search. The full survey instrument is available at <http://www-personal.umich.edu/~linschram/Site/Teaching_Materials_files/SoTL_survey.pdf>. We asked a variety of demographic questions including: area of graduate study, subject of SoTL work, and current position (e.g., graduate student or faculty). Since we are interested in how SoTL impacts graduate student development, we asked a variety of questions related to professional development, including whether the respondents perceived that SoTL affected time-to-degree, faculty SoTL research collaboration, grants received for SoTL work, and whether a publication or conference presentation resulted from the work. Many of our survey questions focused on the respondents' job searches, if applicable. We asked if respondents presented their SoTL research in application materials and in interviews. Among the respondents who presented their SoTL work as part of their applications and in interviews, we solicited their perceptions of how the interviewers reacted to their SoTL project and whether their SoTL project was helpful in their academic job searches.

II. Results: Perceived Impact on Academic Job Market Experience.

This section presents and analyzes our survey results as they pertain to the perceived impact of SoTL on the academic job market experience, in both quantitative and qualitative forms. We had 97 respondents from a variety of disciplines (Table 1), with education and the social sciences each representing approximately one-third of respondents.

Table 1. Field of Study of Survey Respondents (97 respondents).

	Percent of Respondents
Social Sciences	30%
Education	29%
STEM	24%
Humanities	9%
Total Respondents	97

We explored whether responses on other measures might differ by discipline, and did not find any differences by disciplinary background. However, because our sample is so small and overrepresented by two disciplines, we cannot make conclusions about the importance of disciplinary context.

Of our 97 respondents, nearly half (45) took part or were in the midst of taking part in a faculty job search. Unfortunately, we did not track what types of faculty jobs respondents were seeking, so we are unable to explore whether respondents seeking different types of academic jobs had different experiences. This would be an important question to include in future work. We do know that of those with faculty positions, 64% respondents (39 of 61) were teaching at research institutions (Figure 1).

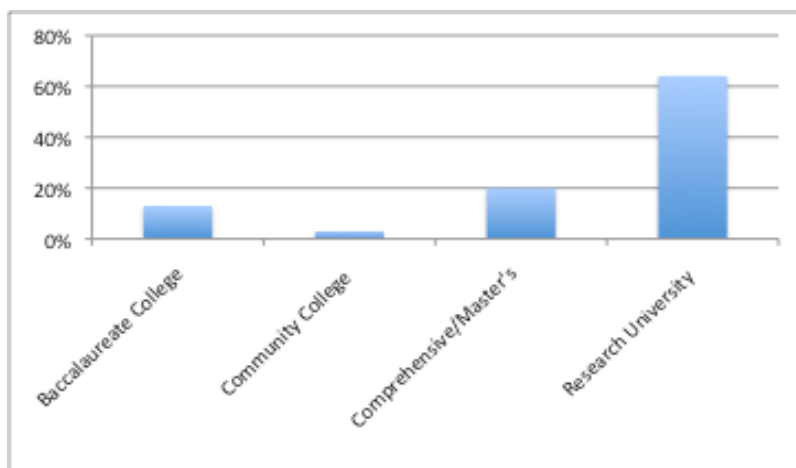


Figure 1. Type of Institution Where Respondent Teaches (N = 61 respondents).

Because past research suggests job search committees do not ask for evidence of SoTL work as part of academic job applications or in interviews, we wanted to examine how applicants framed their SoTL work as part of their job application materials. Respondents provided

information about their SoTL work in their job packets (see Table 2). The vast majority of respondents included their SoTL work on their Curricula Vitae. For some respondents, their SoTL project led to a publication that was listed on their C.V. Nearly half of respondents included their SoTL work in their cover letter, highlighting the work. Many also discussed their SoTL research in their teaching philosophies.

Table 2. How Respondent Presented SoTL Project in Job Applications (N = 45 respondents).

	Percent of Respondents
Curriculum Vitae	80%
Cover Letter	49%
Teaching Philosophy	58%

Note. Respondents could select more than one response option.

Nearly half of respondents (47%) indicated that they were questioned about their SoTL project during interviews, while many others (44%) brought it up themselves (Table 3). Only 16% (7 of 45) of the respondents who went on the academic job market did not discuss their SoTL work in their interviews. This finding is striking because, although past research found no mention of SoTL in job postings or by search committees, our respondents indicated that many job search committees did question an applicant about SoTL work that appeared in his or her job application materials. This suggests that SoTL work may be one way that search committees evaluated candidates' teaching and/or classroom research effectiveness.

Table 3. Discussion of SoTL in Academic Job Interviews (45 respondents).

	Percent of Respondents
I was questioned	47%
I brought it up	44%
Did not discuss at all	16%

Note. Respondents could select more than one response option.

We were interested in how respondents perceived that interviewers reacted to their SoTL work in academic job interviews. Therefore, we asked: "If you did discuss your project during interviews, which of the following best characterizes the reaction you perceive that you received about the project during the interviews?" Figure 2 shows the responses to this question. Overwhelmingly, respondents perceived positive reactions to their SoTL work. Of the respondents that are currently teaching at baccalaureate institution – i.e. schools with more of a focus on teaching – only one of seven respondents (14%) reported a neutral reaction, and all others reported a positive reaction (one respondent did not answer the question). Among the respondents teaching at master's institutions, 64% (7 of 11) of respondents reported positive reactions. Finally, those respondents that are at research universities reported the lowest perceptions of positive reactions (39% or 12 of 31), while many of these respondents indicated "other" reactions. Unfortunately, most respondents did not expand to describe these reactions, so we do not know the nature of these responses. We must be careful to draw any broad generalizations about this institutional breakdown due to our small sample size. With that caveat,

however, it is interesting to note that respondents who ended up taking jobs at baccalaureate and master's institutions did report more perceived favorable reactions to their SoTL work. This raises the question of whether different institutions do, in fact, value SoTL work differently.

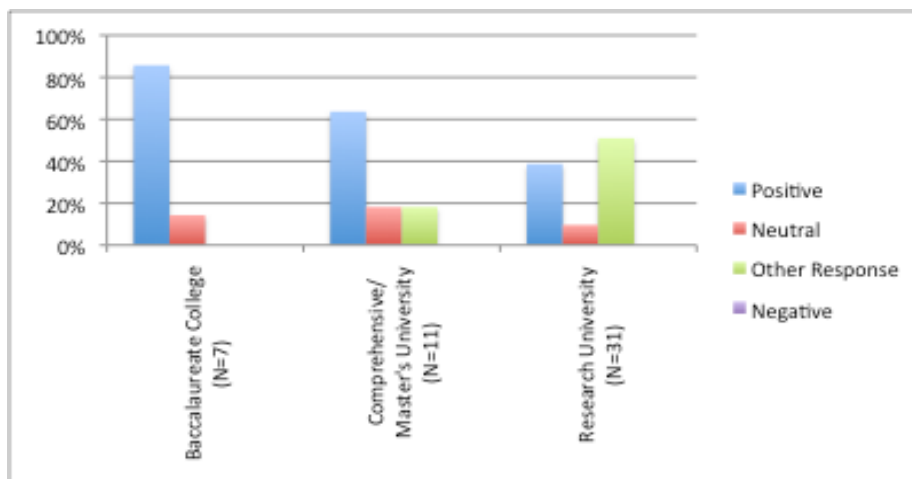


Figure 2. Reaction to SoTL Project During Academic Job Interview.

Note. Other Response includes: “Don’t Know,” “Too Early to say,” and “N/A”; Respondents teaching at community colleges are not included because the only two responses were “Don’t Know” and “N/A”.

Although, no one who responded to this survey item indicated a negative perceived reaction to their SoTL work in their interview. However, we did give respondents the option to elaborate in qualitative responses, and one respondent who selected “other” in response to the close-ended question reported a perceived negative reaction at one institution. This respondent articulated negative reactions at one institution, and positive reactions at another:

“It was sneered at by an interviewer from a well-known research institution. It was positively received by interviewers from a less-well-known research institution (where I accepted a job).”

We also asked, “To what degree would you agree with this statement: My scholarship of teaching and learning project was helpful in my academic job search?” Very few respondents felt that their SoTL work as graduate students hurt their academic job search (Figure 3). On the contrary, the majority of respondents (nearly 70%) agreed or strongly agreed that their SoTL project was helpful in their academic job search. The qualitative responses we received on the survey illustrate why SoTL was a positive experience for the job market:

“There is absolutely no downside to SoTL research. It has completely changed the way I think about myself as an academic and the future career goals I have set for myself.”

“The project prepared me to speak intelligently about teaching and learning as a discipline during my interview. It was also a major component of my teaching portfolio.”

“It was helpful in that I realized I did not want to work at a place that devalued

that type of research. It was also helpful in making me confident in my ultimate choice of where to work - where my teaching experience and interest was viewed as a plus, not a minus."

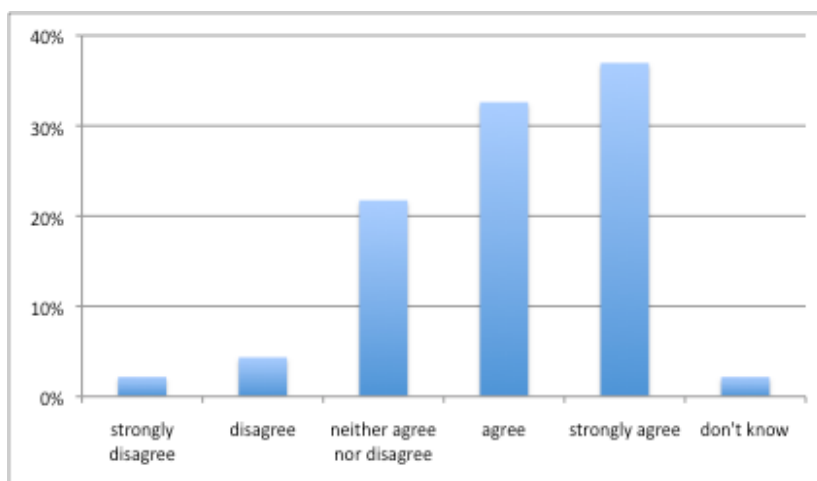


Figure 3. Overall Perception of Whether SoTL Project Was Helpful in Academic Job Search (N = 46 respondents).

While the majority felt graduate student involvement in SoTL projects positively impacted the job market experience, this result was not unanimous; there were three respondents (7%) who disagreed that SoTL was helpful in their academic job search. Respondents used the open-ended response option to articulate why their SoTL work was not helpful:

"Some faculty members stated outright that the project would be of little practical use in my career advancement."

"The project seemed like busywork to get the certificate - it was perhaps the least valuable part of the experience."

These comments suggest that SoTL experience is less productive for graduate students when its perceived value as a requirement for a teaching certificate is low, or when graduate student mentors are unsupportive of the work.

Given that the majority of respondents perceived that SoTL experience was seen positively by interviewers and had a positive impact on their academic job search, how can we understand the nature of that impact? In the next section, we turn to the graduate student development experience to illustrate how SoTL can lead to publication, conference presentation, grant opportunities, and research collaborations, which all play a role in job market success.

III. Results: How SoTL Prepares Graduate Students for the Academic Job Market.

In this section, we explore how SoTL reportedly affected professional development experiences that prepare students for future faculty positions. SoTL projects are one avenue for graduate students to experience research collaboration, and SoTL collaborations provide opportunities for students to work with faculty mentors and colleagues who are scholarly teachers. We asked respondents whether their faculty advisors were supportive, ambivalent or unsupportive of their

SoTL projects. Sixty-six percent of respondents (63 of 95) said their advisor was either somewhat or very supportive, while only 6% (6 of 95) reported that their advisor was either somewhat or very unsupportive. Many of our respondents worked with at least one collaborator on their SoTL projects (Figure 4). Only about a third conducted their SoTL project on their own.

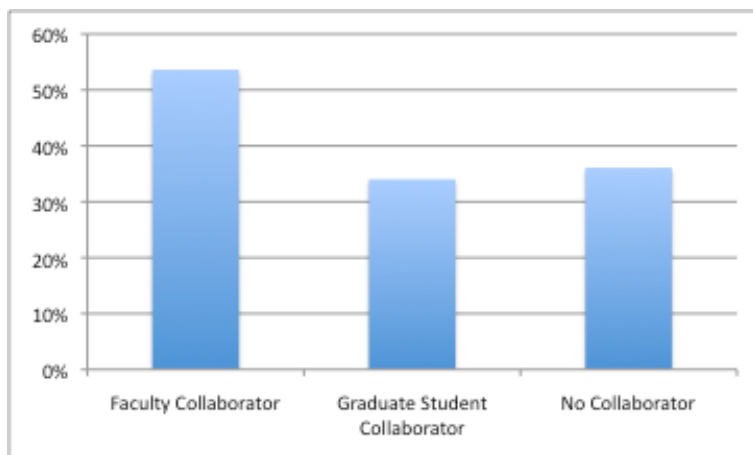


Figure 4: Collaboration on SoTL Project (97 respondents).

Note. Respondents could select more than one category.

In addition, 30% of respondents (18 of 97) received funding for their SoTL projects. This is yet another way that SoTL serves as a form of professional development, since applying for grants and funding for research is an integral part of the faculty career. Finally, Figure 5 illustrates the outcomes of our respondents' SoTL projects. Eighty-one respondents (84%) produced at least one publication or conference presentation as a result of their SoTL project. Presenting conference papers and submitting papers for publication are important skills for graduate students to develop as they prepare for a faculty career.

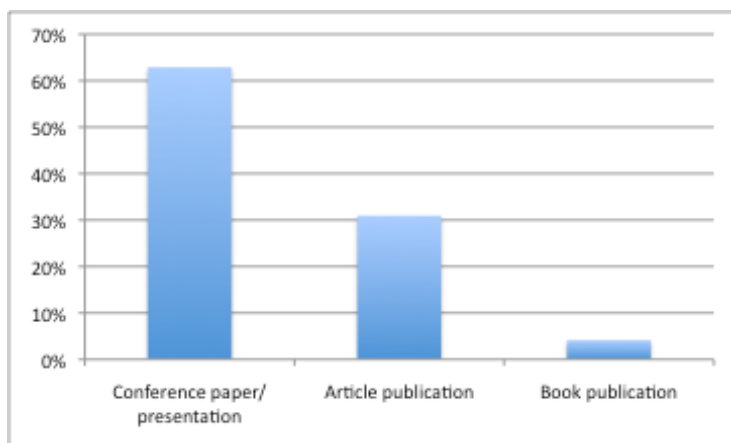


Figure 5. Outcome of SoTL Project (97 respondents).

Note. Respondents could select more than one category.

We also asked respondents how they felt working on SoTL impacted their time-to-degree (Figure 6). A criticism of SoTL work is that it may take away from dissertation-related work, thus increasing the time it takes to finish graduate school. For the majority (65% of 61 of 94) of respondents, they did not perceive this to be the case. In fact, some respondents indicated in their

qualitative comments that their involvement with SoTL was critical for finishing; their SoTL work helped some students secure funding for graduate work, while for others SoTL work helped them manage the demands on their time. For example, one respondent stated, “[My] SoTL project provided funding for me to finish, [and] without [the] SoTL project [I] would not have been able to continue in grad school.” Another reported that, “being involved in education research in addition to my chemistry research helped me to focus and plan my time more efficiently, and therefore is not affecting the amount of time my degree is taking.”

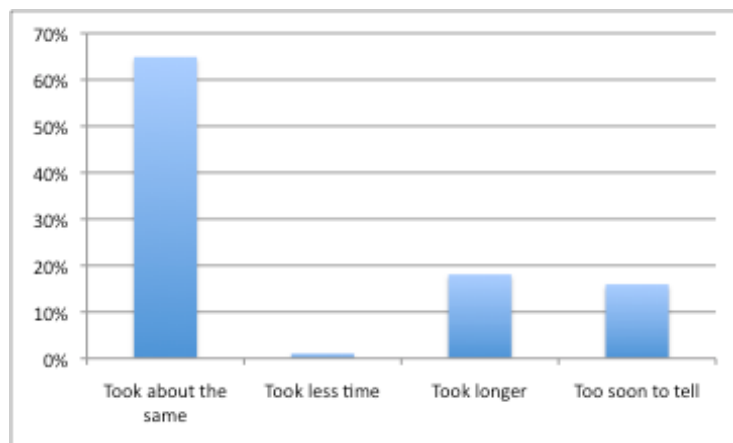


Figure 6. Impact of SoTL Project on Time-to-Degree (N = 94 respondents).

However, a significant minority (18% of 17 of 94) of our respondents felt that being involved in a SoTL project increased their time-to-degree. One respondent explained, “I had to spend time every day working on the project. Unfortunately, the line of work was not directly related to my area of study. So I could not recycle anything from the project into my area of study and research.” Thus, it appears that SoTL does have the potential effect of lengthening time-to-degree.

Given that faculty advisors are not necessarily supportive of graduate student mentees’ SoTL work, educational developers may also be interested to know what support graduate students reportedly received from their universities’ teaching and learning centers. Sixty-one percent of respondents reported receiving some service related to their SoTL project from their faculty development center, ranging from consultations to Preparing Future Faculty (PFF) and mentorship programs (see Figure 7). Graduate student involvement in SoTL provides an opportunity for future faculty to connect with educational developers, who support faculty throughout their careers, early on in their academic lives.

IV. Discussion and Conclusions.

The results of our exploratory survey suggest that SoTL provides many opportunities for graduate students to develop as future faculty, serving as a vehicle for publication, research collaboration, conference presentation, and grant application. Furthermore, the majority of respondents perceived that SoTL participation did not negatively affect their time-to-degree. In order to minimize the possibility of lengthening time-to-degree, one successful strategy appears to be collaboration (discussed more below). Another successful strategy would be for graduate

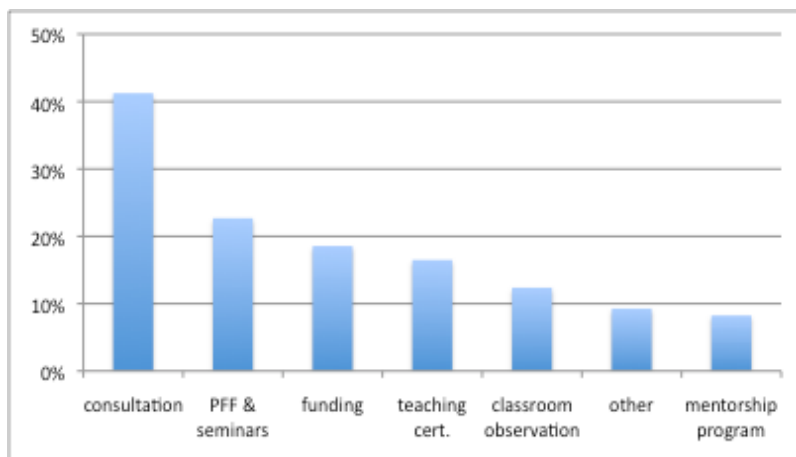


Figure 7. Support from Faculty Development Center (N = 97 respondents).

Note. Respondents could select more than one category.

students to link SoTL work to their other scholarship, such as a topic related to disciplinary research and/or a topic that can be explored in their own classrooms, as qualitative comments discussed above suggest projects unrelated to disciplinary scholarship lengthened time-to-degree. Almost all respondents who had taken part in an academic job search considered SoTL as a helpful asset during the academic job search, and qualitative responses suggest that this is partly because SoTL prepared scholars to speak intelligently about teaching in their job interviews. Austin (2002) argues that “all students who aspire to be faculty members should have opportunities to think deeply about teaching” (p. 114), and our exploratory survey results suggest that SoTL is an excellent means for achieving this goal. Our qualitative results also suggest that SoTL work helps graduate students reflect on their interests and identify careers that reflect these interests.

From the success stories shared in the responses to our exploratory survey, we can learn useful lessons for graduate students and faculty mentors interested in involving graduate students in SoTL. We discuss three lessons below: 1) successful SoTL projects conducted during graduate school are often joint endeavors – with help from faculty mentors, educational developers, and graduate student colleagues; 2) teaching and learning centers play a valuable role in encouraging this work; and 3) SoTL conducted during graduate school can serve as a signal to job search committees that a scholar is interested in this work and, therefore, help her to find an academic position that is a good fit.

First, mentorship and collaboration at the graduate stage appear to be extremely influential for novice SoTL scholars. As discussed earlier, the majority of respondents reported that their faculty advisors were supportive of their work, and faculty mentors played a large part in SoTL projects of our respondents. As illustrated by the large number of reported faculty collaborators (see Figure 4), collaboration with a faculty mentor can be a key to success. Lacking faculty mentorship, some graduate students have found that collaboration with likeminded graduate student colleagues can be a successful route to overcome the difficulty of conducting SoTL at the graduate student career stage. As discussed above (see Figure 4), many of our respondents had graduate student collaborators on their SoTL projects. As one respondent put it:

“The various SoTL research/writing projects I’ve been involved in have been in collaboration with another graduate student. We did not have a faculty

supervisor. This work was done out of sheer interest and dedication to this work, and emerged from a shared work background in a Learning Commons.”

In sum, it appears from our results that faculty mentors and educational developers help graduate students to conduct and fund SoTL work, and lacking such support, graduate student colleagues and learning communities can provide the collaboration necessary to conduct this work. Such collaboration is essential for students to complete SoTL work without significantly affecting their time-to-degree.

Second, our results (see Figure 7) indicate that programs at teaching and learning centers also reportedly play a large role in enabling graduate students to successfully conduct SoTL. Teaching and learning centers can administer grant programs that encourage faculty-student SoTL collaborations, like the Investigating Student Learning grant program at the University of Michigan. These programs incentivize mentoring by faculty working with graduate students on SoTL. Some teaching and learning centers include a SoTL component in graduate teaching certificate programs, such as at Vanderbilt University. One respondent said:

“I created the basis for the project (...) as a requirement for a course I was taking towards the certificate in university teaching. 2 years later, I was still interested in the idea, and with some guidance was able to turn it into a SOTL project.”

SoTL experience during graduate school can also be integrated into preparing future faculty (PFF) programs, such as at Indiana University. Pescosolido et al. (2004) undertook their SoTL project involving graduate students as part of the PFF program in the sociology department at Indiana University, and argued that this was an excellent graduate student development experience. Teaching and learning centers that run PFF programs at their institutions can consider how to incorporate SoTL into the curriculum.

Lastly, our results also suggest that there are potential career paths for graduate students who wish to integrate teaching and research. By highlighting the successful cases where graduate students conducted SoTL research and found academic jobs, including many in research universities, we can show that graduate students who wish to do this type of work can succeed in academic career paths. This is, perhaps, welcome news to those who are predisposed to doing this type of work. We do, consistent with existing literature, see some variation in institutional context. Huber (2001, 2004) found in her interviews with faculty that SoTL may find warmer welcome in some departmental or institutional contexts, and we also found graduate student respondents reporting in open-ended responses that SoTL was appreciated in some institutional contexts but not others. In fact, for scholars interested in this type of work, SoTL experience early on in their careers often reportedly helped them to find an academic job that was welcoming to this type of scholarship. The issue of fit is extremely important, since one’s fit with an institutional context helps one succeed in both the academic hiring process (Fuerstman & Lavertu, 2005) and as a junior faculty member.

Our survey results show that many scholars who conduct SoTL work during graduate school successfully find a position that welcomes their SoTL endeavors, ranging from traditional academic positions at research universities to less traditional routes, such as administration. Several quotes from our qualitative responses below illustrate these points:

“SOTL work helped me land my current job – [I] had met several faculty on the hiring committee for this position at SOTL conferences/panels.”

“[I] ended up choosing an administrative position over a faculty position, but my work and research is still in SoTL.”

This is particularly important given the changing nature of the academic career and the tight academic job market. Since SoTL prepares scholars to integrate research and teaching, it is a unique professional development experience that can be marketed to a variety of institutional contexts and for a diverse set of academic positions.

In conclusion, we find that, as Huber (2001, 2004) found at the faculty stage, at the graduate student stage there are those from a variety of disciplinary backgrounds who successfully design careers that integrate SoTL. However, there remain many unanswered questions. What are the perceptions of graduate students who were interested in SoTL but unable to conduct SoTL work at the graduate career stage? What are the perspectives of those who are hiring for academic jobs? What differences might exist by type of institution or discipline? Or, given the changing landscape of the academic career, by type of academic job? Future research should investigate not just graduate students' perceptions about the role of SoTL in graduate student development and job market success, but also the views of job search committees from a variety of disciplinary and institutional contexts, as Meizlish and Kaplan (2008) explored in their study on the role of teaching in academic hiring. Although our findings suggest that job candidates perceived that SoTL was well-received by interviewers for the most part, we cannot know how search committees view SoTL in job application materials based on the perceptions of job candidates. As Ng's (1997) research on the job search for academic jobs in psychology showed, often the perceptions of job candidates do not match the perceptions of search committees. It would be valuable for graduate students interested in SoTL, faculty mentors and graduate student developers to know not just the success stories shared here, but the views of search committees who will evaluate their candidacy on the academic job market. A valuable next step would be to survey academic search committees from a variety of institutions and disciplines to uncover how they evaluate candidates and what role, if any, SoTL research plays in these evaluations. In addition, analysis of successful graduate student SoTL scholars, similar to Huber's (2001, 2004) work on faculty, would allow us to more deeply explore the mechanisms involved in effectively integrating SoTL into future faculty work.

Acknowledgements

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References

- Austin, A. E. (2002). Preparing the next generation of faculty: Graduate school as socialization to the academic career. *The Journal of Higher Education*, 73(1), 94-122.
- Boyer, E. L. (1990). *Scholarship reconsidered: Priorities of the Professoriate*. San Francisco, CA: Jossey-Bass.

Chick, N. (2006, May). From community property to public property: Shulman challenges CASTL participants to fill in moats and lower drawbridges. *The International Commons*, 1(1), 7.

Cross, J. G., & Goldenberg, E. N. (2009). *Off-Track Profs: Nontenured Teachers in Higher Education*. Cambridge, MA: The MIT Press.

Finkelstein, M. J. (2006). The study of academic careers: Looking back, looking forward. *Higher Education: Handbook of Theory and Research*, 21, 159-212.

Fuerstman, D., & Lavertu, S. (2005). The academic hiring process: A survey of department chairs. *PS, Political Science, & Politics*, 38(4), 731-736.

Hernandez, J. J. (2007). Examining the value faculty search committee chairpersons place on formal teacher training in the sciences, technology, engineering, and mathematics fields: results of a national study. (Doctoral dissertation). Retrieved from ProQuest Dissertations & Theses. (3282117)

Huber, M. T. (2001). Balancing acts: Designing careers around the scholarship of teaching. *Change*, 41(4), 21-29.

Huber, M. T. (2004). *Balancing Acts: The Scholarship of Teaching and Learning in Academic Careers*. Sterling, VA: Stylus.

Huber, M. T., & Hutchings, P. (2005). *The Advancement of Learning: Building the Teaching Commons*. San Francisco, CA: Jossey-Bass.

Kreber, C., & Cranton, P. A. (1997). Teaching as scholarship: A model for instructional development. *Issues and Inquiry in College Learning and Teaching*, 19(2), 4-13.

Kreber, C. (2001). The scholarship of teaching and its implementation in faculty development and graduate education. *New Directions for Teaching and Learning*, 86, 79-88.

McKinney, K. (2007). *Enhancing Learning Through the Scholarship of Teaching and Learning*. San Francisco, CA: Anker Publishing Company, Inc.

McKinney, K., Jarvis, P., Creasey, G., & Herrmann, D. (2010). A Range of Student Voices in the Scholarship of Teaching and Learning. In C. Werder & M.M. Otis (Eds.), *Engaging Student Voices in the Study of Teaching and Learning* (pp. 81-95). Sterling, VA: Stylus.

Meizlish, D., & Kaplan, M. (2008). Valuing and evaluating teaching in academic hiring: A multidisciplinary, cross-institutional study. *The Journal of Higher Education*, 79(5), 489-512.

Nettles, M. T., & Millett, C. M. (2006). *Three magic letters: Getting to Ph.D.* Baltimore: The Johns Hopkins University Press.

Ng, C. F. (1997). Recruitment practices and job search for academic positions in psychology. *Canadian Psychology*, 38, 25-42.

Pescosolido, B. A., Loftus, J., Scherr, S., Fingerson, L., Hadley, K. G., Stuber, J., & Namaster, P. R. (2004). The three faces of SoTL: The contribution of the Summer Freshman Institute Project to service, teaching and research. In W. B. Becker & M. L. Andrews (Eds.), *The Scholarship of Teaching and Learning in Higher Education: The Contribution of Research Universities* (pp. 143-160). Bloomington, IN: Indiana University Press.

Schönwetter, D. J., Taylor, K. L., & Ellis, D. E. (2006). Reading the want ads: How can current job descriptions inform professional development programs for graduate students? *Journal on Excellence in College Teaching*, 17(1&2), 159-188.

Schram, L. (2009, October). *Graduate student involvement in the scholarship of teaching and learning*. Poster presented at the POD Network Conference, Houston, TX.

Sublett, M. D., Walsh, J. A., McKinney, K., & Faigao, D. (2010). Student voices through researching and promoting learner autonomy. In C. Werder & M. M. Otis (Eds.), *Engaging Student Voices in the Study of Teaching and Learning* (pp. 146-161). Sterling, VA: Stylus.

How evaluation processes affect the professional development of five teachers in higher education

Leah Shagrir¹

Abstract: This paper presents research that investigates the nature of the connection between the professional development of five teachers in higher education and the evaluation processes they have to undergo. Since teaching, scholarship, and service are the three components that evaluation measures, this research examines how the teachers' professional development was reflected in these components, and how they viewed the connection between their professional activities and the evaluation process. One conclusion states that while the evaluation process is intimidating and taxing, it develops the skills for the teaching component. The contribution stems principally from a mentoring channel, which enables teachers to receive counseling and guidance from experienced veteran colleagues. Mentoring encourages the teachers and prompts them to seek advice, study, scrutinize their work methods, and improve the quality of their teaching. Another conclusion reveals that during the first years of work in higher education, evaluation was not found to influence activity in the scholarship and service components. The evaluation requirements notwithstanding, the extent of the activity in these components was limited and non-intensive as a result of the teachers' focus on teaching. Professional development deepens and expands as seniority increases and confidence in one's teaching abilities grow. Despite the limited scale of the study, the research conclusions may serve as recommendations for institutions of higher education to consider providing a mentoring channel for the teachers who are in their first years of academic work. Furthermore, institutions should demonstrate flexibility vis-à-vis the extent and depth of such individuals' activity in scholarship and services when evaluating them. Another recommendation is to encourage institutions to take into account the advantages of veteran teachers, and the fact that professional activities deepen and expand as seniority increases.

Keywords: higher education, scholarship, professional development, evaluation process.

I. Introduction.

Professional development is defined as an ongoing and systematic process that includes activities such as discussion, investigation, experimentation with new practices, learning, expansion of knowledge, acquisition of new skills, and the development of approaches, stances, knowledge, and work tools. In order to generate professional development, a work environment that values inquiry, experimentation, and renewal is required (Guskey, 2000). Teachers in higher education are committed to professional development by virtue of their being academics and by their

¹ School for Continuing Education and Professional Development, Levinsky College of Education, 15 Shoshana Persitz, Tel-Aviv, Israel, 61481, leas@levinsky.ac.il.

obligation to keep abreast of the research world. Teachers' professional work contributes to their success and endurance in their work, to the community of peers, to the research world, and to the world of higher education (Secret, Leisey, Lanning, Polich, & Schaub, 2011). In an examination of the question 'What is the quality of higher education?' there is a demand for accountability (Cochran-Smith, 2003; Findlow, 2008) and an expectation that the universities prove their ability to serve as creators and purveyors of knowledge (Brooks, 2005). In order to emphasize the importance of professional development, institutions of higher education implement processes for evaluating teachers' work and contribution. The process occupies a cardinal place as a process that safeguards the academic standard of the institution and helps maintain the standard of teaching for the sake of the students (Findlow, 2008; Huber, 2002; Terpstra & Honoree, 2009).

The evaluation process is a topic of discussion and argument. As time goes by, the components and factors by which teachers are evaluated expand, the demands made of the evaluatees increase, and the examination is performed in greater depth (Huber, 2002). For the purpose of tracking and evaluating professional activities in higher education, several components are taken into account. A difference of opinion exists regarding the place and importance of each component and its requisite scope in professional activities. The research literature discusses the nature of these components, analyzes the various emphases, and examines the weight of each one.

II. Theoretical Background.

Professional teachers are teachers who know how to lead their students to successful learning. In order for them to achieve this, they have to become professionalized (Guskey, 2003; Shagrir, 2010). Employing the term 'professional communities of practice,' Shulman (1998) relates to the obligation of professionals to perform professional activities out of a desire to safeguard their profession. Professional development in higher education is among the requirements that teachers are obliged to fulfill. In order to ensure that development takes place on a professional level, the institutions implement processes whereby they evaluate teachers' activities. Evaluation begins as soon as the candidate's suitability for the job is examined, and continues in the form of on-the-job evaluation. The fate of teachers' academic careers, progress up the promotion ladder, ability to be awarded appointments, and professional advancement depends on the meticulous and complex evaluation process that is held periodically (Caffarella & Zinn, 1999; Huber, 2002). The fact that instructions and guidelines are published regarding the professional demands made of teachers as well as desired achievements and rewards they can receive indicates the importance every institution ascribes to it (Earl, 2008).

In the literature regarding evaluation, two trends can be identified. The first examines the nature and weight of the components that are taken into account (Becker, Cotton, & Grizzle, 2003; Centra, 1983; Elen, Lindblom-Ylänne, & Clement, 2007; Secret, et al., 2011; Serow, 2000; Smeby, 1998; Terpstra & Honoree, 2009). The second deals with the importance, role, and place of evaluation processes in higher education (Caffarella & Zinn, 1999; Halse, Deane, Hobson, & Jones, 2007; Lord, 2009; O'Meara, 2002).

A. The Nature and Weight of the Components that are Examined in the Evaluation of Higher Education.

An examination of the components taken into account in a teacher's evaluation demonstrates that the distinction among them is not always clear, and that it is difficult to distinguish the component to which a particular academic activity should be attributed (Colbeck, 2002). The central component that is examined is the quality of the teaching and the extent of its contribution to the students' achievements. Teachers in higher education are accepted for a post as a result of their expertise and experience in a certain field, and as a result of their ability to teach diverse topics within this field. When the search committees scrutinize candidates' applications, they allocate an important place to teaching skills and teaching experience (Meizlish & Kaplan, 2008; O'Meara, 2002). There are institutions in which candidates are required to present teaching philosophies and provide solid proof that these philosophies are reflected in their teaching experience. Preference is given to candidates with broader experience in teaching, particularly if they garnered their experience in a wide range of teaching contexts (Meizlish & Kaplan, 2008). In order to improve and position high-caliber teaching among teachers, several institutions have opted for solutions such as imposing additional teaching hours on the lecturers, giving awards for good teaching, and establishing centers for improving teaching (Halse, et al., 2007; Serow, 2000). One of the ways to encourage professional development is to create communities of practice (Shulman, 1998), which are helpful in several areas: provision of a professional and speedy response to joint institutional problems, assistance in transferring best practices, assistance in developing professional skills, and help with recruiting and retaining talent (Caffarella & Zinn, 1999; Wenger & Snyder, 2000). The teaching component is also important in research universities, which consider conducting research to be a cardinal objective for teachers (Elen, et al., 2007; Meizlish & Kaplan, 2008; Terpstra & Honoree, 2009), especially among those who teach at the undergraduate level (Landrum & Clump, 2004).

For the purpose of evaluating teachers' teaching, the institutions make use of anonymous student evaluations of teaching. The students relate to topics determined by each institution – for instance, teaching methods, use of sources of knowledge and teaching means, expertise in the field of teaching, and interrelationship with the learners (Earl, 2008).

Another channel employed by some institutions for evaluating the teaching component is the mentoring channel. A teacher under evaluation is paired with a mentor who is a teacher with seniority and experience. The mentor's job is to assist the teachers and ensure that their teaching is high-caliber and academic (Caffarella & Zinn, 1999; Gaye & Cullen, 1995). The mentoring channel has advantages both for novice teachers, who receive assistance by becoming acquainted with the work methods and professional requirements, and for veteran teachers, who give of their experience and empower their colleagues (Foote & Solem, 2009; Gaye & Cullen, 1995; Huber, 2002).

A further channel for evaluating the teaching component is an examination of the activities that supplement the actual teaching – for instance, holding personal consultations with students and advising them in the context of the assignments they have to carry out for their course studies. Teachers have to devote a great deal of time to these consultations, and are required to relate to each learner personally, which is more difficult to accomplish in the large lecture classes typically taught at the undergraduate level. In addition, the teaching-associated activities required of each teacher are measured – for instance, building course curricula,

planning and preparing assignments for the students, setting and checking papers and exams, evaluating students, and giving grades (Colbeck, 2002; Huber, 2002; Krahenbuhl, 1998).

The second component of the evaluation is scholarship. This component examines activities such as conducting research, disseminating academic publications, giving lectures and presentations at conferences and meetings, editing journals, refereeing colleagues' papers, writing grant proposals, and building curricula and teaching materials (Becker, et al., 2003; Colbeck, 2002; Krahenbuhl, 1998; Landrum & Clump, 2004; Shagrir, 2010). The performance of such activities enhances the cutting-edge nature of the innovations and developments in the field of expertise, and contributes to the body of knowledge, to the enrichment and updating of the students (Centra, 1983; Guskey, 2003; Serow, 2000; Smeby, 1998; Terpstra & Honoree, 2009), and to the enrichment of the community of researchers (Krahenbuhl, 1998; Shagrir, 2010). The evaluation of this component includes an examination of the teacher's professional products: the extent to which the products withstand the criticism of peers, the extent of the contribution and the influence of the products on the world of research and higher education, awards and honors, large research grants, the publication of papers in prestigious academic journals, and the extent to which they are referenced in other researchers' studies. The requisite intensity and scope of these activities differs according to the teacher's rank and the program in which he/she teaches (Brooks, 2005). Assessing and rewarding multiple forms of scholarship within academic reward systems encourages teachers to emphasize different kinds of work and elevates the status of teaching and service to their rightful place beside research within academic culture (Huber, 2002; O'Meara, 2002).

The third component of the evaluation is service, which includes activities that make a contribution within and on behalf of the institution. These activities are reflected in membership of departmental, collegiate, and university committees as well as other bodies such as boards and commissions that operate in the local community and in the education system, bodies that work for society, and non-profit organizations (O'Meara, 2002). Some researchers recommend reducing the service component in teachers' professional activities in order to free them up so that they can explore the two components they consider to be cardinal: teaching and research (Terpstra & Honoree, 2009).

B. The Importance, Role, and Place of Evaluation Processes in Higher Education.

Evaluating teachers is a procedure according to which a candidate is accepted or rejected for a job in higher education (Landrum & Clump, 2004), and it serves as a test of the teacher's professionalism, quality, and success during the course of his/her work. Brooks (2005) mentions three research areas that represent the definition of the quality of higher education: reputation, scholarship productivity, and students' educational experiences and outcomes. Professional activities also enhance the institution's reputation and exert a positive influence on candidates who are deciding where to study (Becker, et al., 2003; Findlow, 2008).

The three components taken into account when evaluating teachers demonstrate that integrative professional activity that includes all the components actually lays the foundations of academia and the profession (Colbeck, 2002). The institutions support the teachers and encourage them to conduct and publish research. It transpires that in an institution that supports research activities, the teachers manifest greater research efficacy (Becker, et al., 2003; Guskey, 2000).

There is “rivalry” between the teaching and scholarship components (Halse, et al., 2007) with regard to the question of which one is more important and esteemed for the purpose of evaluation, and which factors are taken into account when they are evaluated (Caffarella & Zinn, 1999). Some consider teaching and research to be of equal importance and to benefit each other. Whoever is involved in research alongside teaching improves the quality of his/her teaching, and whoever is involved in teaching can add inputs and insights to his/her research (Centra, 1983; Elen, et al., 2007; Halse, et al., 2007; Serow, 2000; Smeby, 1998; Terpstra & Honoree, 2009). There are institutions that consider professional experience in conducting research to be more significant and crucial for getting a job than the teaching component and teaching experience (Landrum & Clump, 2004; Serow, 2000). Achievements in the scholarship component determine teachers’ careers as well as the significant benefits they gain such as tenure, promotions, and salary increments (Centra, 1983; Earl, 2008; Lord, 2009; Terpstra & Honoree, 2009).

In recent years, institutions have begun encouraging teachers to be partners in governance issues, thus increasing the emphasis placed on the service component (Terpstra & Honoree, 2009). Some researchers believe that the evaluation process must give the same weight to service as it does to teaching and research activities because it occupies an important place in the scholar’s professional identity and in his/her contribution to the institution and its reputation (O’Meara, 2002).

The research presented here examined how five teachers in a research university perceived the nature and weight of the various evaluation components, investigated the meaning they ascribed to the evaluation process, and analyzed the contribution of evaluation to their professional preoccupation with the components as reflected in their everyday academic work.

III. The Research.

This qualitative research study was conducted at an American research university². The university publishes *Guidelines for Appointment, Review, and Promotion of Practice and Clinical Faculty* (2009), a publication that contains instructions for the evaluation process and lists what is required of the teachers. Instructions specify professional demands, obligatory procedures for professional activities, professional development, advancement tracks, and job preservation. The three components of professional activities – teaching, scholarship, and service – are taken into account in the institutional evaluation, and every teacher is obliged to perform them. Every teacher in the practice track receives mentoring assistance from a tenured teacher. The mentor observes the evaluatee’s lessons at least six times during the course of the academic year; after these observations, the mentor gives him/her professional feedback; following the teaching and the feedback, personal reflective conversations take place; the mentor helps the evaluatee plan lessons by providing guidance with regard to building syllabi and lesson plans. With reference to the mentioned guidelines, the research was based on three questions:

- (1) In what professional activities are the participants involved in each of the evaluation components?
- (2) To what extent are they involved in each of these components?
- (3) How does the evaluation process affect the participants’ professional development?

The research population comprised five teachers – four women and one man – who worked as non-tenured in the practice track at the college of education. All of them held teaching certificates, had school teaching experience, and taught undergraduates. For the sake of

² The name of the university in which the research was conducted has been omitted for the sake of confidentiality.

confidentiality, a pseudonym designating each participant has been allocated. Table 1 presents information about the research population:

Table 1. Information about the research population.

Name (pseudonym)	Seniority at the college	Prior teaching experience
Peter	First year	Eleven years' high school teaching experience (still teaching)
Annie	Second year	Nine years' experience working with children as a diagnostician of learning difficulties
Ellen	Second year; in her first year, she served as a co-teacher	Five years' experience working as a teaching instructor and teaching demonstrator in schools
Nicole	Third year	Ten years' experience teaching in schools
Minnie	Tenth year	Ten years' experience teaching in schools

Two research tools were employed for collecting data: The first was a one-off interview, and the second was a comprehensive electronic questionnaire. The use of an interview and subsequently of a questionnaire permitted broad, first-hand documentation that had the potential to elicit extensive information concerning professional activities, opinions, visions, statements, and perceptions. In order to gather rich qualitative data in response to the research questions, the interview and the questionnaire dealt with three issues. One issue explored the activities that reflected the participants' professional activities, such as learning, research, writing, publishing, participating in conferences, building curricula, and membership in professional organizations. Another issue examined the circumstances under which the professional activities were performed as well as their frequency. The third issue investigated the extent to which the evaluation process affected professional activities and its frequency.

Each participant underwent a semi-structured, open-ended, in-depth interview. The interview questions were prepared in advance, but open conversation was permitted. The interviewees were afforded opportunities to express personal views, arguments, experiences, knowledge, and interpretations (Zanting, Verloop, & Vermunt, 2003). The interviewer added questions that were inspired by the interviewees' body language, gestures, hesitations, and cessation of speech. The interviews were recorded and transcribed by the researcher.

The questionnaire enabled the respondents to think the issues through without the presence of the researcher and to document their insights and responses. The entire questionnaire consisted of open questions; at the end, there was an open space that permitted comments and insights.

The collected data were examined for context sensitivity with the aim of finding connections between attitudes and perceptions and among professional activities. To this end, a

content analysis methodology (Sabar-Ben-Yehoshua, 1990; Stemler, 2001) was employed. Content analysis can be a useful tool for examining trends and patterns, permits the data to be presented objectively and methodically, and enables the research to be repeated (Holsti, 1968; Sabar-Ben-Yehoshua, 1990; Stemler, 2001). The transcriptions of the recorded interviews and the completed questionnaires were reread several times, and during the reading, recurring words and terms were marked. The data were then processed in correlation with the three research questions. The first two questions deal with the participants' professional activities in relation to the three components according to which they were evaluated, and the third deals with their perceptions regarding the contribution of the evaluation processes to their professional development. The distinction between the personal level of the participant's work and activity on the one hand and the general level of his/her conception of professional development on the other yielded interesting findings, which are explained in the following section.

IV. Findings.

The first and second research questions deal with the participants' professional activities. The findings show that they were involved in the three types of required activities, but to differing extents. The analysis revealed a clear distinction between the activities performed by the participants who were at the beginning of their careers as teachers in higher education and those performed by the more veteran participants.

The novice participants who only had several months' to two years' seniority declared their professional activities to be associated mainly with the teaching component and with their efforts to be good and successful teachers. They considered teaching to be the main professional activity they had to perform, requiring many hours of work, including numerous consultations with students.

You need to become a teacher, what are the core activities that you use, what are the key assignments that you do. Teach and program development is the bulk of what I do... Most of what I do is... advising... a lot of advising. [Ellen]
I do a lot of program design, large scale of assessments, redesign our program, and meet with the students a lot. [Peter]

With regard to the scholarship component, the novice teachers were still at the pre-research stage in which they were scouting out interesting research topics. They were involved in a process of choosing a research topic or in filling out applications for research grants in collaboration with colleagues. They wanted their future research studies to have practical significance, to deal with topics taken from the world of teaching and practice, and to contribute to the improvement of their teaching. They declared that this component was not easy to put into practice, voiced their need for guidance, and requested the professional accompaniment of a colleague who had experience in conducting research. The teachers contended that because of the heavy teaching load, they were unable to free up sufficient time for research, and were therefore unable to engage in intensive research activity. The taxing demands of the teaching component compelled them to devote less time to scholarship, thus reducing their research product. Similar claims have been voiced in other studies (Becker, et al., 2003; Huber, 2002; Secret, et al., 2011). The heavy teaching load imposed by the teaching component engendered a feeling of constant struggle among the novices as well as a need to survive and preserve their jobs.

...we should ... be provided with a research mentor who could help us and potentially collaborate with us for our research requirements. I have to make it something that is feasible within the context of my job, but we don't have a lot of time for research. [Annie]

It is very difficult to find time to conduct and complete research projects. The requirements have to be a little bit more flexible. [Annie]

In their struggle for success, the novice teachers sought support among their colleagues and worked with them in informal collaborations that occurred in the departmental setting in the form of conversations about work matters and a dialog on the development of work approaches.

These collaborations have fostered a spirit of support and shared mission. Interestingly, the architecture of our office suites creates a climate conducive to collaboration. We regularly meet in the shared conference center and discuss ideas and lessons. I think a departmental retreat could have been innovative. [Peter]

The veteran participants, whose seniority ranged between three and ten years of college teaching, conjured up a different picture with regard to their professional activities. While the teaching component occupied a significant and considerable place with them as well, they performed more activities that were identified with the two other components – scholarship and service. The activities in the latter components are diverse, and the veterans deemed them highly significant. They considered conducting research to be a prominent facet of the nature of their job, and as such it constitutes one of the job components of a teacher in higher education.

When you are active and researching, it keeps you thinking in particular ways all the time, and so you are looking at the world with particular views that help you to continually develop. [Minnie]

The veterans' activities included conducting research studies, writing presentations, participating in conferences, serving as members of professional organizations and editorial boards as well as on internal, university, municipal, and national committees, building curricula, and setting achievement exams for the education system.

In addition to teaching, I'm a committee member: a departmental committee, a college committee, and a national committee. I've just completed a small-scale research study, so that in addition to teaching, I also conduct research and write. At the moment, I'm working on a presentation for a big conference, and I'm being assisted by a student who's doing the literature review for me. [Nicole]

The third research question asks about the participants' perceptions regarding the contribution of the evaluation processes to their professional development. Their attitude toward the evaluation processes resembled their attitude toward the requirements they were obliged to fulfill on behalf of the institution. When they spoke about the evaluation, they used the pronoun "they" in reference to the institution's regulations and the activities the institution expected them

to perform. The attitude toward “their” (the institution’s) demands obliged them to engage in professional activities; they felt obligated and deprived of choice:

We are supposed to also be doing scholarship... doing research... I think they want the person in this role to be doing more presentations around the country and publishing. We are supposed to be doing something related to research. [Ellen]
We have to do research, present, and remain very current. [Annie]

The participants declared that they were aware of the fact that according to the evaluation requirements, it was mandatory for them to conduct research and present it. They considered scholarship to be an obligation that had to be met in order to preserve their jobs, and deemed success in this component to be extremely significant for their advancement at the university. They stressed that they complied only because of the requirements, and that what they did was minor. They admitted that if there were no requirements to engage in scholarship, they would expend their time and energy solely on teaching. One of them stated that she was involved in teaching activities almost to the exclusion of anything else, and she knew that she was not meeting expectations.

I am more of a teacher so I tend to pull myself from that direction, we’ll see if I last... [Ellen]

As mentioned previously, the novice teachers were required to undergo the intensive professional accompaniment of a mentor as part of the evaluation process. They appreciated the value of this channel for their professional development. As is evident in other studies (Caffarella & Zinn, 1999; Foote & Solem, 2009; Gaye & Cullen, 1995; Guskey, 2003; Shulman, 1998), the participants declared that the accompaniment of mentors enabled them to improve the quality of their teaching. The fact that they could talk to an expert colleague and share topics that they usually had to deal with on an individual basis reinforced and empowered them. They compared their teaching abilities before and after the expert assistance, and identified progress, development, and improvement. The participants stressed that because the mentoring process was ongoing and consistent, they were able to see an improvement in their work and feel empowerment in their professionalism. When the collaboration succeeded, the participants considered it an important opportunity and took effective advantage of it.

She [the mentor] did meet with me during my second semester on a weekly basis... since my first semester evaluations were so poor. I met with her constantly to discuss small details as regards things that I may not be aware of... We discussed what I was planning to teach the following week and she came to observe in each class I taught and we discussed her observations [feedback] in order to improve my performance... [Annie]
I could not have survived without the caring, reflective mentoring I have received. [Peter]

One of the veteran participants did not view the evaluation process as something that motivated people to engage in professional activities. She considered such activities to be a part of her job as a teacher in an institution of higher education, and did not associate them with the evaluation processes that were held in the university. She deemed it important that in parallel to

teaching, every teacher engage in activities that enhance the profession and the good reputation of the university faculty.

V. Conclusions and Recommendations.

The findings of this small-scale study were subjected to an analytic generalization (Serow, 2000; Yin, 1994) that permits the presentation of conclusions and generic arguments. The conclusions may contribute to the understanding of central themes in the domain of the professional development of all those involved in higher education. The emergent picture shows that teachers in higher education perceive the evaluation process as an obligation imposed by the university, and as a taxing and stressful process for those wishing to succeed and preserve their jobs. In their first years of work, they devote most of their attention and energy to teaching and student consultations. An examination of the links between the evaluation process and their professional development yields two conclusions:

The first conclusion indicates that the evaluation process makes a significant contribution to the development of the professional activities required in the teaching component during the first years of working in higher education. The novice teachers viewed teaching as a task that must be accomplished properly so as to survive in the workplace and succeed. They considered success in teaching to be a first stage that would ensure their survival in their jobs. The mentoring channel that was obligatory in the evaluation framework prompted the teachers to expend time and effort in order to become more professional. Mentoring exerts a significant influence both on the development of teaching skills and on the nurturing of professional confidence. It makes a meaningful contribution to the development and cultivation of the tools, skills, and methods that constitute good, professional teaching. It enables teachers both formally and informally to conduct themselves as professionals, accompanied by an institution-appointed colleague. It is responsible for creating an atmosphere of shared responsibility, for reinforcing collaboration among colleagues, and for enabling experienced experts to empower beginners. As a result, teachers become professionalized, students gain better teachers, and the good reputation of the institution is bolstered.

By identifying the contribution of the combined mentoring–evaluation process to the teaching component, a recommendation to adopt the mentoring channel as part of the evaluation process can be made to the various departments in institutions of higher education. Through the mentoring channel, novice teachers receive professional accompaniment, while veterans are recruited to ensure that there is professional academic teaching in the institution in which they work.

The second conclusion indicates that the evaluation process does not exert a significant influence on the scholarship and service components. These components hardly benefit from the evaluation process, and they occupy a limited place in the first years of work. Because of the intensive involvement in teaching activities as well as a lack of experience in academia, there is no room for novice teachers to focus on any activity that is characterized by research or extra-institutional activities such as participating in international conferences, joining a professional peer community, becoming a member of the editorial board of a journal, or conducting inter-institutional research. The present study shows that as the participants' seniority increased, so did their confidence vis-à-vis job preservation and their understanding that professional development must include research and service. Their involvement in scholarship and service occupied a prominent place. One veteran teacher declared that she performed her research activity not because of a feeling of obligation to the institution or because of the evaluation

process, but rather because she was a teacher in higher education and had a commitment as a professional to be constantly involved in research, writing, and publishing.

Despite the limited scale of the study, it is recommended that the institutions of higher education take this conclusion into consideration when evaluating the professional development of beginning teachers. It is important to demonstrate flexibility with regard to scholarship and service. A further recommendation is to take into account the inherent advantages of seniority and experience. Teachers in higher education who wish to be professionals undergo a process as they accumulate seniority and experience – a process that enables them to channel their energy into practice in a broad range of professional fields. The more their seniority increases, the more their professional activities multiply in tandem to become a prominent part of their job.

References

Becker, E., Cotton, M. L. and Grizzle, G. (2003). The derived demand for faculty research. *Managerial and Decision Economics*, 24(8), 549-567.

Brooks, R. L. (2005). Measuring university quality. *The Review of Higher Education*, 29(1), 1-21.

Caffarella, R. S. and Zinn, L. F. (1999). Professional development for faculty: A conceptual framework of barriers and supports. *Innovative Higher Education*, 23(4), 241-255.

Centra, J. A. (1983). Research productivity and teaching effectiveness. *Research in Higher Education*, 18(4), 379-389. doi: 10.1007/BF00974804

Cochran-Smith, M. (2003). The unforgiving complexity of teaching, avoiding simplicity in the age of accountability. *Journal of Teacher Education*, 54(1), 3-5.

Colbeck, C. L. (2002). Integration: Evaluating Faculty Work as a Whole. *Evaluating Faculty Performance: New Directions for Institutional Research*, 2002(114), 43-52.

Earl, H. (2008). Looking the other way? Accreditation standards and part time faculty. *Academe*, 94(2), 103-110.

Elen, J., Lindblom-Ylänne, S. and Clement, M. (2007). Faculty Development in Research-Intensive Universities: The role of academics' conceptions on the relationship between research and teaching. *International Journal for Academic Development*, 12(2), 123-139.

Findlow, S. (2008). Accountability and innovation in higher education: a disabling tension? *Studies in Higher Education*, 33(3), 313-329.

Foote, K. E. and Solem, M. N. (2009). Toward better mentoring for early career faculty: results of a study of US geographers. *International Journal for Academic Development*, 14(1), 47-58.

Gaye, L. and Cullen, D. L. (1995). Empowering the faculty: Mentoring redirected and renewed [ERIC Digest]. Washington DC: ERIC Clearinghouse on Higher Education.

Guskey, T. R. (2000). Evaluating professional development. Retrieved April 3 2010, from <http://books.google.com/books?hl=en&lr=&id=CklqX4zgDtgC&oi=fnd&pg=PR9&dq=fac#v=onepage&q&f=false>

Guskey, T. R. (2003). What makes professional development effective? *Phi Delta Kappan*, 84, 748-750.

Halse, C., Deane, E., Hobson, J. and Jones, G. (2007). The research-teaching nexus: what do national teaching awards tell us? *Studies in Higher Education*, 32(6), 727-746.

Holsti, O. R. (1968). Content Analysis. In L. Gardner & A. Elliot (Eds.), *The Handbook of Social Psychology* (Vol. 2, pp. 596-692). Reading, Massachusetts: Addison-Wesley.

Huber, M. T. (2002). Faculty Evaluation and the Development of Academic Careers *Evaluating Faculty Performance: New Directions for Institutional Research*, 2002(114), 73-83.

Krahenbuhl, G. S. (1998). Faculty work. *Change*, 30(6), 18-25.

Landrum, R. E. and Clump, M. A. (2004). Departmental Search Committees and the Evaluation of Faculty Applicants. *Teaching of Psychology*, 31(1), 12-17. doi: 10.1207/s15328023top3101_4

Lord, T. (2009). "But, I Thought We Were Colleagues?" Professors Evaluating Professors. *Journal of College Science Teaching*, 38(3), 62-66.

Meizlish, D. and Kaplan, M. (2008). Valuing and evaluating teaching in academic hiring: A multidisciplinary, cross-institutional study. *The Journal of Higher Education*, 79(5), 489-512.

O'Meara, K. A. (2002). Uncovering the values in faculty evaluation of service as scholarship. *The Review of Higher Education*, 26(1), 57-80.

Sabar-Ben-Yehoshua, N. (1990). *Qualitative Research*. Tel Aviv: Massada.

Secret, M., Leisey, M., Lanning, S., Polich, S. and Schaub, J. (2011). Faculty perceptions of the scholarship of teaching and learning: Definition, activity level and merit considerations at one university. *Journal of the Scholarship of Teaching and Learning*, 11(3), 1-20.

Serow, R. C. (2000). Research and teaching at a research university. *Higher Education*, 40(4), 449-463. doi: 10.1023/A:1004154512833

Shagrir, L. (2010). Professional development of novice teacher educators: professional self, interpersonal relations and teaching skills. *Professional Development in Education*, 36(1-2), 45-60. doi: DOI: 10.1080/19415250903454809

Shulman, L. S. (1998). *Teaching and Teacher Education among the Professions*. Paper presented at the American Association of Colleges for Teacher Education (AACTE), New Orleans, Louisiana.

Smeby, J. C. (1998). Knowledge production and knowledge transmission. The interaction between research and teaching at universities. *Teaching in Higher Education*, 3(1), 5-20. doi: 10.1080/1356215980030101

Stemler, S. (2001). An overview of content analysis. *Practical assessment, research & evaluation*, 7(17). Retrieved June 21, 2011, from <http://PAREonline.net/getvn.asp?v=7&n=17>

Terpstra, D. E. and Honoree, A. L. (2009). The effects of different teaching, research, and service emphases on individual and organizational outcomes in higher education institutions. *Journal of Education for Business*, 84(3), 169-176.

Wenger, E. C. and Snyder, W. M. (2000). Communities of practice: The organizational frontier. *Harvard Business Review*, 139-145.

Yin, R. K. (1994). *Case study research: design and methods* (2 ed.). Thousand Oaks CA: Sage.

Zanting, A., Verloop, N. and Vermunt, N. J. D. (2003). Using Interviews and Concept Maps to Access Mentor Teachers' Practical Knowledge. *Higher Education*, 46, 195-214.

A course redesign project to change faculty orientation toward teaching

Susan Eliason¹ and Christine L. Holmes²

Abstract: This article discusses the development, implementation, and outcomes of a Faculty Course Redesign Camp for full-time and adjunct faculty members. The purpose of the camp was to educate and coach faculty in effective strategies to promote learner-centered teaching skills. Evaluation results show that the participants changed their orientation toward teaching in the dimension of their role in instruction, but they made little change in balance of power and responsibility for learning.

Keywords: faculty development, learner-centered teaching, college teaching, change strategies, teaching effectiveness.

As a function of our leadership roles in the Center for Teaching Excellence at Anna Maria College, a small Catholic-based liberal arts institution, we developed, implemented, and facilitated a Faculty Course Redesign Camp for full-time and adjunct faculty members. The purpose of the camp was to educate and coach faculty in effective strategies to promote learner-centered teaching skills while generating student excitement for course content. Participants in the camp produced a revised course syllabus. In courses with multiple sections, faculty members from all sections were encouraged to attend. This article will describe the development, implementation, and outcomes of the Faculty Course Redesign Camp.

I. Development.

During the initial development we primarily used the work of Barr and Tagg (1995), Blumberg (2009), Fink (2003), Tagg (2003), and Weimer (2002) to shape the focus of and inform the goals for the camp. Barr and Tagg (1995) described a learner-centered model where faculty and students work as a team to promote substantive learning. The model encourages students to discover and construct knowledge and to have control over the learning process. Faculty are primarily designers of learning methods and environments using both formative and summative assessment. “In learner-centered teaching, the instructor focuses on what the students are learning, how they are learning, and how they can use the learning” (Weimer, 2002, as cited in Blumberg, 2009, p. 3). It is an approach to teaching that focuses on student learning rather than on what the teacher is teaching. Fink (2003) defined significant learning as having a process and an outcome dimension. The process of learning begins by activating prior knowledge. During the process of learning, students are highly engaged. The outcomes include significant and meaningful change.

Using a learner-centered approach can present a potential challenge because faculty develop conceptions about teaching based on their experiences as a student or novice teacher and

¹Department of Elementary and Early Childhood Education, 90 Burrill Avenue, Hart Hall, Room 121, Bridgewater State University, Bridgewater, MA 02325, susan.eliason@bridgew.edu

²Education Programs; Human Development and Human Services, 50 Sunset Lane, Box C, Anna Maria College, Paxton, MA 01612, cholmes@annamaria.edu

may have established an orientation to teaching that could limit the way they provide instruction (Holmes, 2004; Northcote, 2009). Because we are both from the field of education, research from Bloom (1956), Chickering and Gamson (1987), Darling-Hammond and Bransford (2005), Vygotsky (1934/1986), and Wiggins and McTighe (1998) informed the content of the camp.

From informal conversations with faculty, guided conversations with mentors, and feedback from adjunct professional development days, we knew that learner-centered teaching would need to be taught, and that participants may resist the idea due to prior expectations about learning and teaching (Michael, 2007). We assumed that adjunct faculty would have the same needs for professional development regarding effective teaching strategies as full-time faculty members. Research supports that the quality of instruction from adjunct faculty does not seem to influence student learning. The difference appears to be in faculty support and the feeling of inclusiveness, which could impact the achievement of student learning objectives (Reichard, 2003). In addition, there is no significant difference in the teaching capability of adjunct faculty as compared to full-time faculty (Leslie & Gappa, 2002; Reichard, 2003). Thus, the camp was opened to both full-time and adjunct faculty members.

Learner-centered teaching is not one specific teaching method; rather, many different instructional methods can lead to a learning-centered approach (Blumberg, 2009). We decided to promote reflective practice as a foundation for the camp and provide resources and support to faculty interested in learning more about active learning strategies, multiple ways to assess student learning, and Universal Design for Learning (UDL). We gathered resources and developed intellectually stimulating activities to promote a deeper understanding of active teaching and learning to allow participants to explore assessment strategies, pedagogy, reflective teaching and learning, and innovative practices. We designed a learning experience where faculty could work together as a community of reflective practitioners with one-to-one support as needed.

An open invitation was electronically delivered to all faculty to complete an application for the camp (see Appendix 1). We reviewed each application to ascertain prior knowledge, record areas faculty wished to explore, and note additional resources to provide participants based on their interests (see Appendix 2). Faculty wished to explore assumptions, making connections between courses, service-learning, cooperative learning strategies, motivation, using current events, and technology as a teaching tool. As an incentive, faculty participating in the three-day camp received a stipend and lunch daily. The incentive may be a stronger motivator for attendance than the desire to learn a new skill, which could bias the results of the camp.

II. Implementation.

The Faculty Course Redesign Camp I was held in June 2010 and Camp II in January 2011, with Camp Reunions in January and May 2011. The camp was presented using a face-to-face model with resources and discussions available online through the college course management system. Camp II was revised to better meet faculty needs and to model effective teaching practices.

Camp I had more scheduled individual work time than Camp II. Participants seemed to want more instruction and guidance as determined by the questions they asked during individual work time. To increase the level of instruction and guidance during Camp II, we more clearly defined and described the opening activity and the self-assessment, and we used Fink's (2003) *Self-Directed Guide to Designing Courses for Significant Learning* as a framework for course redesign. We modeled the use of organizing schema, techniques for actively engaging

participants, and the use of course content to facilitate future learning. We were more explicit as to how the camp was concrete, real, and relevant to college teaching. In addition, we included a guest speaker on day two to highlight campus resources for assessment and the role of assessment in their courses. On day three we added content to include the use of Poll Everywhere as a tool for active engagement.

Both camp sessions included guided activities, individual working time, a working lunch, and a closing activity. On the first day of camp, participants completed a self-assessment to reflect on their practice as it relates to the five dimensions of learner-centered teaching: the function of content, the role of the instructor, the responsibility for learning, the purposes and processes for assessment, and the balance of power (Blumberg, 2009; Weimer, 2002). Using a think-pair-share model, we encouraged participants to discuss areas for improvement and share effective teaching and learning strategies that promote learner-centered teaching. The self-assessment was revisited during the Camp Reunion when faculty reflected on the changes they made in their courses post camp.

On day one, we provided instructional design resources to include writing measurable learning objectives using Bloom's (1956) cognitive taxonomy and Fink's (2003) taxonomy for significant learning. After a self-assessment and goal-setting activity, participants worked on their course redesign project. We encouraged participants to reflect on several factors such as knowledge of students, discipline-specific methods, and course goals. These areas are included in the framework for understanding teaching and learning from Darling-Hammond and Bransford (2005). As they created their syllabi, participants were urged to discuss their thinking with others while we provided one-on-one coaching. Discussion with others is critical to changing thinking and behaviors. Vygotsky (1934/1986) believed cognition was primarily a social experience. A zone of proximal development occurs when an individual transfers abilities from a shared environment to knowledge within the self.

The closing activity for day one consisted of viewing a case story video on UDL through the Multimedia Educational Resources for Learning and Online Teaching (MERLOT) website. After viewing the video, participants completed a self-assessment on implementing UDL in their classroom, with our goal being to develop reflective faculty (Brookfield, 1995; Darling-Hammond & Bransford, 2005). A discussion of the ramifications of implementing UDL followed.

On the second day of camp, the focus was on assessment of student learning. Resources shared included a Clarity Grid (Huston, 2009), reflective assignment prompts, prior knowledge activities, the design of tests and projects, and the use of formative assessment to inform instruction to include the Critical Incident Questionnaire (Brookfield, 1995). We met with participants during individual work time to discuss the application of assessment strategies as they redesigned their courses. At the end of the second day participants discussed strategies for the use of formative assessment and to provide effective feedback to their students. We included techniques that would clearly communicate high but attainable expectations, explicitly relate current learning to prior learning, offer a variety of ways to learn, encourage hands-on practice, present information visually, support reflection, provide prompt and concrete feedback, and assign tasks to include revisions (Chickering & Gamson, 1987; Suskie, 2009).

On the third day of camp, participants identified goals for the day and discussed lingering questions based on their first two days of course redesign. Participants worked on their courses with guidance from us as needed. The day closed with the sharing of technology resources to include instruction on creating presentations that inform, motivate, and inspire

(Atkinson, 2008), creating course materials with MERLOT Content Builder (http://taste.merlot.org/Programs_and_Projects/ContentBuilder.html), increasing student participation with Poll Everywhere (<http://www.polleverywhere.com/>), discussions on literacy and critical thinking in a digital age, and creating an in-class computer use policy. On the final day of Camp I it was agreed that there would be a Camp Reunion in January 2011 so that participants could share their experiences after implementing the changes they had made to their courses. At the end of Camp II, a reunion was scheduled for June 2011 to include Camp I and II participants.

III. Camp Reunion.

The Camp Reunion agenda included the sharing of successes and discussion of further revisions. The opening activity was a written reflection on the five dimensions of learner-centered teaching (Blumberg, 2009). Charts, labeled with each of the five dimensions—the function of content, the role of the instructor, the responsibility for learning, the purposes and processes for assessment, and the balance of power—were posted on the walls and participants recorded their responses. A guided discussion followed and participants were asked to consider how they:

- Made use of technology
- Made content clear and accessible
- Organized content
- Made use of examples and illustrations
- Made use of questioning strategies
- Used writing to enhance learning and thinking
- Incorporated diversity into teaching, learning, and assessment
- Created concrete, real, and relevant curricula
- Fostered a safe and collaborative classroom community

The final agenda item for the Camp Reunion was for participants to identify resources and professional development opportunities they may need to support their teaching and learning. Again, it was agreed that reunion meetings should continue at the end of each semester and that participants from all camp sessions would be invited to participate.

IV. Outcomes.

To date, 13 faculty members, 5 full-time and 8 adjunct faculty, participated in the Faculty Course Redesign Camp experience (see Table 1). The academic status of the 5 full-time faculty participants included 2 tenured and 3 non-tenured faculty. Faculty members (3 males and 10 females) represent a variety of academic disciplines: core curriculum (n = 4: two from freshman-level and two from junior-level courses), criminal justice (n = 3), legal studies (n = 1), business (n = 1), history (n = 1), English (n = 1), psychology (n = 1), and education (n = 1).

Table 1. Participation summary.

	Camp I	Camp II
Reunion I	7/8	0/5
Reunion II	5/8	3/5

Eight faculty members participated in the June 2010 Camp I and seven of the eight attended the Camp I Reunion held in January 2011. Of the eight participants, five attended both

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Camp Reunions. Five faculty members attended the January 2011 Camp II. The May 2011 Camp I and Camp II Reunion included eight participants, five from Camp I and three from Camp II.

At the reunion camps, we used Blumberg's self-assessment (2009) to structure the discussion with participants about perceived changes in their students' experiences or their own teaching behavior as a result of the course redesign. The self-assessment relates to the five dimensions of learner-centered teaching: the function of content, the role of the instructor, the responsibility for learning, the purposes and processes for assessment, and the balance of power (Blumberg, 2009; Weimer, 2002). The participants recorded their ideas on charts. The responses were coded using five questions developed from Blumberg's framework that would demonstrate a higher level of adopting learner-centered approaches:

1. Did the participants assist students to transform and reflect on some of the content to make their own meaning?
2. Did the participants use some teaching and learning methods appropriate for student learning goals?
3. Did the participants provide some opportunities for students to assume responsibility for their own learning?
4. Did the participants integrate some assessment into the learning process?
5. Were the participants flexible on some course policies, assessment methods, learning methods, and deadlines?

The participants showed some transitioning toward more learner-centered teaching in the dimension of the function of the content (question 1). For instance, participants shared examples of solving real-world problems, using organizing schemes such as templates, facilitating future learning, and providing students with reasons for learning the content. The participants reported a more learner-centered orientation in the use of some teaching and learning methods appropriate for student learning goals (question 2). They aligned the course objectives to activities and assessment, used engaging activities, and created an environment for learning. The responses indicated participants were using learner-centered assessment in their courses, primarily formative assessment and authentic assessment techniques (question 4). Wiggins (1993) defined authentic assessment as:

Engaging and worthy problems or questions of importance, in which students must use knowledge to fashion performances effectively and creatively. The tasks are either replicas of or analogous to the kinds of problems faced by adult citizens and consumers or professionals in the field. (p. 229)

Examples of authentic assessment that the participants shared were creating a brochure for families about an aspect of child development and creating a resume in a freshman writing course.

The dimensions of responsibility for learning (question 3) and balance of power (question 5) did not appear to be as learner-centered, with little evidence to support learner-centered teaching in these dimensions. The reported changes were determined to be substantial by how the participants defended their written responses and their ability to elaborate and provide examples.

In addition, participants reflected on the resources and professional development opportunities needed to support learner-centered teaching at Anna Maria College. Participants requested a paradigm shift on campus and more sharing with colleagues in order to move away from the college's perceived transmission orientation toward teaching to a learner-centered orientation. The list of professional development requests is included in Table 2.

Table 2. Requested professional development.

The functions of content

- Including diversity and social justice

The role of the instructor

- Using technology effectively
- Involving all students during student presentations
- Designing questions
- Developing effective assessment tools that measure mastery of course objectives, making expectations clear, creating rubrics, measuring mastery of content rather than effort
- Conveying learning objectives versus content
- Accommodating all learners

The responsibility of learning

The processes and purposes of assessment

- Providing effective peer feedback
- Using assessment data
- Using student portfolios to assess learning

The balance of power

- Including more choice on assignments
 - Exploring the balance of power, especially how to give up power when you don't know the content well
-

Participants were most interested in learning more about the role of the instructor and assessment. There was some interest in the balance of power and functions of content; however, there was no interest expressed in learning more about the responsibility for learning.

Following Camp II, the authors reviewed completed syllabi and assignments created by participants during the weekend after the camp. The Blumberg Rubric for the Function of Content Dimension of Learner-Centered Teaching was used to evaluate the documents for learner centeredness. The documents included the following information:

- A Reading Reflection Form assignment (RR)
- Critical Thinking and Writing syllabus (CWT)
- A Comparative Assignment (CA)
- Origins of Literature in Myth and Folklore syllabus (OMF)
- Human Life Span Development syllabus (HLD)

Four of the five assignments were in humanities courses: RR, CWT, CA, and OMF. HLD is from the social sciences. The rubric evaluates four components of the content (see Table 3).

The participants were able to add components to engage students and they used organizing schemes. Three participants used a technique described in the camp, the dialogue table, which encourages students to connect learning to prior experiences, find ways to apply learning, and develop areas of further study. Additional work is needed to assist participants in communicating the importance of learning content, acquire discipline-specific learning methodologies, the ways of thinking in the discipline, and how to solve real-world problems. It was interesting to note that there was more evidence of learner-centered approaches in the psychology course as opposed to the other humanities courses.

Table 3. Results of function of content dimension of learner-centered teaching.

Rubric for the function of content dimension of learner-centered teaching				
COMPONENT	Employs <i>instructor-centered</i> approaches →	→ Transitioning to learner-centered approaches →		Employs <i>learner-centered</i> approaches
		Lower level of transitioning	Higher level of transitioning	
1. Varied uses of content	RR	CA, OMF, CWT	0	HLD
2. Level to which students engage in content	0	CWT	OMF, HLD	RR, CA
3. Use of organizing schemes	0	CWT	OMF	RR, CA, HDL
4. Use of content to facilitate future learning	CWT	RR, CA, OMF	HDL	0

V. Interpretation.

Reflecting on the results of the Camp Reunion discussion, the focus of the camp was on the dimension of the role of the instructor. We provided instruction and coaching on creating a positive classroom community, aligning course objectives, assessment and activities, use of formative assessment, and teaching methods and strategies. Were participants most likely to change their role as this was the instructional focus of the Faculty Course Redesign Camp? Interestingly, the role of instruction was also the most requested area for future learning, marking a change in participants' attitudes and acknowledging that they should have a different role in instruction.

There are several reasons why providing professional development in the dimension of the role of the instructor is essential. First, college teachers may have limited approaches to teaching due to prior experiences or a lack of pedagogical knowledge. This may prevent them from implementing a full range of teaching strategies and minimize their effectiveness as teachers. Second, teachers need to be encouraged to explore their own orientation to teaching, critically reflect on their own conceptions of the practice of teaching and learning, and focus on strategies that make them most effective. Finally, reflection on their teaching, coupled with the opportunity for discussion with colleagues about teaching, will expand pedagogical understanding and provide support as they grow their teaching repertoire and recognize how various strategies contribute to effective teaching (Holmes, 2004).

Our analysis also showed that the dimension of balance of power is more difficult to change. Blumberg (2009) suggested using a gradual approach for this dimension and to consider many teacher and student characteristics: "The amount of power you give your students depends on their maturity, their motivation, and your own comfort with this redistribution of power" (p. 188). The participants acknowledged the difficulty for students to assume responsibility for learning: "It was scary for them, at least at first." "The students, however, seemed very hesitant when I gave the opportunity of ownership in course and its processes." Shifting the balance of

power can be an uncomfortable process. Zirbel (2008) explained, “This might give the teacher the feeling of temporal disempowerment and make him feel more vulnerable” (p. 17). Perhaps this dimension is the last to change and may need the most support in the form of coaching and shared discussions.

VI. Conclusions and Future Research.

This study was limited in several ways. The results are applicable only to our work setting, and the sample size was relatively small ($N = 13$). A more systematic approach to data collection would strengthen the findings. In future camps we plan to copy the initial self-assessments, collect the syllabi and assignment handouts, use the Blumberg Rubrics for the Dimensions of Learner-Centered Teaching as a framework for analysis, and interview participants at the end of the semester to determine the effectiveness of the project. Interview protocol will be developed prior to the camp.

One limitation of the study was the use of a standardized syllabus template. We wonder if faculty members have an awareness that a syllabus can not only provide information on what to teach, particularly when the curriculum is prescribed, but can also serve as a teaching tool for their students. Perhaps professional development focused on using syllabi as teaching tools would be helpful.

As a result of our analysis we hope to assist humanities faculty in becoming more concrete, real, and relevant in their teaching practice. Dean and Kaiser (2010) suggested that collaboration may not be valued or highly used in the humanities and related fields. Collaboration is an effective pedagogical tool for active learning. Dean and Kaiser found that the “collaborative process of researching and publishing in humanities disciplines offers an ideal setting for active learning, which involves knowledge that students acquire and construct for themselves during the learning process” (p. 43).

The logical next steps based on the results would be to offer professional development on the dimension of balance of power. For example, faculty may benefit from discussions on the use of open-ended assignments, flexible course grading strategies, and the development of syllabi policies.

The college culture may also be a barrier to learner-centered teaching as experiences that most deeply affect students are more often than not outside the classroom, and their tendency to take a deep or surface approach stems from their overall experience over many years of schooling (Tagg, 2003). Barr and Tagg (1995) acknowledged the challenges of learner-centered teaching within a culture that values and reflects an instructional model. During the camp, participants realized that learner-centered teaching is more time consuming than a more transmissive model of teaching.

Our analysis reflects that the two Faculty Course Redesign Camps were successful in engaging full-time and adjunct faculty in community building, teaching skills, active learning strategies, UDL, and assessment. Faculty participants are beginning to focus more on what students are learning rather than on what they are teaching. To enhance the future success of the camp, we plan to research effective faculty development strategies related to attitudinal changes that affect the balance of power, and to investigate whether learner-center teaching produces a difference in student outcomes.

Appendix 1. Application for Faculty Course Redesign Camp.

The Center for Teaching Excellence

Faculty Course Redesign Camp

When: June 14, 15, and 17, 2010, from 9:30–2:30, plus homework. If there is interest, the Center will offer a second Camp on June 21, 22, and 24. There will be a limit of 10 participants, and participants are required to attend all three days.

The Faculty Course Redesign Camp will address community building, teaching skills, active learning strategies, Universal Design for Learning, and assessment while generating excitement for your course content. The goal is to produce a syllabus to use next year. In courses with multiple sections we encourage as many of those teaching the course to attend together. Faculty participating in the Course Redesign Camp will receive a \$500 stipend and lunch daily.

To apply, complete the enclosed form. This will provide us with valuable information to tailor the course to meet your needs. Applications are due by May 21. Please complete and return to the Center.

In addition to the books in the Center's section of the college library, some resources to help you prepare for course redesign are:

Universal Design for Learning (UDL) is a framework for designing educational environments that enable all learners to gain knowledge, skills, and enthusiasm for learning. Educators can improve educational outcomes for diverse learners by applying the following principles to the development of goals, instructional methods, classroom materials, and assessments:

- Provide multiple and flexible methods of presentation to give students with diverse learning styles various ways of acquiring information and knowledge.
- Provide multiple and flexible means of expression to provide diverse students with alternatives for demonstrating what they have learned.
- Provide multiple and flexible means of engagement to tap into diverse learners' interests, challenge them appropriately, and motivate them to learn. (See CAST at <http://www.cast.org>)

For information on **active learning strategies**, read *Active Learning: Creating Excitement in the Classroom* available at

<http://www.oid.ucla.edu/about/units/tatp/old/lounge/pedagogy/downloads/active-learning-eric.pdf>, and visit the Illinois State Center for Teaching, Learning, and Technology website at: <http://ctlit.illinoisstate.edu/>

For information on **assessment strategies** see *Online Assessment Resources for Teachers* at the University of Wisconsin website at <http://www.uwstout.edu/soe/profdev/assess.shtml>, and read *Effective Online Instructional and Assessment Strategies* at <http://edtech.boisestate.edu/elearn/assessment.pdf>

Application for Faculty Course Redesign Camp

Criteria	
Name	
Course name	
Course goals and objectives	Your response
What do you want students to learn by the end of the course that will still be with them several years later?	
When will you teach the course?	
How many students do you expect in the class? Is the course lower division, upper division, or graduate level? How long and frequent are the class meetings? How will the course be delivered: live, online, or in a classroom or lab? What physical elements of the learning environment will affect the class?	
What is the special instructional challenge of this particular course?	
What is expected of the course by students? The department? The institution? The profession? Society at large? What learning expectations are placed on this course or curriculum by the university? The college and/or department? The profession? Society?	
Is this subject primarily theoretical, practical, or a combination? Is the subject primarily convergent or divergent? Are there important changes or controversies occurring within the field?	
What is the life situation of the learners (e.g., working, family, professional goals)? What prior knowledge, experiences, and initial feelings do students usually have about this subject? What are their learning goals, expectations, and preferred learning styles?	
What beliefs and values do you have about teaching and learning? What is your attitude toward the subject? Toward students? What is your level of knowledge or familiarity with this subject? What are your strengths in teaching?	
What is the focus area(s) of the course redesign? Suggested focus areas for course design include but are not limited to:	

<ul style="list-style-type: none">• Encouraging active learning• Utilizing principles of Universal Design for Learning (UDL) so all learners gain knowledge, skills, and enthusiasm for learning• Creating ongoing or formative assessment• Developing methods for prompt or automated feedback	
Rationale for focus area	
Which instructional strategies do you want to include? This could include instructional technology.	
Which assessment techniques might you include in this course? Think about what you can do that will help students learn, as well as give you a basis for issuing a course grade.	

Appendix 2. Faculty Course Redesign Camp Additional Resources.

Multimedia Educational Resources for Learning and Online Teaching (MERLOT)

<http://www.merlot.org>

The National Service-Learning Clearinghouse

<http://www.servicelearning.org/>

Formative Assessment

- Angelo, T. A., & Cross, K. P. (1993). *Classroom assessment techniques: A handbook for college teachers* (2nd ed.). San Francisco, CA: Jossey-Bass.
- *50 CATS by Angelo and Cross*
http://www.lanec.edu/assessment/documents/fifty_cats.pdf

Integrative Learning and Motivation

http://www.fairfield.edu/documents/academic/cae_conf09_fink.ppt

References

Atkinson, C. (2008). *Beyond bullet points: Using Microsoft Office PowerPoint 2007 to create presentations that inform, motivate, and inspire*. Redmond, WA: Microsoft Press.

Barr, R. B., & Tagg, J. (1995, November/December). From teaching to learning—A new paradigm for undergraduate education. *Change*, 27(6), 12–25.

Bloom, B. (1956). *Taxonomy of educational objectives: The classification of educational goals, handbook I: Cognitive domain*. New York, NY: Longman.

Blumberg, P. (2009). *Developing learner-centered teaching: A practical guide for faculty*. San Francisco, CA: Jossey-Bass.

Brookfield, S. (1995). *Becoming a critically reflective teacher*. San Francisco, CA: Jossey-Bass.

Chickering, A. W., & Gamson, Z. F. (1987, March). Seven principles for good practice in undergraduate education. *AAHE Bulletin*, 39(7), 3–7.

Darling-Hammond, L., & Bransford, J. (Eds.). (2005). *Preparing teachers for a changing world: What teachers should learn and be able to do*. San Francisco, CA: Jossey-Bass.

Dean, J. M., & Kaiser, M. L. (2010). Faculty-student collaborative research in the humanities. *Council on Undergraduate Research Quarterly*, 30(3), 43–47.

Fink, L. D. (2003). *Creating significant learning experiences: An integrated approach to designing college courses*. San Francisco, CA: Jossey-Bass.

Holmes, C. L. (2004). *College teachers' orientation to teaching: A comparative case study* (Unpublished doctoral dissertation). University of Massachusetts Amherst. (UMI No. 3152707)

Huston, T. (2009). *Teaching what you don't know*. Cambridge, MA: Harvard University Press.

Leslie, D. W., & Gappa, J. M. (2002). Adjunct faculty: Competent and committed. In C. L. Outcalt (Ed.), *New directions for community colleges: No. 118. Community college faculty: Characteristics, practices, and challenges* (pp. 59–67). San Francisco, CA: Jossey-Bass.

Michael, J. (2007). Faculty perceptions about barriers to active learning. *College Teaching*, 55(2), 42–47. doi:10.3200/CTCH.55.2.42-47

Northcote, M. (2009). Educational beliefs of higher education teachers and students: Implications for teacher education. *Australian Journal of Teacher Education*, 34(3), 69–81.

Reichard, G. W. (2003). The choices before us: An administrator's perspective on faculty staffing and student learning in general education courses. In E. Benjamin (Ed.), *New directions for higher education: No. 123. Exploring the role of contingent instructional staff in undergraduate learning* (pp. 61–69). San Francisco, CA: Jossey-Bass.

Suskie, L. (2009). *Assessing student learning: A common sense guide* (2nd ed.). San Francisco, CA: Jossey-Bass.

Tagg, J. (2003). *The learning paradigm college*. San Francisco, CA: Jossey-Bass.

Vygotsky, L. S. (1986). *Thought and language*. A. Kozulin, (Ed.). Cambridge: Massachusetts Institute of Technology Press. (Original work published 1934)

Weimer, M. (2002). *Learner-centered teaching: Five key changes to practice*. San Francisco, CA: Jossey-Bass.

Wiggins, G., & McTighe, J. (1998). *Understanding by design*. Alexandria, VA: Association for Supervision and Curriculum Development.

Wiggins, G. P. (1993). *Assessing student performance*. San Francisco, CA: Jossey-Bass.

Zirbel, E. L. (2008). *Teaching to promote deep understanding and instigate conceptual change*. Retrieved from <http://cosmos.phy.tufts.edu/~zirbel/ScienceEd/Teaching-for-Conceptual-Change.pdf>

Innovative teaching and technology in the service of science: Recruiting the next generation of STEM students

Thomas McNally¹

Abstract: This article examines innovative approaches to augmenting science lessons taught in middle and high school, with special emphasis on the importance of the early teen years, when experiences both in and out of school have significant impact on career decisions. This is a reflective essay on the recent work of science educators and educational researchers hoping to increase science literacy in American students and inspire them to choose STEM careers. The creativity and breadth of the techniques discussed have important implications for the way in which student teachers are prepared within college secondary education programs.

Keywords: science literacy, informal learning, analogies, metaphors, argumentation, science mentoring, science education.

Although researchers disagree on the extent of the shortage in the U.S. of science, technology, engineering, and mathematics (STEM) workers (Brown, 2009), most agree that STEM education needs revamping. And, while innovators themselves disagree about the target audience, whether every student should be exposed (“Some STEM for all”), or just the technically-gifted (“All STEM for some”), many see the need to move from content-driven lectures and texts to more inquiry-based group projects. And further, there is disagreement over the setting of educational reform, whether to innovate within the science classroom, or outside of the traditional schoolroom—or indeed, outside the traditional school. Some recent programs have shown that technical innovations and computer applications have a role to play in improving STEM education, as can the imaginative use of tools from other disciplines, like those of English teachers, as this paper will show.

I. Background.

Pervasive national anxiety about science education in the United States has reached the level where some scientists, like S. James Gates of the President’s Council of Advisors on Science and Technology, see the country as entering our third great crisis regarding STEM (science, technology, engineering, and mathematics) education (Witze, 2010). Just as the German threat during World War II and the Russian challenge posed by the launch of Sputnik prompted calls for the reform of science and technology education in the 20th century, the low comparative scores of American science and math students over the last decade have renewed the chorus of criticism about the effectiveness of American STEM pedagogy.

The test scores at the center of this controversy include the quadrennially administered Trends in International Mathematics and Science Study (TIMSS) from the Spring of 2007, in which the American 4th graders placed 8th out of 36 countries, while our 8th graders finished 11th

¹English Department, Kutztown University, Kutztown, PA 19530, mcnally@kutztown.edu.

out of 48 countries, and the Programme for International Student Assessment (PISA) in 2009, when U.S. 15 year olds (10th graders), came in 17th out of 30 countries.

How significant are these numbers? How worried need we be about losing the scientific and technological advantage over other countries? According to the Bureau of Labor Statistics, job growth for STEM workers was projected, in 2007, to grow 19% by 2018, compared to all other occupations achieving a 10% growth rate. With the ensuing recession, no shortages currently exist, prompting skeptics of the STEM worker shortage to downplay the seriousness of the projection (Atkinson & Mayo, 2010). But technological innovation, according to the U.S. Department of Commerce, has been responsible for 75% of the growth in the U.S. economy since World War II, and 55% from 1955 to 2005. Against this economic backdrop, the fact that the United States currently ranks 6th out of 40 developed nations in innovations, and 40th out of 40 in improvements to innovation and competitiveness (patents, R & D spending, STEM degrees, and workforce intensity), signals an unmistakable erosion of economic leadership (Atkinson & Mayo, 2010).

Because economic leadership flows from technological innovations, and currently, only 5% of American workers have the skills needed to be STEM workers, we risk falling behind in the generation of new ideas, and the success that flows from bringing those ideas to fruition. It is possible that our country may lack the domestic candidates to fill future STEM jobs (currently 18% are foreign workers, and many are now returning home to vibrant economies that place a premium on STEM proficiency). But our faltering economy already shows the strain of increased competition, and so a concerted national program to improve science education must also become a recruitment effort as well. And any worthwhile attempt at increasing the ranks of STEM students has to start at the point where U.S. science education begins in earnest, in middle school and high school. Here is where student test scores start to wane, where the emphasis shifts from elementary school's focus on animals, weather, and the local landscape, to lab experiments and difficult terminology, that is, to a perceived "distance" from everyday life—high in relevance to college admission, but low in creativity and student engagement.

Determining the scope of the effort for students at this age has significant implications for meaningful reform. Should science education be focused narrowly on technically-gifted students (the "All STEM for some approach") or must we employ a widespread effort to increase science literacy for all students ("The some STEM for all approach")? The answer has to be a combination of both. Advocates for the creation of hundreds of new specialty STEM high schools want to create a cadre of "Deep Divers" who can concentrate on the specific skills needed to acquire deep knowledge in one discipline, while forming "roots" in 2 others. Reformers intent on raising the scientific literacy of all our students point to the basic scientific knowledge voters must have to intelligently deal with the most pressing public policy issues for the future: climate change, ocean protection, food scarcity, energy use, water quality, waste reduction, economic policy, and of course, support for science.

This division over educational focus in many ways mirrors the changing understanding of the term "scientific literacy," which originally conveyed the attempt to make scientific concepts more comprehensible to more people, but now reflects dual usage by researchers. The more conventional use refers to examining the knowledge that results from teaching the language of science and from using various forms of science texts, which seems to fit nicely with the "all STEM for some approach." The other use involves promoting engagement with the natural world to illustrate scientific principles and the scientific way of thinking, which would easily assimilate with the more democratic "some STEM for all approach".

While such a bilateral approach necessitates programmatic changes at the high school level and beyond—it can begin with a unified approach to making science less formidable and more engaging at the middle school level. And it is necessary to begin with the middle school curriculum, before students decide that science is “not for them,” or that school is “not for them.” In addition to the inherent difficulty of the subject matter, secondary school innovators also have to deal with the natural reluctance of some students and the traditional pedagogical approaches endemic in most schools. Indiana University’s High School Survey of Student Engagement in 2009 found that 66% of the surveyed students reported being bored in school every day, with 98% of them deeming the material either “not interesting,” “not relevant,” or “not challenging enough.” The survey found that the standard pedagogical approach, the teacher lecture, engaged student interest only 26% of the time, while switching to more interactive approaches, such as group projects, engaged students 60% of the time, and group discussions and debates held students’ interest 61% of the time (Yazzie-Mintz, 2010). Clearly, both the material and the methodology have to synchronize in such a way that students feel they “need to know this,” and “want to know it now.”

II. Methodology.

Innovative classroom approaches for engaging students in the pursuit of scientific literacy, as well as technical enhancements to learning and “informal” science programs outside of school, must all be subject to evaluation by rigorous and consistent standards. Five principles for developing materials and instruction for literacy in science show up consistently in classrooms across the country, and in the most recent research (Krajcik & Sutherland, 2010):

First, Linking new knowledge to prior, foundational learning;

Second, Stimulating student exploration by generating relevant questions about a topic’s impact on their own lives;

Third, Making sense of models, diagrams, simulations, and graphs;

Fourth, Applying newly-learned scientific ideas to new contexts;

Fifth, Engaging students in the construction of arguments and explanations.

Matching these recent classroom innovations and technical enhancements to their underpinnings in Krajcik and Sutherland’s principles can provide the theoretical justification for changing the training for new secondary educators. Establishing the value of interdisciplinary collaboration among teachers from the sciences and the humanities toward improving science literacy can provide the foundation for this change. Examining the role that enhancements in software design and the remote access to both scientific equipment and research scientists can play in career decision-making, strengthens the argument for structural change in our approach to science education. Recognizing the underappreciated contribution of “informal” science programs completes the triad of teaching tools available to educators.

III. Findings.

Most research into reforming science education has addressed the difficulty students have with comprehension. All of the sciences employ specialized vocabularies and abstract concepts, “many of which are chains of conceptual relations too long or complex to reside in working memory.” (van den Broek, 2010). For beginning science students, these obstacles are compounded by texts written in passive voice and dense with information-bearing words

(nominalizations). The texts offer no respite in the presentation of foundational ideas critical to understanding each scientific concept, so that one overlooked connection or misperception could derail those “chains of conceptual relations” necessary for comprehension. At the introduction to a new subject, maintaining this coherence presents the greatest challenge for teachers in their quest to engage students.

This quest for engagement leads us back to an examination of the dual understanding of the term “science literacy.” Each understanding carries with it certain critical assumptions about the nature of the problem facing educators. The first meaning, dealing with language use and texts, characterizes the loss of interest in science as a failure of methodology—the wrong text, the wrong activities, the wrong approach. If our science pedagogy improves, this thinking goes, students will engage more readily in scientific inquiry. The second understanding of scientific literacy more directly confronts the national concern about STEM education by viewing the problem as one of recruitment. From this perspective, if students see science as an indispensable tool needed to achieve their career ambitions, and to enrich their relationship with the natural world—not just an academic requirement, then they will enthusiastically embrace scientific inquiry. Both approaches to scientific literacy can yield valuable outcomes, and both need to be pursued, not just by science teachers, but also with the collaboration of others, including English teachers.

A. Classroom Learning.

Krajcik and Sutherland’s five principles serve as a useful tool for organizing proposed innovations. The first principle, linking new knowledge to prior, foundational learning, takes on an added challenge when teaching counter-intuitive concepts that do not match a child’s everyday experience, in which the sun, not the earth, appears to move in a sky that seems empty of substance, not packed with various gases critical to the maintenance of life and the regulation of climate. So immediately the teacher faces three obstacles while introducing new ideas: modifying existing knowledge, and introducing unfamiliar, specialized vocabulary, that is used in surprising syntactical structures. And these obstacles appear even more daunting in the wake of No Child Left Behind’s (NCLB) influence on educational policy. An emphasis on preparing for standardized tests in reading and math has left less time for science instruction. A much-cited 2008 survey of San Francisco area elementary schools (Dorph et al., 2007) documented the post-NCLB allocation of 60 minutes per week for science, compared with 200 minutes per week in 2001. So that students enter middle school with less of a scientific foundation. And, once students enter the full-period science classroom in middle school, they continue to encounter the time limitation resulting from the decision to assess content knowledge via multiple choice standardized tests, which requires the teaching of facts over broader scientific concepts.

Isolated in the science classroom, and short on class time for scientific inquiry, some teachers have addressed the problem of integrating new material by opting for texts utilizing more familiar vocabulary, and more straightforward grammar in order to have students spend less attention on language and more on learning key concepts. As van den Boek (2010) rightly points out, when introducing topics such as anatomical nomenclature, a simplified language approach doesn’t always fit. And given the sheer volume of material to be covered, time constraints limit the number of review lessons for mapping new terms to their correlates, forcing teachers to rely upon the “motivation and prior knowledge” of their students for lasting comprehension.

Now some alternatives are available. A supplemental text-based approach, Guided Inquiry supporting Multiple Literacies (GIsML) helps students conduct scientific investigations using a fictional scientist's notebook (Pearson, Moje, & Greenleaf, 2010). Students get practice at interpreting data and drawing inferences from the available evidence. And by adopting a collaborative approach, a science classroom activity like the scientist's notebook can be extended and complemented. In the English classroom, students can keep their own journals of new knowledge—translating the inferences from the scientist's language into their own terms, which aids comprehension. Similarly, English and social studies teachers can use web-based programs such as Word Generation (designed by the Strategic Education Research Partnership for middle school use), which inserts important vocabulary words into articles about real-life dilemmas to demonstrate the use, in-context, of words such as “hypothesis,” “infer,” and “data.” This stimulates discussion, where students get further practice using these terms (Snow, 2002). Outside collaboration has also yielded significant benefits. The Beckman Institute's “Bugscope,” a free, educational technology outreach program for teachers and students at all levels, offers online access to the University of Illinois at Urbana-Champaign's electron microscope so that students can view minute details of insect anatomy, and more importantly, interact with real scientists. Students can ask questions about insects, electron microscopy, or science careers. One fifth grader asked, at the end of their session with the scientists, “What does it take to be you guys?” (Korb & Thakkar, 2011). In this one short quote resides the rationale for educational innovation: direct involvement with scientists and the thrill of scientific inquiry provides the answer to the question students always ask, “Why do I need to know this stuff?”

Krajcik and Sutherland's second principle, driving student exploration by generating meaningful and engaging questions about a topic's impact on their own lives, also lends itself well to collaboration. For example, asking a scientific question like “What nutrients in food are essential for growth and good health?” can lead to discussions in a health or English class, during which students are encouraged to draw inferences from evidence in order to generate questions of their own, such as, “What should I eat to lose weight while maintaining good health?” or “Why do some foods do more harm than good?” By creating a purpose for continued reading, students hunt for specific information and remember it better (Lorch, Lorch, & Inman, 1993). It is this “need-to-know” that pushes students to tackle complex research material for written assignments and class discussions. Both written and oral sharing of new knowledge aids memory formation.

Classroom management, especially in the handling of grades, can also have a large impact on learning. Fortunately, some of the lessons learned in the video game industry are slowly coming to the assistance of education. Contrast the enthusiasm of gamers who attempt to “level up,” that is, ascend to a more difficult round of challenges by acquiring needed skills, with the student questioning “when” this science material will ever be useful, and it becomes clear that invoking a difficult challenge that promises immediate feedback and rewards provides students with the kind of engagement they crave.

The efficacy of this approach is on display at New York City's Quest to Learn, a public charter school for students in grades six through twelve, where questions become “quest”ions in a game-based educational environment (McGonigal, 2011). Students on a “quest” to achieve mastery in a subject generate relevant questions to help them work toward a self-chosen goal, like master code-breaker, master storyteller, or master chemist. To “level-up” to master status, students must overcome “boss level” challenges, like facing an extremely difficult “boss

monster” (the equivalent of a final exam). Achieving this goal creates the emotional rewards of a job well-done and the satisfaction of overcoming significant obstacles. They learn and they have fun—“hard fun”, while mastering an academic skill to solve personally-relevant problems. Classroom management shifts to coordinating enthusiastic learners embracing concepts with a direct impact on their lives, as Krajcik and Sutherland propose.

The third principle, making sense of models, diagrams, simulations, and graphs is an indispensable skill for several reasons. Not only does the visual representation of data create quickly-grasped summaries of measurements and processes, but it also aids, especially with the advent of powerful new data visualization programs, in the recognition of emerging patterns and relationships in data, across many disciplines. For example, the Molecular Workbench (MW) software, developed by the Concord Consortium of scientists and educators in Concord, Massachusetts, is a research technique that has been successfully converted into a tool for teaching. MW transforms equations of natural phenomena into digital representations that allow students to carry out computational experiments on a wide range of science concepts (Xie et al., 2011). Similar to real experiments, students can observe visualizations, and formulate questions, hypotheses, investigations, and analyses of results, focusing on nurturing the ability to do quantitative analysis without needing to master complex mathematics and statistics.

Teaching individual scientific concepts like states of matter, gas laws, fluid mechanics, and chemical reactions, can often result in a view of fragmentary forces at play in nature. By viewing MW’s simulation snapshot of the interacting forces in a classroom experiment, students perceive the interconnectivity, which paves the way for richer creativity in designing thought experiments. By crafting additional experiments themselves in an attempt to challenge existing laws, students learn to think like researchers. In partnership with science teachers, English and social science teachers can reinforce newly-acquired proficiency by relating the interplay of physical forces to real-world phenomena. Creating research projects in humanities classrooms to investigate societal problems that actually utilize the students’ new understanding of scientific principles, helps long term memory formation.

The fourth principle of Krajcik and Sutherland, applying newly-learned scientific ideas to new contexts, opens up many opportunities for English and social studies teachers to craft units where students can integrate what they have learned in science into an explanation of, and then a solution for, societal dilemmas like water scarcity, climate change, soil depletion, overfishing of the oceans, and an unending host of other challenges. This reinforcement of new scientific knowledge requires only the coordination of planning among teachers, and the introduction of science-based topics for writing assignments in classes that normally sidestep scientific material.

Inside the science classroom, applying scientific concepts to new contexts conjures up images of Science projects designed for annual science fairs around the country. One nonprofit developer of software, Science Buddies, found that students had much more difficulty selecting a topic and doing the background research than they had with formulating hypotheses, designing experiments, and analyzing data (Hess, Corda, & Lanese, 2011). With personalized learning tools and over 15,000 pages of content, Science Buddies matches students with information that interests them and answers their questions by connecting them to an online community of scientists. This “recommender” system allows students to converse online and understand how scientists work (only 18% of Americans have ever actually met a working scientist) and thus become a part of a learning community outside of the school setting. As with the Bugscope project, students become inspired by contact with real scientists probing meaningful questions about nature and actual problems, not just concepts in a textbook.

The fifth, and last principle for engaging students in scientific inquiry is the richest opportunity yet for collaboration between science and English teachers: engaging students in the construction of arguments and explanations. These tasks have traditionally been the province of the English teacher, especially persuasive arguments. Arguing, however, is also a core competency of scientific inquiry (Osborne, 2010). Scientists dispute the methods of collecting and interpreting data, as well as the theories resulting from interpretations. They argue in small meetings, at conventions, and in peer reviewing each other's research. It is really within this crucible of attempting to find weaknesses in a hypothesis or the data supporting it that a consensus is forged among scientists. Science would not be as objective, and as trusted without argument—yet, as a review of science texts will verify, the controversies surrounding scientific theories receives very little attention in science texts used in our schools. Densely-packed facts are presented for test preparation, at the expense of revealing the history of how we came to know what we know about consensually agreed upon theories, even relatively recent ones such as plate tectonics, for example.

By teaching the tools of rhetorical analysis, English teachers are already preparing their students to test the reliability of evidence and the validity of assumptions underpinning the claims made in new theories they will examine in science class. An analysis of 18 studies grouping learning activities into three categories (Chi, 2009) found that the “Interactive” model (based on discussion and argumentation) produced more effective learning than either a “Constructive” model (based on producing a written essay or lab report), or an “Active” model (focused on experimentation). Very surprisingly, the “Active” model produced the least effective results. Collaborative effort will always be required, however, between teachers to help students, especially younger students, to determine the reliability and relevance of evidence.

This cross-fertilization of ideas about science concepts can help our schools achieve the goals set forth in the recently released report from the National Academies, *A Framework for K-12 Science Education*, which suggests that students return to science concepts in increasing depth as they get older, and placing problem-solving skills for real-world problems on a level with the inquiry method currently taught (Mervis, 2011). When students discuss in an English class or a social studies class the implications and effects of the concepts discovered in science class, they are spiraling back to lessons from earlier in the day, and increasingly looking at concepts from earlier grade levels with more sophistication and deeper appreciation for their significance.

The other half of the fifth principle, engaging students in the construction of explanations for new science material using their own language, creates an opportunity for English teachers to demonstrate the practical application of analogies and metaphors. And here great benefits have to be weighed against the danger of misconceptions from poor choices by teachers who cling to outdated or unfamiliar analogies, especially with younger students. Often, a student's understanding of a concept derives from the popular metaphors used to create quick, shorthand descriptions. For instance, the term “DNA fingerprint” frequently appears in news stories about forensic science's ability to solve murders and paternity suits, or to identify the remains of accident victims. Interviews with both elementary and secondary students (Venville, Gribble, & Donovan, 2010) reveal the confusion that can result. One ten-year old student thought that DNA was “pieces of the body used to identify things,” and is located “outside of the body, like hair, fingerprints, footprints.” (Venville, Gribble, & Donovan, 2010). So the phrase “DNA fingerprint” became “DNA=fingerprint” in the minds of young students untrained in the use of representational language. And science teachers, who expend a great deal of energy and care to

teach a concept, may not realize that memorable catchphrases carry inseparable associations for students struggling to incorporate new material.

Proper training in analogy construction involves a thorough examination of the features of both the analog and the target concept. In collaboration with the science teacher, the English teacher must examine those features shared by the new material being taught and the familiar analog, as well as those features they do not share. While the “perfect” teacher-constructed analogy may not exist, the chosen analog can serve as a point of departure, from which students venture forth to construct an analogy of their own choosing. And in the process of mapping the features of the target idea to a self-generated analog, critical thinking and enhanced understanding ensue.

B. Informal Learning.

The five enumerated principles for improving student engagement with science in the classroom respond to the needs identified with the first meaning of the term “science literacy”: the quest to understand the language and the texts used in scientific inquiry. The classroom activities discussed in this paper can lead to greater student involvement, and thus greater comprehension of scientific concepts. Comprehension, however, is only part of the problem. America’s economic leadership depends upon more young people choosing science careers, which pertains more to the second meaning of “science literacy”: the movement toward greater interaction with the natural world to illustrate scientific concepts. Recent research, based on over forty years of research on “free choice” or complementary learning, has focused attention away from school as the primary determinant of career choice, and toward the out-of-school learning that has a major impact on children’s educational achievement (Falk & Dierking, 2010).

The anxiety over the performance of U.S. middle school and high school students needs to be balanced with the surprising results of other age groups in this country. Over the last ten years, elementary students in the U.S. have consistently outperformed most other children in the world on such standardized tests as the Trends in International Mathematics and Science Study (TIMSS) and the Programme for International Student Assessment (PISA). And for over twenty years U.S. adults have outperformed the rest of the world (except Sweden), according to the 2005 Survey of Civic Science Literacy conducted in 34 countries. The U.S. ranked second with over 27% of the population deemed to be scientifically literate. Although taking college-level courses undoubtedly improves literacy, only 30% of American adults have ever taken even one science course in college. Instead, the fact that the U.S. scores well, apart from those years when most classroom science instruction takes place, suggests that our rich variety of free-choice sources of exposure to science and the natural world has a significant impact. From jogging through the woods, or visiting science museums, national parks, science centers, botanical gardens, and the multiple online and media-centered sources, to having science-related hobbies such as gardening or astronomy, to encountering real-life dilemmas such as disease, pollution, or the effects of climate change that provoke a powerful need-to-know in a population with these ample science-based resources, our country has the capacity, outside of the classroom, to influence interest in science.

A recent study by the National Educational Longitudinal Study (NELS) cited attitudes formed in early adolescence, primarily from out-of-school experiences, as the single most important influence on the choice of a science career (Falk & Dierking, 2010). Free-choice

science activities also increase comprehension, and so appear to be a better predictor of science achievement—even more so than math scores.

V. Conclusion.

This research describes educational challenges balanced with rich resources, both within our school systems and outside in our communities. The innovations described in this paper have significant implications for the teaching methodology in our secondary education programs around the country. Surely, interdisciplinary approaches deserve immediate support.

As a nation we can choose to mobilize our increasingly limited educational resources through teacher collaboration to increase engagement with text-based science, and at the same time we must realize that our surest path leading to greater interest in science careers is probably the path just outside our back doors, the one that brings our children into contact with the natural world—the original source for all science, the original hands-on approach to learning.

References

- Atkinson, R., & Mayo, M. (2010). Refueling the U.S. innovation economy: Fresh approaches to science, technology, engineering and mathematics (STEM) education. *The Information Technology and Innovation Foundation*. Retrieved from <http://www.itif.org/files/2010-refueling-innovation-economy.pdf>
- Brown, A. (2009). What engineering shortages? *The Bent of Tau Beta*, Summer, 21-25.
- Chi, M. (2009). Active-constructive-interactive: A conceptual framework for differentiating learning activities. *Topics in Cognitive Science*, 1(1), 73-105.
- Dorph, R., Goldstein, D., Lee, S., Lepori, K., Schneider, S., & Venkatesan, S. (2007). The status of science education in bay area: Research brief. *Lawrence Hall of Science. University of California Berkeley, California*. Retrieved from <http://lawrencehallofscience.org/rea/bayareastudy/index.html>.
- Falk, J., & Dierking, L. (2010). The 95% solution. *American Scientist*, 98, 486-493.
- Hess, K., Corda, C., & Lanese, K. (2011). Science buddies: Advancing informal science education. *Science*, 332, 550-551.
- Korb, M., & Thakkar, U. (2011). Facilitating scientific investigations and training data scientists. *Science*, 333, 534-535.
- Krajcik, J., & Sutherland, L. (2010). Supporting students in developing literacy in science. *Science*, 328, 456-459.
- Lorch, R., Lorch, E., & Inman, W. (1993). Effects of signaling topic structure on text recall. *Journal of Educational Psychology*, 85(2), 281-290.

McGonigal, J. (2011). *Reality Is Broken*. New York: The Penguin Press.

Medina, J., (2008). *Brain Rules: 12 Principles for Surviving and Thriving at Work, Home And School*. Seattle: Pear Press.

Mervis, J. (2011). Report alters definition of what students should learn. *Science*, 333, 510.

Osborne, J. (2010). Arguing to learn in science: The role of collaborative, critical discourse. *Science*, 328, 463-466.

Palinscar, A., & Magnusson, S. (2001). *Cognition and Instruction: Twenty-Five Years of Progress*. Mahwah: Earlbaum.

Pearson, P., Moje, E., & Greenleaf, C. (2010). Literary and science: Each in the service of the other. *Science*, 328, 459-463.

Snow, C. (2002). Reading and Understanding: Toward a Research and Development Program in Reading Comprehension. *Rand*. Retrieved from www.rand.org/publications/MR/MR1465

Van den Broek, P. (2010). Using texts in science education: Cognitive processes and knowledge representation. *Science*, 328, 453-456.

Venville, G., Gribble, S., & Donovan, J. (2005). An exploration of young children's understandings of genetics concepts from ontological and epistemological perspectives. *Science Education*, 89(4), 614-633.

Witze, A. (2010). Confronting a third crisis in U.S. science education. *Science News*, 177(11), 32.

Xie, C., Tinker, R., Tinker, B., Pallant, A., Damelin, D., & Berenfeld, B. (2011). Computational experiments for science education. *Science*, 332, 550-551.

Yazzie-Mintz, E. (2010). *Charting the path from engagement to achievement: A report on the 2009 High School Survey of Student Engagement*. Bloomington, IN: Center for Evaluation & Education Policy.

Mentor and protégé goal orientations as predictors of newcomer stress

Julia M. Fullick¹, Kimberly A. Smith-Jentsch, Charyl Staci Yarbrough², and Shannon A. Scielzo³.

Abstract: Although many academic organizations offer formal mentoring programs, little is known about how individual characteristics of peer mentors and their protégés interact to reduce new-student stress. First-year college students participated in a peer-mentoring program designed to reduce stress. The results of this study demonstrated that protégés who received greater psychosocial and career support showed greater stress reduction. Additionally, protégés with a higher avoid performance goal orientation showed lesser stress reduction. Mentor avoid performance goal orientation was positively associated with stress reduction for protégés high on avoid performance goal orientation, but negatively associated for those low on avoid performance goal orientation.

Keywords: newcomer socialization, mentoring, goal orientation, stress reduction

First-year college students often undergo a stressful induction to their new environments. This stress is likely to result from a struggle with new academic structures, classroom expectation uncertainty, and exam performance pressures (Shields, 2008). Researchers have long recognized the harmful effects stress can have on academic performance (e.g., Felsten & Wilcox, 1992; Shields, 2008; Silver, 1968).

A key desired outcome of formal mentoring programs for first-year students is to reduce the stress inherent in adjusting to new roles, responsibilities, and expectations. Such stress can slow the process of developing critical skills, lengthening the time in which the student requires educational training, and extending coursework completion, and can even lead to attrition (Cooper-Thomas & Anderson, 2005). Each of these outcomes can have a negative impact on the student's academic success.

Most institutions look for strategies to reduce attrition of new members (Sanchez, Bauer, & Paronto, 2006). Schools hope to socialize new students quickly and efficiently so that the first-year students can become academically and socially successful. Saks and Ashforth (1997) provide a multi-level process model of socialization. In this model, the researchers outline the contextual and socialization factors that influence cognitive sense making. Cognitive sense making consists of information, uncertainty reduction, and learning. *Newcomer socialization* has been referred to as the process of learning and adjusting to organizational norms and standards that follows selection into an organization (Cooper-Thomas & Anderson, 2005) and is a critical component to improving student commitment and reducing attrition.

This paper focuses on the portion of the model that suggests that socialization factors (i.e., orientation programs, mentoring programs) influence the cognitive sense making of

¹ Department of Psychology, University of Central Florida, 4000 Central Florida Boulevard, Orlando, FL 32816, julia.fullick@knights.ucf.edu

² The John J. Heldrich Center for Workforce Development, Rutgers University, 30 Livingston Avenue, New Brunswick, NJ 08901

³ Department of Psychology, University of Texas at Arlington, 501 South Nedderman Drive, Arlington, TX 76019

newcomers. Furthermore, we hope to find that first-year students benefit from positive outcomes when academic socialization programs (e.g., mentoring) are used to provide information, reduce uncertainty and promote learning. Orientation programs that foster student participation, feedback seeking, and the discovery and application of knowledge can enhance a student's educational experience. From the administrator's perspective, a productive student will contribute to the school's scholarly reputation as well as the marketable statistics for the institution.

For many years, formal mentoring programs have been used in universities (Allen, McManus, & Russell, 1999; Sanchez et al., 2006) to facilitate the socialization of first-year students and to promote the positive outcomes that have been associated with formal mentoring programs (e.g., higher satisfaction, increased self-esteem, greater university commitment, lower school stress). Formal mentoring programs are often used to augment classroom or computer-based orientation and training programs designed to move newcomers through this process effectively and efficiently (Joiner, Bartram, & Garreffa, 2004). Mentors can help guide first-year students through their transition into college life. Specifically, a mentor can be someone to go to for information regarding classes, career ambitions, stress reducers, and information about the college atmosphere and city area.

A. Defining Mentoring and Goal Orientation.

Kram (1985) defined *mentoring* as a relationship between two individuals whereby the more experienced individual, the mentor, commits to providing developmental support to the less experienced individual, the protégé. When an academic organization sponsors a formal mentoring program with the purpose of socializing students, it typically matches the new students with more experienced students and provides some sort of guidance as to the expected frequency and goals of mentor-protégé meetings. Formal mentors serve as role models, help their protégés to network, make sense of organizational signs and symbols, and acquire knowledge about rules, resources, and expectations that may be difficult for the protégés to find on their own (Raabe & Beehr, 2003). This is expected to reduce the stress associated with the uncertainty of adjusting to new student roles and responsibilities.

Prior research has demonstrated that mentoring can reduce protégé stress (Ülkü-Steiner, Kurtz-Costes, & Kinlaw, 2000). However, little is known about the manner in which dispositional characteristics (e.g., goal orientation) of the mentor and protégé influence the success of mentoring on stress reduction. The present study investigated the additive and interactive effects of mentor and protégé goal orientations on new-student stress reduction during a formal peer-mentoring program.

Eby and Lockwood (2005) found that mentor-protégé mismatch was reported to be a common source of dysfunctional mentoring experiences. This is particularly an issue with respect to formal mentoring since mentors are typically paired with their protégés by a third party rather than on the basis of mutual attraction as is the case for informal mentorships (Ragins & Cotton, 1999). The mismatch experiences discussed by Eby and Lockwood further confirm the consensus that mentor-protégé similarity is a critical component for success (Allen & Eby, 2003). Further, Eby, Butts, Lockwood, and Simon (2004) found that mentor-protégé mismatches were associated with less learning and less psychosocial and career support reported by the protégé.

The concept of *goal orientation* was first introduced in the educational psychology literature to explain variability in how people interpret and respond to achievement situations (Deshon & Gillespie, 2005; Dweck, 1986; Elliot & Dweck, 1988; Sideridis, 2005). Dweck (1986) argued that those with a learning goal orientation engage in learning for its own sake, whereas those with a performance goal orientation are primarily motivated to gain favorable evaluations (or avoid negative ones) from others.

Empirical research on goal orientation later indicated that learning and performance goal orientations do not reflect opposite ends of a single continuum, but instead represent two relatively independent dimensions (Brophy, 2005). Furthermore, it has become recognized that performance goal orientation consists of two subcomponents that are correlated with each other, yet show a different pattern of correlations with the same antecedents and consequences. Specifically, *prove performance goal orientation* describes the motivation to approach situations in which one's competence can be demonstrated, whereas *avoid performance goal orientation* describes the motivation to withdraw from situations in which one's lack of competence might be demonstrated (Vandewalle, 1997).

A recent meta-analysis by Payne, Youngcourt, and Beaubien (2007) demonstrated that *prove performance goal orientation* tends to be uncorrelated or weakly correlated with learning processes and outcomes whereas *avoid performance goal orientation* tends to be negatively correlated to the same variables. Given the demonstrated relationships between goal orientation and learning in educational contexts, this construct may well be related to learning in the context of mentoring relationships.

Two recent studies report evidence to suggest that greater mentoring behaviors were provided when the mentor and protégé both shared a high learning goal orientation (Egan, 2005; Godshalk & Sosik, 2003). Additionally, Welsh and Wanberg (2009) found that learning goal orientation was associated with higher levels of career-related mentoring received. This also supports the theoretical framework outlined by Kim (2007) in which she posits mentors high in learning goal orientation will provide, and protégé high in learning goal orientation will receive more mentoring. However, mentor-protégé *avoid goal orientation* similarity, which has been commonly related to anxiety (Elliot & Thrash, 2002; Payne, et al., 2007; VandeWalle, 1997), has yet to be examined.

The present study extends this prior research in two important ways. First, we focus on the influence of *avoid performance goal orientation* on stress reduction during a formal mentoring program designed to socialize incoming first-year students. Second, we jointly tested main and interactive effects of mentor and protégé levels of *avoid goal orientation*.

B. Theory and Hypotheses.

Research has consistently shown us that similarity breeds success in mentoring relationships. However, there are many different dimensions upon which a mentor-protégé dyad can be similar or different. The nature of the specific outcome desired should be considered in this regard. For instance, learning goal orientation pertains to the degree to which an individual strives to achieve mastery. Consistent with this notion, Godshalk and Sosik (2003) demonstrated that mentor and protégé learning goal orientation influenced the development of protégés' enacted career aspirations (i.e., actions protégés took towards fulfilling career-related mastery). In terms of stress reduction, however, we reasoned that *avoid goal orientation* should be the more

relevant construct given its established links to anxiety and to responses to anxiety producing events (Elliot & Thrash, 2002; Payne, et al., 2007; VandeWalle, 1997).

Mentoring Behaviors. House (1981) suggested four types of social support that may lead to stress reduction. The first type is *emotional*, incorporating such aspects as trust, concern, and listening. The second is *appraisal*, which refers to aspects such as affirmation, feedback, and social comparison. The third type is *informational*, which incorporates aspects such as providing advice, directives, and suggestions. The final form of social support is *instrumental*, referring to aspects such as modifying the environment and providing financial guidance.

Allen et al. (1999) suggested that the former two forms (emotional and appraisal) of social support correspond with psychosocial support behaviors provided by mentors, whereas the latter two (informational and instrumental) correspond with the career support behaviors. In partial support of this notion, Allen et al. (1999) found a positive relationship between career support received and a protégé's perception that their mentor helped them cope with stress. In the present study, we tested the hypotheses that both career and psychosocial support would be unique predictors of protégés' stress reduction. The following direct effects were hypothesized.

Hypothesis 1. Psychosocial support provided during a formal mentoring program will be positively associated with stress reduction for first-year students.

Hypothesis 2. Career support provided during a formal mentoring program will be positively associated with stress reduction for first-year students.

Avoid Performance Goal Orientation. Although formal mentoring has the potential to reduce first-year student stress, we expected that mentor and protégé levels of avoid performance goal orientation would moderate these effects. First, avoid performance goal orientation has been shown to relate positively to state anxiety and negatively to emotional stability and self-efficacy (Payne et al., 2007). Therefore, protégés who have a strong avoid performance goal orientation are likely to enter a formal mentoring program with lower confidence in themselves and higher levels of stress to begin with. However, although they may be in the greatest need for stress reduction they may be less likely to benefit from mentoring as a stress reducer.

First, those high on avoid performance goal orientation tend to believe that ability is stable. Thus, their mentor is less likely to be able to convince them that things will get easier for them. Second, since they are motivated to hide their weaknesses, they should be less likely to vent their frustrations or seek feedback on their level of understanding. This, in turn, should make it more difficult for their mentor to address the specific issues that are causing them stress. Thus, we hypothesized that:

Hypothesis 3. Protégés who score higher on avoid performance goal orientation will show less reductions in stress during a formal mentoring program than will those who score lower on avoid performance goal orientation.

In a sincere effort to reduce their protégés' stress, mentors are likely to project their own beliefs about what causes and reduces stress on their protégés and to adopt stress reduction strategies accordingly. Since avoid performance goal orientation influences the types of things that induce and reduce stress for a student, a mentor's attempts to reduce a protégé's stress may be ineffective or may even increase stress if the two do not share similar levels of avoid performance goal orientation.

For instance, a mentor who has a low avoid performance goal orientation would be more likely to share his/her own personal challenges during their collegial career and to encourage protégés to do the same. “One common finding in the self-disclosure literature is the ‘dyadic effect,’ a subject tends to reciprocate the same level of intimacy to the discloser that has been revealed to him” (Chaikin & Derlega, 1974, p.117-118).

For protégés who are also low in avoid performance goal orientation this is likely to be a cathartic experience that allows them to vent frustrations, express fears and concerns, and to receive empathy, acceptance and feedback that their concerns are normal. By contrast, protégés who have a high avoid performance goal orientation are likely to experience increased stress at the prospect of being put on the spot to detail their personal weaknesses. Moreover, given their propensity to view ability as unchangeable (Dweck & Leggett, 1988), they may perceive a mentor’s self-disclosures as a sign of the mentor’s lack of competence. As a result, they may lose confidence in that mentor and in his/her ability to provide useful guidance.

Conversely, a mentor who is high on avoid performance goal orientation is unlikely to reveal personal information that would make him/her appear less competent and is unlikely to ask his/her protégés to do so either (e.g., Tolor, Cramer, D’Amico, & O’Marra, 1975). Both high and low avoid performance goal orientation protégés should be less likely to reveal concerns to a mentor who does not encourage them to share such concerns and who appears not to have ever had those concerns themselves. However, protégés high on avoid performance goal orientation should be happy to avoid such uncomfortable topics, and be less likely to expect their mentor to reveal his/her own prior weaknesses. On the other hand, protégés low on avoid performance goal orientation may be more likely to interpret the absence of such self-disclosure either as a sign that their mentor never faced the same challenges as they are and therefore cannot provide empathy or acceptance. It follows that our final hypothesis stated:

Hypothesis 4. Mentor and protégé levels of avoid performance goal orientation will interact to predict the protégé’s stress reduction. Specifically, mentor avoid performance goal orientation will be negatively associated with stress reduction for low avoid protégés and positively associated with stress reduction for high avoid protégés.

I. Methods.

A. Participants.

Protégés were 271 college first-year students who took part in a formal peer-mentoring program designed to assist them in acclimating to a large southeastern university. These protégés were randomly assigned to one of 58 senior (class standing) undergraduate mentors. One-hundred and twenty-four protégés and 31 mentors were female. The mean age was 18.24 years for protégés and 21.43 years for mentors. Protégés and mentors were compensated \$8 and \$10 per hour respectively for their participation in this research.

B. Measures.

Mentoring Behaviors. Protégés reported the extent to which they felt psychosocial support and career support was provided to them using an adapted 25-item version of a measure by Noe (1988). Modification of the measure included the addition/deletion of items as well as the

modification of question wording to fit the academic context of our study (see Appendix). Responses were made on a 6-point Likert scale (1 = *strongly disagree* to 6 = *strongly agree*). For the original scale, Noe (1988) reported internal consistency estimates of .92 for the psychosocial scale and .89 for the career-related scale. The internal consistency reliability estimates obtained in the present study for protégé reports of psychosocial support and career support were .89 and .90, respectively.

Goal Orientation. Mentor and protégé learning goal orientation and avoid performance goal orientation were assessed using scales developed and validated using confirmatory factor analysis, reliability analysis, and nomological network analysis by VandeWalle (1997). Participants were asked to respond to each item using a six-point Likert scale (1 = *strongly disagree* to 6 = *strongly agree*). The learning goal orientation measure consisted of five items (e.g., “I enjoy challenging and difficult tasks where I’ll learn new skills”) and the measure of avoid performance goal orientation consisted of 4 items (e.g., “I prefer to avoid situations where I might perform poorly”). The full scale can be found in VandeWalle (1997; Table 2). VandeWalle (1997) reported internal consistency estimates of .89 for learning goal orientation and .88 for avoid performance goal orientation. The internal consistency reliability estimate obtained in the present study was .89 for learning goal orientation and .60 for avoid performance goal orientation.

Stress. Protégés were asked to report their levels of school-related stress prior to their participation in the mentoring program using a three-item measure extracted from House and Rizzo’s (1972) anxiety-stress questionnaire. The three items were, “Problems with school have kept me awake at night this semester,” “My schoolwork this semester has had a negative impact on my health,” and “I have been under a great deal of tension this semester” (revised from House & Rizzo, 1972). Item responses were averaged to form indicators of pre-program stress. House and Rizzo (1972) found a Kuder–Richardson reliability estimate of .83 for the three items we used to measure pre-program stress. This item was used as a control variable in all of our analyses.

Protégés were also asked to report their level of mentor-related stress reduction upon completion of the third mentoring session. Allen et al.’s (1999) two-item measure was used including, “Having a mentor has really helped to reduce my school tension,” and “My mentor has helped me better cope with my school stress” (revised from Allen et al., 1999). The two items were averaged to form an indicator of mentor-related stress reduction. Allen et al. (1999) found a correlation of .71 between these two items in their original study.

All stress items were rated using a 6-point Likert-type scale (1 = *strongly disagree* to 6 = *strongly agree*). The internal consistency reliability estimate obtained in the present study was .76 for pre-program stress and .91 for mentor-related stress reduction.

C. Procedure.

All participants attended a protégé or a mentor orientation, completed a demographic survey, and the goal orientation measures. Protégés additionally completed the pre-program stress measure. Next, each protégé was randomly assigned a mentor. Due to the greater number of protégés than mentors, each mentor was assigned 3-4 protégés. During an initial 3-week probationary period, each dyad was asked to hold weekly fifteen-minute sessions. These sessions took place either face-to-face, through video-teleconferencing technology, by phone, or through electronic chat. One week following the final mentoring session, participants completed the stress measure once again and completed the mentoring behaviors measure. At this point in time, mentors and protégés were free to meet when and where they pleased.

II. Results.

Table 1 presents means, standard deviations, and correlations among study variables.

Since mentors had multiple protégés, Hierarchical Linear Modeling (HLM) analyses were used to test whether the mentor accounted for unique variance in mentoring outcomes. Results of our HLM analyses indicated that the random factor for the nested variable (i.e., mentor) did not account for unique variance in protégé stress reduction (*Wald's* $Z = 0.69$, $p = 0.49$). Thus, multiple regression analysis was used to test hypotheses regarding stress reduction. Time-one stress level was used as a control variable. The results of the regression analyses are presented in Table 2.

While we are specifically interested in avoid goal orientation, learning goal orientation is typically correlated (negatively) with avoid goal orientation. In order to rule out the possibility that learning goal orientation rather than avoid goal orientation was responsible for differences in stress reduction, we included mentor and protégé learning goal orientation and their interaction in our analysis as well as mentor and protégé avoid performance goal orientation. Protégé stress reduction was regressed onto time one stress levels ($t = 1.78$, $p = 0.07$), career support ($t = 5.22$, $p < 0.01$), psychosocial support ($t = 1.79$, $p = 0.07$), mentor ($t = -.47$, $p = 0.64$) and protégé ($t = -.32$, $p = 0.75$) learning goal orientations and mentor ($t = 1.42$, $p = 0.16$) and protégé ($t = 2.24$, $p = 0.02$) avoid performance goal orientations, as well as two product terms representing interactions among mentor-protégé learning goal orientation and avoid performance goal orientation. The overall model was significant ($F = 11.93$, $p < 0.01$), accounting for 36% of the variance in stress reduction.

Hypothesis 1 stated that those who received greater psychosocial support would show greater stress reduction than those who received lesser psychosocial support. This hypothesis was supported ($t = 1.79$, $p = 0.04$, two-tailed). In support of Hypothesis 2, the amount of career support received by the protégé also accounted for unique variance in stress reduction ($t = 5.22$, $p < 0.01$). Hypothesis 3 stated that protégés who scored higher on avoid performance goal orientation would show lesser stress reduction than those who scored lower on avoid performance goal orientation. This hypothesis was not supported. Instead, we found the opposite. Protégés who scored higher on avoid performance goal orientation showed *more* stress reduction than those who scored lower on avoid performance goal orientation ($t = 2.24$, $p = 0.03$). Finally, as depicted in Figure 1, mentor avoid performance goal orientation was positively related to stress reduction for protégés with high avoid performance goal orientations and negatively related to stress reduction for protégés with low avoid performance goal orientations ($t = -0.60$, $p = 0.04$). Thus, Hypothesis 4 was also supported.

III. Discussion

This study provided additional support for the positive influences of formal mentoring programs on first-year students. Consistent with prior research (Allen et al., 1999), results from this study indicated that first-year students who received greater career support from their mentors reported greater stress reduction than did those who received lesser career support. In the present study, however, psychosocial support received also had a uniquely positive relationship with stress reduction. Our results extend prior research by demonstrating that beyond the effects of career and psychosocial support, the level of avoid goal orientation possessed by first-year students and their peer mentors played a significant role in determining stress reduction levels. First-year students who were higher on avoid goal orientation started the mentoring program with higher stress levels and reported more stress reduction than did first-year students who were lower in avoid goal orientation.

Table 1. Inter-correlations among study variables.

Variable	<i>M</i>	<i>SD</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>
1. Pre-program School Stress	2.80	1.13	1.00							
2. Protégé Learning Goal Orientation	4.43	0.84	0.05	1.00						
3. Protégé Avoid Goal Orientation	3.07	0.93	0.24*	-0.24**	1.00					
4. Mentor Learning Goal Orientation	5.22	0.64	0.03	-0.01	-0.10	1.00				
5. Mentor Avoid Goal Orientation	2.32	0.75	-0.04	0.05	0.13	-0.41**	1.00			
6. Protégé-reported Stress Reduction	3.00	1.23	0.67**	0.16*	0.15*	-0.08	0.04	1.00		
7. Career Development Support	2.87	0.94	0.12	-0.04	0.07	0.18**	-0.12	0.01	1.00	
8. Psychosocial Support	4.20	0.86	0.10	0.14*	-0.05	0.12	-0.08	0.04	0.68**	1.00

Note. $N = 203$. * $p < 0.05$; ** $p < 0.01$

Table 2. Multiple regression analyses for the prediction of stress reduction.

Variables					
Dependent	Independent	<i>B</i>	<i>SE B</i>	β	R^2
Stress Reduction					0.36**
	Protégé Pre-program Stress	0.12	0.06	0.11*	
	Mentor Learning Goal Orientation	-0.28	0.60	-0.15	
	Mentor Avoid Goal Orientation	0.48	0.34	0.30	
	Protégé Learning Goal Orientation	-0.22	0.69	-0.16	
	Protégé Avoid Goal Orientation	0.56	0.25	0.44*	
	Psychosocial Support	0.20	0.11	0.15*	
	Career Support	0.55	0.11	0.43**	
	Mentor X Protégé Learning Goal Orientation	0.05	0.13	0.22	
	Mentor X Protégé Avoid Goal Orientation	-0.21	0.10	-0.60*	

* $p < 0.05$, ** $p < 0.01$. $N = 203$.

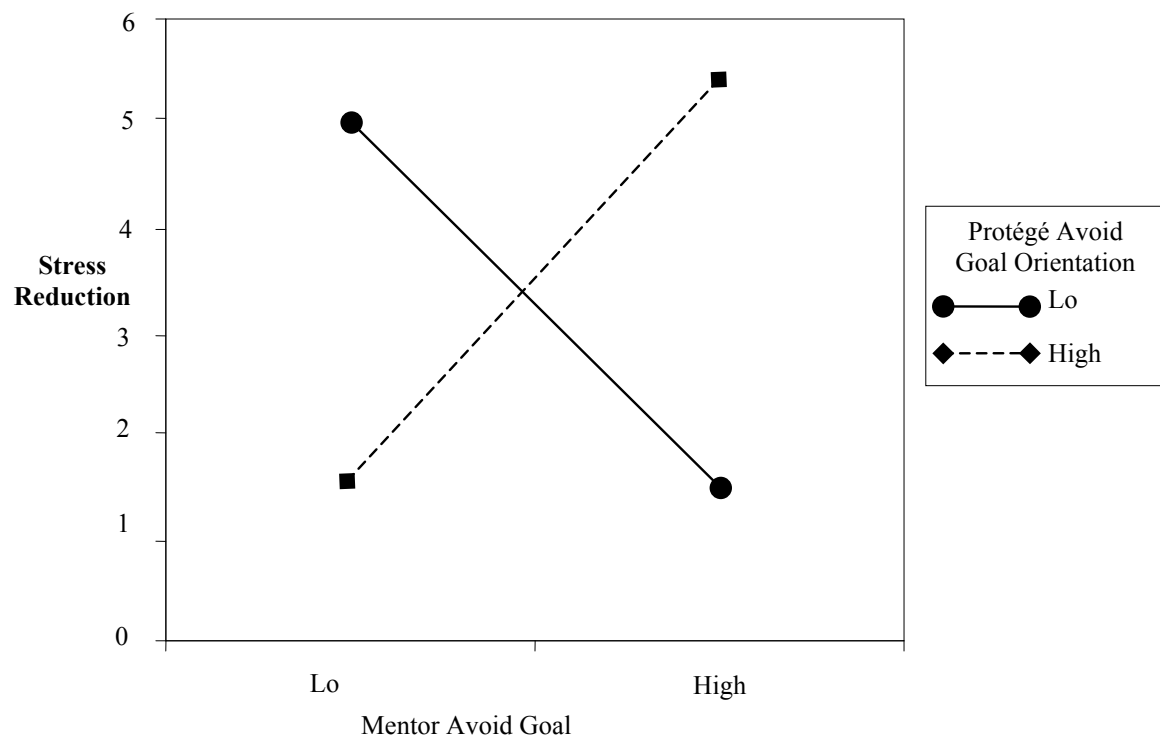


Figure 1. Relationship between mentor avoid goal orientation and protégé stress reduction moderated by protégé avoid goal orientation.

Our most interesting finding further specified that mentor avoid performance goal orientation was positively related to stress reduction for first-year students who were also high on avoid performance goal orientation, but negatively related to stress reduction for protégés who were low on avoid performance goal orientation. This finding supports the notion that in addition to mentor-protégé similarity on surface level characteristics (e.g., gender, race) similarity on deep-level characteristics such as personality or goal orientation also contributes to the success of mentoring relationships. Eby et al. (2000) noted that negative mentoring was most likely to occur when mentors were perceived by their protégés to have divergent values, beliefs, and attitudes.

Although prior research has demonstrated interactive effects for mentor and protégé learning goal orientation, mentoring behaviors received, and affective outcomes (Sosik & Godshalk, 2004), we found that the learning goal orientation of mentors and protégés did not interact to predict stress reduction. Instead, mentor and protégé avoid performance goal orientation interacted to predict first-year student stress reduction. These findings were consistent with our expectation that the avoid goal orientation dimension was more conceptually related to anxiety and responses to anxiety, and thus, would be the more relevant dimension upon which mentor-protégé similarity should be considered. Future research on mentor and protégé goal orientation should continue to specify the dependent variables that are most related to either the learning or the avoid performance goal dimension. In this way, we can provide more tailored guidelines for administrators of formal mentoring programs.

The fact that protégés were randomly assigned to mentors also enables us to rule out the possibility that those high in avoid performance goal orientation somehow attracted or were attracted to less capable mentors or protégés. In addition, the effects of avoid performance goal orientation were not explained by differences in the provision of career or psychosocial support. Instead, mentor and protégé avoid goal orientations (and the interaction of the two) contributed uniquely to stress reduction beyond the direct effects of career and psychosocial support.

It may be that although protégés with high avoid performance goal orientation mentors did not receive quantitatively less career or psychosocial support, the support that was provided may have been less relevant to their specific needs. We base this argument on the notion that mentors high in avoid performance goal orientation should be less likely to ask their protégé for feedback on the degree to which they are meeting his/her needs, and protégés high on avoid performance goal orientation are less likely to reveal developmental needs that they feel threaten the appearance of their personal competence. Other potential contributing factors are that high avoid performance goal orientation individuals are more prone to state anxiety and less prone to engage in self-regulation (Payne et al., 2007). Additional research is needed to explore these and other possibilities.

We have argued that mentors, in a sincere effort to reduce their protégés' stress, are likely to project their own beliefs about what causes and reduces stress onto their protégés and to adopt stress reduction strategies accordingly. Thus, mentor levels of avoid performance goal orientation should be positively related to stress reduction for protégés with high avoid performance goal orientation but negatively related for protégés with low avoid performance goal orientation. Our results fully supported this hypothesis. These findings suggest that formal mentoring programs designed to reduce first-year student stress should pair mentors to protégés in a way that maximizes similarity on avoid performance goal orientation. However, certain limits to generalizability must be noted.

It is important to point out that our data were collected after only the first three weeks of the mentoring relationships. It is unclear whether the initial negative effects of mentor-protégé avoid goal orientation mismatch on stress reduction continue over time, dissipate, or become accentuated. It is also important to note that most peer mentoring programs are designed with multiple desired outcomes in mind. It is unclear whether mentors with high avoid goal

orientation are beneficial to high avoid protégés with respect to these other criteria (e.g., learning, self-efficacy). The fact that mentor and protégé learning goal orientation has been found previously to be beneficial (e.g., Egan, 2005) yet was unrelated to stress reduction in the present study highlights the fact that the appropriate matching criteria may differ for different types of outcomes. Future research should examine the possibility that protégé and mentor levels of avoid goal orientation may also have very different effects on different types of outcomes.

Implications for Practice

The results presented here have important implications for colleges that implement formal mentoring programs. We demonstrated that short-term formal mentoring relationships can reduce first-year student stress, but we also found that this was not true for all participants. Eby and Lockwood (2005) identified mentor-protégé mismatch as a factor contributing to dysfunctional mentoring outcomes. Results from the present study specify one of the dimensions on which mentors and protégé need to be in alignment. Administrators of formal mentoring programs intended to reduce newcomer stress should attempt to match protégés that are high on avoid goal orientation with mentors who are also high on avoid goal orientation, and to match protégés low on avoid goal orientation with mentors who are also low on avoid goal orientation.

Additionally, our results suggest that administrators of formal mentoring programs may provide training/instructions to first-year students that help them to understand the importance of the role that they play in assisting their mentors in targeting areas in which they are in greatest need of support. Both the needs of the protégé and the composition of the mentoring relationship influence a mentor's behavior (Ragins, 1997). If the mentor and protégé do not possess congruent levels of avoid goal orientation, the mentor may misperceive the needs of the protégé and engage in behaviors the protégé perceives negatively.

In sum, we know from the literature that similarity fosters interpersonal comfort (Allen, Day, & Lentz, 2005) and satisfaction with the relationship (Ensher & Murphy, 1997). We took this one step further to examine goal orientation similarity and found consistent results: congruence with respect to mentor and protégé avoid performance goal orientation matters when it comes to first-year college students' stress reduction. Mentoring can be a valuable source for stress reduction when mentors supply first-year students with social support in the manner consistent with their characteristic dispositions. These types of mentoring relationships may help to reduce academic stressors such as coursework overload, ambiguity with academic expectations, and first-year student adjustment to the college environment. Future research should continue to explore these effects to expand the nomological network related to goal orientation, mentoring, and student stress reduction.

Our findings contribute to the literature by emphasizing the need to consider personality differences in student populations and to consider how first-year students respond to mentoring and stress. Early developmental experiences impact later career development and mentoring in particular (Berlew & Hall, 1966) can have significant longitudinal effects (Chao, 1997) for individuals as they progress through their academic careers. The first year of college is a critical period of adjustment for students. This time is also often associated with great deals of stress as students attempt to juggle course deadlines, assignments, extracurricular engagements, and the socialization process. Peer mentors can be a source of support and guidance to help alleviate tensions during this time.

Appendix.

Mentoring Behaviors.

Modified Psychosocial Support Items

(Original scale: Noe, 1988, Table 1)

Please indicate on the scale from 1-6 the extent to which the following statements describe the relationship you had with your mentor.

1. My mentor shared the history of his/her academic career with me.
2. My mentor encouraged me to prepare for academic advancement
3. My mentor encouraged me to try new ways of behaving in school.
4. My mentor demonstrated good listening skills in our conversations.
5. My mentor discussed my questions and concerns regarding feelings of competence.
6. My mentor discussed my questions concerns regarding commitment to academic advancement.
7. My mentor discussed my questions and concerns regarding relationships with peers.
8. My mentor discussed my questions and concerns regarding relationships with faculty.
9. My mentor discussed my questions and concerns regarding work/family conflicts.
10. My mentor shared personal experiences as a different perspective to my problems.
11. I expect that my mentor will provide suggestions for how to manage my personal stress levels.
12. I expect that my mentor will suggest ways to be involved in *non-academic* extracurricular activities.
13. I expect that my mentor will suggest ways to deal with personal concerns.
14. I expect that my mentor will encourage and support me.

Modified Career Support Items

(Original scale: Noe, 1988, Table 1)

1. My mentor reduced unnecessary risks that could threaten the possibility that I would advance through my program of study.
2. My mentor helped me review assignments/tasks or meet deadlines that otherwise would have been difficult to complete.
3. My mentor offered to help me meet with other students.
4. My mentor gave me ideas for increasing contact with school administrators and faculty.
5. My mentor gave me ideas for activities to prepare me for an internship or job.
6. My mentor gave me ideas for activities that will present opportunities for me to learn new skills.
7. My mentor provided me with practical tips on how to accomplish academic objectives.
8. My mentor offered to introduce me to others who can provide me with academic opportunities.
9. My mentor helped my mentor develop interpersonal communication, leadership, or team skills through feedback.
10. My mentor helped me to develop study skills.
11. My mentor offered to recommend me to faculty, staff, employees, etc., for desired opportunities.

References

- Allen, T. D., & Eby, L. T. (2003). Relationship effectiveness for mentors: Factors associated with learning and quality. *Journal of Management*, 29, 469-486.
- Allen, T. D., Eby, L. T., & Lentz, E. (2006). Mentorship behavior and mentorship quality associated with formal mentoring programs: Closing the gap between research and practice. *Journal of Applied Psychology*, 91(3), 567-578.
- Allen, T. D., Day, R., & Lentz, E. (2005). The role of interpersonal comfort in mentoring relationships. *Journal of Career Development*, 31(3), 155-169.
- Allen, T. D., McManus, S. E., & Russell, J. E. A. (1999). Newcomer socialization and stress: Formal peer relationships as a source of support. *Journal of Vocational Behavior*, 54, 453-470.
- Allen, T., & O'Brien, K. (2006). Formal mentoring programs and organizational attraction. *Human Resource Development Quarterly*, 17(1), 43-58.
- Berlew, D. E., & Hall, D. T. (1966). The socialization of managers: Effects of expectations on performance. *Administrative Science Quarterly*, 11(2), 207-223.
- Brophy, J. C. (2005). Goal theorists should move from performance goals. *Educational Psychologist*, 40(3), 167-176.
- Chaikin, A. L., & Derlega, V. J. (1974). Liking for the norm-breaker in self-disclosure. *Journal of Personality*, 42(1), 117-129.
- Chao, G. T. (1997). Mentoring phases and outcomes. *Journal of Vocational Behavior*, 51(1), 15-28.
- Cooper-Thomas, H. D., & Anderson, N. (2005). Organizational socialization: A field study into socialization success and rate. *International Journal of Selection and Assessment*, 13(2), 116-128.
- Deshon, R. P., & Gillespie, J. Z. (2005). A motivated action theory account of goal orientation. *Journal of Applied Psychology*, 90(6), 1096-1127.
- Dweck, C. S. (1986). Motivational processes affecting learning. *American Psychologist*, 41(10), 1040-1048.
- Dweck, C. S., & Leggett, E. L. (1988). Asocial-cognitive approach to motivation and personality. *Psychological Review*, 95(2), 256-273.
- Eby, L. T., Butts, M. M., Lockwood, A., & Simon, S. A. (2004). Protégé's negative mentoring experiences: Construct development and nomological validation. *Personnel Psychology*, 57, 411-447.
- Eby, T. D., & Lockwood, A. (2005). Protégés and mentors' reactions to participating in formal mentoring programs: A qualitative investigation. *Journal of Vocational Behavior*, 67(3), 441-458.

Eby, L. T., McManus, S. E., Simon, S. A., & Russell, J. E. A. (2000). The protégé's perspective regarding negative mentoring experiences: The development of a taxonomy. *Journal of Vocational Behavior*, 57, 1-21.

Egan, T. M. (2005). The impact of learning goal orientation similarity on formal mentoring relationship outcomes. *Advances in Developing Human Resources*, 7(4), 489-504.

Elliot, E. S., & Dweck, C. S. (1988). Goals: An approach to motivation and achievement. *Journal of Personality and Social Psychology*, 54(1), 461-475.

Elliot, A. J., McGregor, H. A., & Gable, S. (1999). Achievement goals, study strategies, and exam performance: A mediational analysis. *Journal of Educational Psychology*, 91(3), 549-563.

Elliot, A. J., & Thrash, T. M. (2002). Approach-avoidance motivation in personality: Approach and avoidance temperaments and goals. *Journal of Personality and Social Psychology*, 82(5), 804-818.

Ensher, E. A., & Murphy, S. E. (1997). Effects of race, gender, perceived similarity, and contact on mentor relationships. *Journal of Vocational Behavior*, 50(3), 460-481.

Felsten, G., & Wilcox, K. (1992). Influences of stress and situation-specific mastery beliefs and satisfaction with social support on well-being and academic performance. *Psychological Reports*, 70(1), 291-303.

Godshalk, V. M., & Sosik, J. J. (2003). Aiming for career success: The role of learning goal orientation in mentoring relationships. *Journal of Vocational Behavior*, 63(3), 417-437.

House, E. A. (1981). Gender-role orientation and marital satisfaction in dual- and one-career couples. *Dissertation Abstracts International*, 42, 771.

House, R. H., & Rizzo, J. R. (1972). Role conflict and ambiguity as critical variables in a model of organizational behavior. *Organizational Behavior and Human Performance*, 7(3), 467-505.

Joiner, T. A., Bartram, T. A., & Garreffa, T. (2004). The effects of mentoring on perceived care success, commitment and turnover intentions. *Journal of American Academy of Business*, 5(1/2), 164-171.

Kram, K. E. (1985). *Mentoring at work: Developmental relationships in organizational life*. Glenview, IL: Scott Foresman.

Kim, S. (2007). Learning goal orientation, formal mentoring, and leadership competence in HRD: A conceptual model. *Journal of European Industrial Training*, 31(3), 181-194.

Noe, R. A. (1988). An investigation of the determinants of successful assigned mentoring relationships. *Personnel Psychology*, 41, 457-479.

Payne, S. C., Youngcourt, S. S., & Beaubien, J. M. (2007). A meta-analytic examination of the goal orientation nomological net. *Journal of Applied Psychology*, 92(1), 128-150.

- Raabe, B., & Beehr, T. A. (2003). Formal mentoring, versus supervisor and coworker relationships: Differences in perceptions and impact. *Journal of Organizational Behavior*, 24(3), 271-293.
- Ragins, B. R. (1997). Diversified mentoring relationships in organizations: A power perspective. *Academy of Management Review*, 22, 482-521.
- Ragins, B. R., & Cotton, J. L. (1999). Mentor functions and outcomes: A comparison of men and women in formal and informal mentoring relationships. *Journal of Applied Psychology*, 84(4), 529-550.
- Saks, A. M., & Ashforth, B. E. (1997). Organizational socialization: Making sense of the past and present as a prologue for the future. *Journal of Vocational Behavior*, 51(2), 234-279.
- Sanchez, R. J., Bauer, T. N., & Paronto, M. E. (2006). Peer-mentoring freshmen: Implications for satisfaction, commitment, and retention to graduation. *Academy of Management Learning & Education*, 5(1), 25-37.
- Schrodt, P., Cawyer, C. S., & Sanders, R. (2003). An examination of academic mentoring behaviors and new faculty members' satisfaction with socialization and tenure and promotion processes. *Communication Education*, 52(1), 17-29.
- Sheilds, N. (2001). Stress, active coping, and academic performance among persisting and nonpersisting college students. *Journal of Applied Biobehavioral Research*, 6(2), 65-81.
- Sideridis, G. D. (2005). Goal orientation, academic achievement, and depression: Evidence in favor of a revised goal theory framework. *Journal of Educational Psychology*, 97(3), 366-375.
- Silver, L. (1968). Anxiety and the first semester of law school. *Wisconsin Law Review*, 4(4), 1201-1218.
- Sosik, J. J., & Godshalk, V. M. (2004). Self-other rating agreement in mentoring: Meeting protégé expectations for development and career advancement. *Group & Organization Management*, 29(4), 442-469.
- Tolor, A., Cramer, M., D'Amico, D., & O'Marra, M. M. (1975). The effects of self-concept, trust, and imagined positive or negative self-disclosures on psychological space. *Journal of Psychology: Interdisciplinary and Applied*, 89(1), 9-24.
- Ülkü-Steiner, B., Kurtz-Costes, B., & Kinlaw, C. R. (2000). Doctoral student experiences in gender-balanced and male-dominated graduate programs. *Journal of Educational Psychology*, 92(2), 296-307.
- VandeWalle, D. (1997). Development and validation of a work domain goal orientation instrument. *Educational and Psychological Measurement*, 57(6), 995-1015.
- Welsh, E., & Wanberg, C. (2009). Launching the post-college career: A study of mentoring antecedents. *Journal of Vocational Behavior*, 74(3), 257-263.

A faculty learning community's reflection on implementing service-learning goals

Diana Becket, Brenda Refaei, and Claudia Skutar¹

Implementing service-learning is challenging in light of issues such as changes in student demographics and pressure from existing curricula goals. However, closer community engagement is increasingly important in the long-term goals of our universities. Members of a faculty learning community at an open-access college reflect on the process of implementing the official university definition of service-learning in their English program. The implications of using service-learning as a teaching tool are critically discussed.

Keywords: service-learning, community engagement, experiential education, extra-curricular activities, transfer of learning

Participants are drawn into a faculty learning community (FLC) to work collaboratively on an area of professional development that affects the academic life of their college. Such communities are an effective source of support for instructors when they are exploring new teaching and learning techniques. Service-learning is an example of such a teaching tool. Researching the wider implications of such teaching experiences develops the work of the FLC into the Scholarship of Teaching and Learning (SoTL). Investigating inclusive teaching techniques is the primary goal of the faculty at an open-access college, where teaching is their primary responsibility. Open-access colleges accept all high school graduates or GED (Graduate Equivalency Diploma) students, who are usually members of communities in the area. Service-learning offers students from the community the opportunity of using their local knowledge in academic ways.

The priority given to service-learning is not just at our college, however, as this teaching tool has become increasingly important in the long term goals of the colleges throughout our large, state, Midwestern university. Discussions that emerge from SoTL communities are important because they report on the stages through which the institution is going to implement their goals. Shulman (2000) comments that “(a)ccrediting agencies are insisting on educational audits in which we provide evidence that we are achieving our stated goals” (p. 52). The work of the FLC described in this article began in fall 2007, when three faculty members received university funding to begin exploring the question of how to implement goals for service-learning in preparatory and college-level composition courses at their open-access college.

Our university is committed to fostering connections with the local community. The vision for future endeavors at the university includes community engagement, which is supported through an office for Community Engagement that supports faculty member's efforts to involve students in the community. Within the college, there is a commitment to developing more service-learning courses as a way to improve academic programs. Finally, at the

¹ Department of English, University of Cincinnati, Blue Ash, 9555 Plainfield RD, Cincinnati, OH 45236, Diana.becket@uc.edu, refaeibg@uc.edu, and Claudia.skutar@uc.edu

department level, the English department incorporated the development of SL courses as one of its five-year goals. The FLC investigated how this could be done.

From the point of view of instructors who work in the English Program at this open-access college, implementing these goals is challenging from different perspectives. Initially, the group had to interpret and apply the official university definition of SL; the SL syllabi needed to be designed for changing student demographics; and the courses had to meet the University Composition Committee's established goals for composition, which did not include service-learning. Members of the FLC began teaching the syllabi in fall 2008.

I. The Group's Analysis of Service-Learning at the University Level.

The FLC began by focusing on the institutional SL mission statement that was developed with contributions from faculty throughout the university and representatives from all administrative levels, including the provost's office:

Service-Learning (SL) is a specially designed learning experience in which students combine reflection with structured participation in community-based projects to achieve specified learning outcomes as part of an academic course and/or program requirement. By participating in academic community partnerships at the local, national or international level, students gain a richer mastery of course content, enhance their sense of civic responsibility, and ultimately develop a more integrated approach to understanding the relationship between theory, practice, ideas, values, and community.

Two related concepts in this mission statement were significant for the FLC. The first of these is that service-learning is inextricably linked to individual course goals. The second is that it is through this educational enrichment that students gain a deeper sense of "civic responsibility." Allison (2008) surveys the research on the collaborative advantages of SL for students, faculty, and community partners (p. 51), and she adopts Bringle and Hatcher's (1995) definition of SL as a way of organizing the conceptual base of her Public Relations Campaign course. Milolchak, (2006), uses the same definition when compiling her English Composition course:

Service-Learning is a course-based, credit-bearing educational experience in which students (a) participate in an organized activity that meets identified community needs and (b) reflect on the service activity in such a way as to gain further understanding of the disciplines, and an enhanced sense of civic responsibility (p. 51).

In both definitions, the SL experience involves students in communities, and they deepen their understanding of their studies by reflecting on these activities. However, a different emphasis is suggested by Bringle and Hatcher's description of SL as: "...an organized activity that meets identified community needs." The tone and positioning of this statement implies that the needs of the community are central, while our university definition places academics at the center; there is no reference to the "needs" of the community. In our approved university definition, through SL activities, students understand how community activities relate to academic and theoretical concepts. The "value" for the community is that through these activities, students are more aware of "civic responsibility."

Such differences are significant, and this tension is important in the debate on the role of SL in academia. Butin (2006) writes, "Higher education is torn between the notion of functioning as an academic enterprise concerned primarily with the rigorous, objective, and pure examination

of the truth versus as a training ground and incubator for the social and civic mission of a public democracy” (p. 58). The description of this tension in higher education suggests that academic rigor and civic awareness are separate goals and objectives. Service-learning is linked to the development of civic awareness; however, as Butin stresses, this does not help to establish the “academic legitimacy” of service-learning. In contrast, our university definition of service learning allows instructors to focus on designing courses that inextricably link academic priorities with civic awareness. This initial research on ways SL has been defined helped the FLC to establish a conceptual framework for the courses before researching the local college environment.

II. Applying Wider Curricular Goals to the Students.

Having established the wider curricular goals at the university level, the FLC began researching the literature that focused on students in service-learning. Although students at open-access and four year colleges come from different backgrounds, common factors influence the lives of all students and indicate changes in student demographics in higher education today. Butin (2006) comments that much service-learning literature presents an “ideal student who volunteers her time, has high cultural capital, is single, has no children, is un-indebted, is between the ages of 18 and 24, matriculates in four consecutive years” (p. 58). Current trends show, however, that students are increasingly working and studying part-time or returning to college while they also have family commitments, and this group is “the largest growing segment in higher education.”

Therefore, like the majority of students in colleges today, our students would say that “they are too busy to fit community based learning into their crowded schedules” (Holland & Robinson, 2008, p. 20). The service-learning component is an essential component of the course goals, but such a commitment is time-consuming, and the FLC community wrestled with the question of how to justify the component in their courses. One of the themes of current research is that professors who aim to use service-learning in their courses must “accommodate” all the “multiple roles” in their students’ lives (Reed & Marienau, 2008, p. 72). Students will understand the community engagement requirement when they experience this as an essential way to complete the course assignments. When they understand how “the service-learning component will enhance the learning experience” (Hendricks, 2007, p.17), they make time for community engagement. Students are increasingly aware of the sacrifices they are making when they return to college, and each hour represents significant value. For this reason, students need to know that they have contributed to the needs of their community (Reed & Marienau, 2008.)

Intuitively, the FLC concurred with this description of their students; and in the next stage, members worked through the process of relating this research to the university’s mission statement.

III. Applying Current Student Demographics to Course Design.

Non-traditional students bring a range of experience that they can draw on as an important critical thinking tool in a class. If students are asked to use their background experiences to design individual service-learning projects, the critical thinking involved in these tasks “will likely make for a more meaningful and holistic...learning experience” (Largent & Horinek, 2008, p. 46). Kraemer (2005) has discussed the disadvantages of placing developmental writers in the position of writing “for” the community, and he suggests that writing “about” the

community “serves basic writers better” (p. 93). In order to do this effectively, basic writers need to participate in the community in ways that will help them to understand the needs of the members. Such participation offers the potential for truly engaged writing. College level students who are involved in communities have the opportunity of researching and writing about genuine community needs. Such experience fulfills “a wide range of learning outcomes” (Franco, 2007, p. 12). Franco lists as the first of these outcomes practical experience in “written and oral communication.” Rhetorical analysis of writing for different audiences is very important at all levels of composition, and in service-learning courses, students have genuine experiences of writing for defined audiences and goals.

If the students’ backgrounds are an important factor in the course, the academic goals of the class and the projects should be selected with the students’ interests in mind. Students should be involved in choosing their community placements and deciding the ways in which they want to be involved. Individual input is important because experiential learning only takes place when the students are directly involved with the tasks where the learning is planned to take place (Fiddler & Marienau, 2008). Students’ previous experiences should play a role because they “bring knowledge and skills (sometimes to the level of professional expertise) to a community-based project” (Reed & Marienau, 2008, p. 68). Drawing on and developing previous knowledge consolidates the growth of experiential learning. When they think meta-cognitively about how the service-learning experience relates to their studies, students are taking charge of their own learning.

For the same reasons, students can use their own judgment on the amount of time they spend working with the community. Research on ways that community engagement promotes learning has indicated that the length of time in the community should be determined by the amount of time it takes to “engender critical reflection on their assumptions” about the community and the activity in which they are engaged (Reed & Marienau, p. 68). The students themselves are in a position to make this decision. Thus, the actual time spent with the community could be a matter of hours, days, or weeks, which is important in light of student demographics at our college where 81 percent of the college’s more than 5,000 students work, with 67 percent working more than 20 hours per week. There are differences of opinion about how much time students should spend on community engagement experiences, however, as lengthy time commitments to community partners in advance foster more stable relations. More contact with community partners gives more time for faculty to discuss course goals and work with the partners to forge links with the academic goals and the community activity. The role of the student as an active participant in the learning process is less active, however. Reed & Marienau suggest “educators may decide to emphasize development of students’ self-efficacy over more time spent in the community” (p.71). These authors stress that the total number of hours that students spend fulfilling the requirements of a service-learning section of a course section should be the same as the hours needed for a class in the same course that does not require service-learning.

Service-learning experiences are an additional source of data that deepens the understanding of academic courses. The University Composition Committee at our college reviewed the syllabi for the service-learning sections, and the principal concern of the committee was that all the goals for first year composition were included in the service-learning options. Integrating the service-learning component with English Composition course requirements was another important consideration of the FLC.

IV. Implementing Service-Learning Theory in University-Approved Composition Courses.

The FLC worked together to design SL syllabi for a preparatory reading and writing course as well as two different syllabi for the research course in the college level composition sequence. The overall challenge the members faced involved integrating a service-learning component into the core composition goals of the individual courses. The students who comment on the courses in this section have signed the consent letter approved by the Institutional Review Board (IRB) giving their permission for their ideas to be used in this discussion.

A. Service-Learning in Preparation for Composition.

The primary goal of the preparatory course is to introduce students to the necessary developmental and process activities that help students become competent college-level readers and writers. The course described here integrates a reading course with a writing course where underprepared students are able to work on both their reading and writing abilities. Very few of the college's students are placed into this course. One important aspect of the course is to help students develop their reading abilities and to change their self-image as it relates to literacy. Many of the students have been told by teachers, parents, guidance counselors, and others that they are not college material. They have taken the university placement test and have been placed into one of the lower level English courses that do not fulfill their English requirements, so these students often have negative beliefs about their literacy abilities. Motivating these students to pursue the rigorous critical thinking activities promoted in the course is always an issue, and it is this same challenge the FLC faced when integrating course goals with the research on service-learning and current students needs.

The syllabus and service-learning activities developed for these students related to a common need that all the students share, which is active participation in their own reading. Many students in this preparatory reading and writing course are non-native speakers who need to read without pausing. The native English speakers in the class often exhibit lack of oral fluency, as well. Reading fluency is the ability to read smoothly and accurately so the reader is able to understand the ideas presented in the text. Marcaruso and Shankweiler (2010) suggest that "fluent reading frees up resources for higher level processing; thus we see a relationship between fluency measures and reading comprehension" (p. 466).

Reading aloud is associated with elementary school activities, and students are reluctant to engage in it at the college level. Because many students in this course need the opportunity to practice reading quickly with appropriate prosody and phrasing, students were asked to engage in a service-learning project. The project revolved around having the college students record themselves reading. These books and tapes were delivered to an inner-city classroom with its own struggling readers. This project was made possible because a colleague at another university was interested in finding older students to read with the struggling elementary school students. She felt the third-grade students needed more access to reading materials they could follow along with as they worked to improve their own reading skills. Together we bought third-grade level reading materials that college students could record.

Since this course incorporates both reading and writing, the other learning community members recommended linking the reading activity with the writing students needed to do. As Kraemer (2005) recommends, students in this course were asked to "write about the community" instead of "writing for the community." The first essay assignment asked students to reflect upon

their own experiences with learning to read and write and how those experiences helped shape how they viewed their literacy skills now. As students selected books to record, they were asked to think about their own reading materials they read when they were young. Students were encouraged to consider how these early reading experiences might have shaped their current reading abilities.

One recurrent FLC discussion focused on the use of a reflective journal as a place for students to begin thinking about their service experience and to begin making connections to course assignments. Students were given prompts to help them explore their experience of reading the texts. They were asked to reflect on how they prepared before recording themselves. For example, one student wrote, “one major social problem discovered (by reading to students) is the lack of communication.” The third grade students were in an underperforming school that was slated to be closed. These third graders were reading well below their grade level, so the third grade teacher wanted ways to motivate her students to read more. The books on tape would be a good way for her students to increase their reading opportunities. The preparatory reading and writing course discussed why the elementary students were having difficulty reading at their grade level. Students explored the various social causes such as poverty, racism, uninvolved adults, and others that might apply to the third graders’ situation. One issue students seized upon that is reflected in the quote is the lack of communication between the school and parents. The college students wanted parents and teachers to be more proactive in helping the third graders. Although we discussed these issues in class, very few students wrote about them in their journals. The journal assignment asked students to reflect on how the service-learning activity related to the course goals and to their own experiences with reading, but most journals focused on the mechanics of reading to the students and the frustration with the tape recording equipment.

Overall, however, the service-learning activities gave students the opportunity to reflect on their own literacy experiences, to begin to see themselves as literacy experts, and to explore social forces that influence literacy development. The recordings students made demonstrated that they could read fluently, which helped them begin to see themselves as capable of sharing their literacy expertise. They were also able to begin exploring the social forces that shaped not only the third grade children’s experiences, but their own as well.

The community partner also reported that the service-learning activity helped her better serve her students. She believed the project effectively addressed a real community problem of helping struggling third graders by giving them greater access to books. By recording the books on tape, college students were able to engage with third grade students they would not otherwise be able to help. The college and elementary school are around seven miles apart, so many of the college students would not be able to meet individually with a third grade student. Another benefit to this approach is that students did not need a background check. These issues of accessibility and security were discussed frequently in the FLC. The discussions helped structure the final format for the service-learning assignment.

B. College-level Service-Learning Course: Issues of Social Relevance in Composition.

In college-level service-learning composition courses, situations off campus were a source of topics for writing assignments. The first of these courses focused on environmental issues, and students wrote three formal papers and a more informal reflective journal, which, in part,

documented the service during the quarter. To provide a socially relevant connection between service and classroom, the course focused on current environmental issues as a theme for readings, discussions, formal papers, journal writings, and service work. Students began the course with readings about and class discussions of environmental issues. During this time, they set up their individual self-selected service projects.

To do so, students followed one of two course options allowed for service work. Under the first option some served in work related to environmental issues and/or the environment for a self-selected and specific community group, business, or organization. These community entities did not in themselves necessarily have environmental issues or the environment as foci, but the service itself that students performed for the groups was required by course parameters to have either of these foci. Students who completed this course option sought out community groups such as churches, schools, and parks and served in a way to benefit both the group and the larger community while performing work tied to environmental issues and/or the environment. So, for example, under this first course option, one student majoring in education chose to go into a local elementary school class to work with young students on activities to increase their environmental awareness. Another student sought volunteer work in a local park, where she was asked to help keep the grounds free of litter.

Under the second course option for service, some students designed their own community service with the stipulation that a self-designed project must benefit the community and that it must involve at least one other person both to help in carrying out the service and to document a student's participation. One student decided to clean the trash outdoors at his apartment complex, and, in so doing, recycled all materials possible. Another student, an artist, collected candy wrappers and food containers and used them to make jewelry and art objects. She solicited friends to help her collect the materials, and, when the jewelry and art objects were completed, she gave them away.

Students wrote weekly journal reflections according to specific prompts on service work and on environmental issues. These reflections led up to and beyond the first essay assignment (reflections continued throughout the quarter); this first essay was an argument on a student-selected environmental issue. As part of this assignment, students conducted library research to find sources to support their ideas. The goals of the assignment were to find an environmental topic of personal interest, to think critically about an issue, and then to form a persuasive thesis supported with reasons and evidence.

A rhetorical analysis of a contemporary reading on an environmental issue comprised the second essay students wrote. This assignment required students to analyze the writer's strategy and then explain the significance of its elements. Students had to use and cite evidence from the reading to support their ideas. They practiced for writing this analysis through reading, discussion, and in-class deconstruction of other texts focused on environmental issues. Class discussion coordinated the work they were concurrently doing in their service work with the environmental issues that are the topics of the texts. The third assignment was an argumentative research paper on an environmental issue.

As students completed these assignments, they also recorded their thoughts in more informal form through their weekly journal entries. They used material from this journal as analysis for their formal papers; however, the journal provided a different means of writing practice, allowing students both to get their thoughts down on the page without attention to a particular academic essay style and to reflect on the nature of their service. The service-learning component provided them with the experience for this reflection while tying in to the

environmental themes of the course about which students were asked to think and to write in various ways. Through discussion with FLC members, the journal rubric was redesigned to include an assessment of the students' sense of social responsibility as described in their journal reflections.

One student summed up well in her journal how the service-learning component of the course affected her writing. She chose to work at a local prison, where she helped to pick up litter and recycle what she could. During the experience, she attempted to persuade reluctant community service workers of the importance of this work for the environment. In her journal reflection, she described increased confidence in writing essays on issues related to her community engagement because it "opened my eyes more about recycling and litter pick up." She went on to tie essay writing directly to her service by saying, "I can write a paper or essay on this because it would be like arguing with the volunteers on why it is important and why it needs to be done." The assignments were in keeping with university and college goals for this required course. At the same time, the writing and service helped students, as demonstrated in the previous example, to build awareness of and critical thinking skills about socially-relevant ideas which they will be encountering everywhere in the culture throughout their lives.

C. Service-Learning for Academic and Career Goals.

In the second example of college-level composition, students began by analyzing their individual academic concerns. In their journal, they wrote about the personal strengths they brought to their studies and career goals, and they brainstormed activities that would strengthen these. They selected a community where their participation focused on ways they wanted to develop as students or pre-professionals and focused on activities that reflected their academic interests at this time in their lives. They began their involvement with the community early in the quarter and selected topics for the required assignments by thinking about their interaction with members of the community.

The FLC's discussion of this course included issues such as how to focus the wide range of students' interests in a selection of community placements. Before starting to teach this course for the first time, the professor made contact with communities in the area that reflect the students' majors. There is a hospice ten minutes away from the college, a local elementary school is situated close by, and Pathways, an organization that assists special needs students, is on the college campus. The students were required to select one of these communities the first year that the course was taught. However, in the second year, the students had the option of finding their own placement communities.

One important disadvantage of having students select their own placement is that faculty are unable to visit before the quarter begins to discuss the goals of the course and to talk to the supervisors about any concerns they may have in advance. In the first year of teaching the course, the professor was able to talk to the coordinator of volunteers at the local hospice before teaching the class. One of this professor's concerns was that students in a ten-week quarter would not have enough time to give to the community for their contribution to be worthwhile. The coordinator stated that she could, indeed, use such student volunteers for as many as forty hours a week, but she realized that this was impossible. The number of hours was not the important factor for her, however. Any amount of time that students were able to give to, for example, visiting patients was valuable for two reasons. In the first place, college students brought the outside world to the patients through their conversation; secondly, links with the

outside community were made through the contact that the hospice had with local colleges. This was important information for the FLC and helped to make decisions about how to organize community involvement in all their classes.

Whether the students found their own placements or selected one from the list, their community involvement was the source of learning, which students used as a data for the required assignments. They worked closely with the supervisors in the communities and selected tasks that reflected their learning objectives. For example, a student who was majoring in multimedia designed a PowerPoint presentation for the hospice to inform the public about hospice care. A student majoring in pre-education worked at the local elementary preschool program and devised activities for the children. The journal assignments documented their experiences and their reactions to these. A pre-pharmacy student worked with a patient in a facility for Alzheimer patients. She recorded in her journal her observations of the patient as she helped her to perform essential tasks. As a pre-pharmacy student, her interest was in the medications that were administered and the effect that these had on the patient. She talked to the nurses at the facility to develop her firsthand observations of the patient. She had three sources of data for her research essay: personal observations and reflections on these in her journal, conversations with personnel at the community placement, and library research. Community service is a requirement for admission into the pharmacy program, and the experiences of this student indicate the strong link between service and academic learning, which is coordinated by reflection.

The final assignment was a project that answered a community need. For example, some students wrote a proposal that summarized a community concern and suggested ways that it might be addressed. Other students assessed the community's Web site. They designed or revised areas and wrote accompanying documents that explained the goals of the project and the ways that their documents had been adapted to reflect these goals and the audience they were addressing. As for all the assignments, the students decided the nature of their participation, and this was determined by the learning they needed to do to complete the required composition assignments and to contribute to the members of their communities' lives.

VI. Pedagogical Implications of Implementing Service-Learning.

A. Integrating Composition Goals and Service-Learning Projects.

The most important pedagogical implication that emerged from our experiences of teaching these service-learning courses related to the integration of the service with the academic priorities of the courses. This is the central goal of the service-learning mission statement and one of the areas with which we wrestled the most. From the students' writing, it was clear that preparatory students need more scaffolding for the type of writing required in reflective journals. Most student entries were too short and superficial, and they did not really help students make connections between the service learning activity and its relationship to their own learning in the course. In the college composition courses, the ten-week time frame limited the extent of the journal writing and in-class discussion that were focused on making connections between practical community engagement and the academic goals of a composition course. We found that using both student and professional texts to integrate academic composition goals more closely with service activities, throughout the course, is a useful way for students to discuss composition

within a framework of community issues. Our university is moving toward semester conversion; a longer time frame offers opportunity for developing these connections more effectively.

The university-wide policy for service-learning states that service-learning courses meet “specified learning outcomes as part of an academic course.” In each case, the three courses fulfilled the English composition learning outcomes by incorporating service-learning activities. In this sense, they could be seen as ways to “institutionalize” service-learning by incorporating this tool into sections of the Composition Sequence (Butin, 2006, p. 57). The choice of placements is a crucial decision that influences the quality of the critical thinking and writing that results from this. In the first year that the college-level composition courses were taught, both instructors gave their students a list of placements in communities that related to the respective course goals. In both courses, the lists proved problematic, with some contacts failing to respond promptly to student queries. Some contact information proved to be outdated, despite pre-quarter instructor research before, and after, compiling the list. Several students responded to such obstacles with concern, frustration, and resistance.

Some students found environmental issues difficult or boring, although many found their experiences helped them to understand the wider significance of the theme. The second time this course was taught, the professor had previous students’ experiences and writing for reference, and the relevance and importance of the issue was clearer for all the students in the group. In the following year, the students had, from the beginning of the quarter, the option of finding their own placements, and this eliminated the pressure to accommodate their individual interests to a preconceived list of possibilities. The FLC found this decision difficult to make. If placements are planned in advance and the instructor has visited the community, talked with the supervisors, and discussed the projects with which her students may become involved, coordinating class discussion and introducing students to common themes in the range of placements is more easily achieved. The advantage of allowing students to make these decisions is that such decisions are, potentially, an important component for genuine experiential learning to take place (Fiddler & Marienau, 2008). The disadvantage lies in the challenges of focusing a wide range of placement opportunities in the class. We are still wrestling with such important curricular decisions.

An important tool for integrating all areas of any service-learning course is the journal. Whether students select their placements from a list compiled by the instructor or from their own research, they need to think critically about how their choices will fulfill the goals of the course. The journal provides a space for such critical thinking, and all the students were asked to submit a journal entry where they explained their choice of community, the role they would play in this community, and how this contact would help them to develop the course goals. The FLC certainly found, as instructors, that when students make these decisions, the instructor must “engage the student in active reflection on learning goals and assumptions” (Reed & Marienau, 2008, p. 70). The journal integrates the critical thinking that is involved in these courses.

B. The Benefit of Community Engagement for the Community.

The university goal for service-learning is for students to “enhance their sense of civic responsibility.” This suggests a different emphasis from Bringle and Hatcher’s (1995) focus for service-learning as “an organized activity that meets identified community needs” (p. 51). This issue was an important part of the FLC group discussions. The group could not claim that their students were meeting specific community needs. However, students were in contact with community issues, and their participation was a form of civic responsibility. These situations

were complicated by the fact that students themselves associated service-learning with “a social and civic mission” to help “those in need” (Butin, 2006, p.58), and as Reed and Marienau (2008) report, students are frustrated if they do not perceive how their participation is helping their communities.

One related issue was found in the preparatory reading and writing course. Students did not feel very engaged in the reading program because they did not meet the third grade students. Although the teacher came to speak with the class and introduce the need for the project, most students did not believe that their service was helping the third grade students. Since this was a ten week quarter, there was not enough time to record the stories, deliver them to the elementary school, and to bring third grade responses back to the college students. This failure to close the loop left some students feeling like their reading did not make a difference. The college students were invited to travel to the school the day the books were delivered, but it was after the quarter was over and students had already gone their own ways. Even though some students did not see how the service helped the community, it not only helped the community, it also contributed to the college students’ own learning in the course.

C. Students’ Civic Responsibility.

Understanding how their involvement helps their community is an important factor for all the courses. One student in the college-level course visited a women’s shelter, ate lunch with the participants, and talked to them about their experiences and their lives. The women’s shelter appreciated any contact with participants and valued this contact. The student was going into the social service field and was fulfilling the course goals, yet it was difficult for her to understand that being involved and interested are ways of learning and giving to a community. However, our students seem to have an inherent sense of “civic responsibility,” which is an integral part of the mission statement on service-learning. Community involvement is a source of learning and of civic responsibility. The FLC defined civic responsibility as a developing awareness of the needs of our communities and the ways that these needs can be met professionally by the students’ developing perception of themselves in their academic lives. We were aware of this quality in our students’ writing when they were beginning to work on analyzing the audiences for their community projects.

The students needed to analyze the audience of their writing because this is part of the English Composition requirements. From this analysis, they related the interests of their chosen readers to the goals they had for writing. One pre-nursing student, Ying, visited a dying hospice patient and chose to write a document explaining hospice care. She writes:

The audience I intend to address is the guardian of the dying patient. I chose this type of audience because they are the loved ones of the sick patient that want the best for the patient. They are also the ones that carry the burden in their daily lives. The solution to lightening their burden is receiving help from the hospice program.

In the document addressed to these families, she focuses on misconceptions about hospice and explains how these are inaccurate. She writes:

One misconception is that being in hospice care means giving up hope. It is undeniable that patients who are in the hospice program have no longer than six or fewer months to live, but it is necessary to be in this program. This program deals with the whole person and not just his or her physical illness. Focusing on

the patient's physical, emotional, and practical needs does this. Even after the patient's death, hospice continues with bereavement service and grief support for the family members for fourteen months.

Ying was absorbed by the service-learning project because she saw the future professional links. As a writer, she fulfilled the goals of the assignment by selecting and writing about issues that related to her goal and to the people she was addressing. In addition, she was learning about the responsibility for aging people that is shared by members of her profession, their families, and the wider community, which fulfilled our requirement of civic responsibility.

Similarly, in the environmental issues course, students commented on how the readings, writing, class discussions, and service pushed them to think about environmental problems in a way they had not previously. For example, one student noted about her work in an elementary classroom educating young students on recycling:

I like the community engagement project because it parallels a lot of the topics we discuss in class and truly appeals to me personally. This project allows us to work on our persuasive/argumentative techniques because, with the type of project I am doing, you really have to sell your concept and opinion to your audience. You have to show them that their actions affect other things and other people, both negatively and positively.

Another student noted in her journal that, "Taking this English class has not only showed me how to write a better paper. It has shown me how to become a better citizen and be more concerned about the environment."

VII. Conclusion.

A FLC is deeply embedded in the academic life of our open-access college. Active participation in such communities is valued as a source of professional development. For this reason, a FLC is in a unique position to include faculty members from different disciplines who are also involved in implementing department, college, and university goals. Our three member FLC has developed into a college-wide Service-Learning Faculty Learning Community with nine members representing six different disciplines. The wider group meets to discuss ways to implement service-learning in different courses. Over the last year, the university-wide SL initiative has developed further and a centralized Service Learning Advisory Council has been established to coordinate the service-learning initiatives across campuses; members of our FLC represent the open-access college at the meetings.

Members of this FLC focused on ways that university, college, and department policy on service-learning can be applied at the college where they teach. This involvement has included research at different levels and extensive discussion to integrate this for practical teaching purposes. This is a debate that is continuing in different areas of the university, and the FLC has been the channel for its members to join in the discussion in different university roles.

References

Allison, A. W. (2008). A best practices service learning framework for the Public Relations Campaigns course. *Journal of the Scholarship of Teaching and Learning*, 8(3), 50-60.

Bringle, R., & Hatcher, J. A. (1995). A service-learning curriculum for faculty. *Michigan Journal of Community Service Learning*, 2, 112-122.

Butin, D. W. (2006). Disciplining service learning: Institutionalization and the case for community studies. *International Journal of Teaching and Learning in Higher Education*, 18 (1), 57-64.

Fiddler, M, & Marienau, C. (2008.) Developing habits of reflection for meaningful learning. In S. C. Reed & C. Marienau (Eds.), *Linking Adults with Community: Promoting Civic Engagement through Community Based Learning* (pp. 75-84.). San Francisco: Jossey-Bass.

Franco, R. (2007). Using service-learning to build attainment pathways. In M. Baratian, D. K. Duffy, R. Franco, A. E. Hendricks, & T. Renner (Eds.), *Service-Learning Course Design for Community College* (pp. 5-16). Providence RI: Campus Compact.

Hendricks, A. (2007). Best practices for creating quality service-learning courses. In M. Baratian, D. K. Duffy, R. Franco, A. E. Hendricks, & T. Renner (Eds.), *Service-Learning Course Design for Community College* (pp. 17-38). Providence RI: Campus Compact.

Holland, B., & Robinson, G. (2008). Community based learning with adults. In S. C. Reed & C. Marienau (Eds.), *Linking Adults with Community: Promoting Civic Engagement through Community Based Learning* (pp. 17-28). San Francisco: Jossey-Bass.

Kraemer, D. J. (2005). Servant class: Basic writers and service learning. *Journal of Basic Writing*, 24(2), 92-109.

Largent, L., & Horinek, J. B. (2008). Community colleges and adult service learners evaluating a first-year program to improve implementation. In S. C. Reed & C. Marienau (Eds.), *Linking Adults with Community: Promoting Civic Engagement through Community Based Learning* (pp. 37-46). San Francisco: Jossey-Bass.

Macaruso, P., & Shankweiler, D. (2010). Expanding the simple view of reading in accounting for reading skills in community college students. *Reading Psychology*, 31(5), 454-471.

Milolchak, M. (2006). Service learning in English composition: A case study. *The Journal of the Scholarship of Teaching and Learning*, 60(2), 93-100.

Reed, S. C., & Marienau, C. (2008). Educator as designer: Balancing multiple teaching perspectives in the design of community based learning for adults. In S. C. Reed & C. Marienau (Eds.), *Linking Adults with Community: Promoting Civic Engagement through Community Based Learning* (pp. 61-72). San Francisco: Jossey-Bass.

Shulman, L. S. (2000). From Minsk to Pinsk: Why a scholarship of teaching and learning? *The Journal of the Scholarship of Teaching and Learning*, 1(1), 48-53.

Book Review

The Technology Toolbelt for Teaching

Dave Morgan¹

Citation: Manning, S., & Johnson, K.E. (2011). *The Technology Toolbelt for Teaching*. San Francisco, CA: Jossey-Bass. ISBN: 978-0-470-63424-0

Publisher's Description: Instructors are pressured to integrate technology into their traditional or online instruction. This book offers a hands-on resource that shows how to integrate technology into lessons and offers information about common technologies, categorizing by groups, and explains the purposes they serve pedagogically as well as how they can be most effectively used in online or face-to-face classrooms. In addition to examples, each chapter will feature a decision making matrix to help instructors decide on whether or not a tool is really needed based on curriculum objectives or a specific organizational or curricular problem.

If you're a senior level faculty member and have been teaching at the college level for some time, you have either come to appreciate, or perhaps lament, the speed with which technology has altered the way we do business, especially in the classroom. Most of us who began our careers with chalk and non-virtual blackboards find ourselves now immersed in a world dominated by YouTube, PowerPoint, and course management systems. This ship has long since set sail and we're all on board now, so the important question for most of us becomes 'to what end can technology actually help me be a more effective or efficient instructor?' Susan Manning and Kevin Johnson go a long way toward answering this question with their book, *Technology Toolbelt for Teaching*, which contains an impressive collection of descriptions and recommended uses for a growing population of web-based tools for the classroom instructor.

The instructional technology landscape is a moving target, and to their credit, the authors strongly encourage faculty to make decisions about technology usage based on the overall instructional design and the specific learning objectives of their courses, not simply out of a desire to incorporate the latest "bells and whistles" into their classrooms. Consequently, Part One of the book entails not only an argument that technology adoption should serve explicit pedagogical functions, but also a thoughtful description of several instructional design models and a decision matrix for adopting web-based tools.

Subsequent sections are devoted to descriptions of specific tools for handling such varied tasks as course organization, communication and collaboration, content presentation, assessment, and social networking. Each chapter contains a general rationale for the specific category of tool (e.g., course organization), specific teaching related problems that can be solved by the particular tool, examples of applications in both K-12 and higher education settings, and a wealth of information about the tool itself. Not overlooked are such important practical matters that impact adoption decisions, such as cost of the tool, amount of time necessary for both faculty and students to learn how to use the tool, and access and compatibility issues. Of particular

¹ Department of Psychology, Spalding University, Louisville, KY, dmorgan@spalding.edu

usefulness, the authors provide URL addresses for the various tools, making it easy for anyone to visit the site to learn more about the tool and its potential instructional value in his or her class. This is easily the book's greatest strength.

It's hard to imagine a more user-friendly introduction to web-based instructional tools for a faculty member looking to enhance his or her use of technology in the classroom. In fact, the book may be particularly valuable to those of an "old school" bent reluctant to embrace such innovations in their teaching. Manning and Johnson strike the right balance in describing both the reasons for and against adopting these tools, and you get the sense that they would adamantly recommend against using a tool that offers no more contribution to an explicit instructional objective than methods already in place. This is indeed a breath of fresh air in a contemporary climate that too frequently advocates for blind adoption of the latest cyber-developments, irrespective of their instructional value. *The Technology Toolbelt for Teaching* is an important resource for college faculty, whether you wish merely to test the instructional technology water, or immerse yourself completely.

Book Review

Effective Instruction for STEM Disciplines: From Learning Theory to College Teaching

Shelly Sheats Harkness¹

Citation: Mastascusa, E. J., Snyder, W. J., & Hoyt, B. S. (2011). *Effective Instruction for STEM Disciplines: From Learning Theory to College Teaching*. San Francisco, CA: Jossey-Bass. ISBN: 078-0-470-47445-7

Publisher's Description: This groundbreaking book offers information on the most effective ways that students process material, store it in their long-term memories, and how that effects [sic] learning for long-term retention. It reveals how achieving different levels is important for “transfer” which refers to the learner's ability to use what is learned in different situations and to problems that might not be directly related to the problems used to help the student learn. Filled with proven tools, techniques, and approaches, this book explores how to apply these approaches to improve teaching (citation from Amazon.com).

This book was written by a commendable group of engineers who were interested in examining their own teaching practice and the impact of different teaching methods and strategies on their college students' learning. Mastacusa et al. first explored research about how students learn. In fact, I conducted a literature search from the journal, *Advances in Engineering Education (AEE)*, and found only four published articles with the search term “learning theory.”

The authors' learning theory research allowed them to move away from lecture and PowerPoint™. They tried new strategies, some which seemed counterintuitive [such as creating “desirable difficulties” (Bjork, 2004) and “the spacing effect” (Dempster, 1988)] to helping students learn, in their own college engineering courses. One of the merits of their work was the collaborative nature of it. They were not working in isolation and I think this book should be read and discussed in a collaborative atmosphere. In fact, I envision it as a book used in a professional development setting. Each chapter could be read by participants and then discussed. This would help build the required schemata (this term is well-defined in the book) for understanding the somewhat complex learning theory the authors cite.

The authors begin the book by posing the questions, “Is There a Problem? Or Is the Problem That We Don't Think There Is a Problem?”, and they surmise that there are problems. Students enter college STEM (Science, Technology, Engineering, and Mathematics) courses unprepared and with misconceptions about the content. College faculty do not consistently employ teaching methods that are based on research related to how students learn. Many professors use the transmission model of teaching; students' minds are empty vessels which need to be filled with information supplied by the professor.

This transmission model of teaching is not working for many students and within Chapters 2, 3, and 4, the authors discuss “Learning and Memory”, “Perception”, and “Processing

¹ Shelly Sheats Harkness, Ph.D., is an Associate Professor at the University of Cincinnati.

and Active Learning.” They allow the reader to grapple with how learners construct their own knowledge rather than knowledge being something that is simply “transmitted from the professor’s brains to the students’ brains” (p. 14). Additionally, the authors discuss how the learner needs to process material in working or short-term memory so that it can be transferred and stored in long-term memory (in the form of schemata or knowledge structures). Active learning (eg., interactive engagement with others, minds-on, and Problem-Based Learning) “can produce substantial gains in learning when compared with more traditional methods such as lecture” (p. 69). When students are actively engaged, the material can be both remembered and learned. The authors use citations of important studies to support their conclusions.

Although many education scholars already draw on Bloom’s Taxonomy of Educational Outcomes, the authors advocate its use by STEM faculty when they write objectives for their courses. Bloom’s taxonomy includes different levels of knowing from the least sophisticated to the most sophisticated: Knowledge; Comprehension; Application; Analysis; Synthesis; and, Evaluation. They acknowledge the fact that faculty need to write goals at the application level and above because at these levels students will retrieve information from existing schemata and thus learn with understanding. In fact, the Appendix is a good resource for how to write goals which use the higher levels of Bloom’s taxonomy and suggestions for action verbs that describe each level.

Chapters 6, 7, and 8 focus on interactive engagement, active learning strategies, and Problem-Based Learning (PBL). In contrast to asking students to solve exercises from a textbook, PBL encourages students to solve problems embedded in real-life situations. PBL activities offer students the opportunity to build schemata with rich connections to other content both within and outside of the discipline being taught. This also allows for transfer (Chapter 9).

Transfer, according to the authors, is what we want to ultimately foster. The concept of transfer has two main aspects: “(1) long-term retention of material; and, (2) the ability to use and apply material in situations different from the ones in which material was learned” (p. 153). In order to foster transfer, the authors advocate decontextualizing the information, having students re-represent the information in different formats, and striving to help students develop some sort of abstract representation of the material. The authors’ logic behind these suggestions is based on learning theory and cited literature.

In the final chapter, the authors note, “The most important thing to take from this book is an understanding of what is important in the learning process ...” (p. 191). They warn readers to “start simple and go in stages” (p. 194) when making changes in their teaching practice. Additionally, they make some excellent suggestions for how to accomplish the simple start in stages.

Of course other learning theories based on STEM disciplines could also have been explored by the authors, such as: social constructivism (Vygotsky); modes of representation (Bruner); or, Levels of Geometric Reasoning (van Hiele). Perhaps an appendix with a list of other learning theories important in STEM content areas could enhance the use of the book as a resource for faculty seeking additional learning theories for specific courses which they teach.

In summary, although there are some minor points made by the authors with which I disagree, my own schemata could be changed based on conversations with colleagues who also read the book. Therefore, I reiterate my point that this is a book which could be used in a collaborative professional development setting. As I think back on my own growth as a teacher and teacher educator, I have often contemplated these questions: “What changed first for me? As I learned more about learning theory did my beliefs change my practice? Or did my change

in practice change my beliefs? Do beliefs and practice change somewhat concurrently?” Based on reading *Effective Instruction for STEM Disciplines: From Learning Theory to College Teaching*, I now ponder: What will change first for STEM professors who read this book? Will they be satisfied with the status quo of lectures and PowerPoint™ presentations once they grasp the impact of active learning strategies on their students’ learning? I would hope not.

References

- Bjork, D. L. (2004). Research on learning as a foundation for curricular reform and pedagogy. In *Proceedings of the Reinvention Center’s 2nd National Conference: Integrating Research into Undergraduate Education: The Value Added*. Washington, D.C., 37-41. November 18-19.
- Dempster, F. N. (1988). The spacing effect: A case student in the failure to apply the results of psychological research. *American Psychologist*, 43(8), 627-63.

Book Review

Learner-Centered Teaching: Putting the Research on Learning into Practice

Phyllis Blumberg¹

Citation: Doyle, T. (2011). *Learner-Centered Teaching: Putting the Research on Learning into Practice*, Sterling, VA: Stylus Publishing.

Publishers Description: This book presents the research-based case that Learner Centered Teaching (LCT) offers the best means to optimize student learning in college, and offers examples and ideas for putting it into practice, as well the underlying rationale. It also starts from the premise that many faculty are much closer to being learner centered teachers than they think, but don't have the full conceptual understanding of the process to achieve its full impact. There is sometimes a gap between what we would like to achieve in our teaching and the knowledge and strategies needed to make it happen.

LCT keeps all of the good features of a teacher-centered approach and applies them in ways that are in better harmony with how our brains learn. It, for instance, embraces the teacher as expert as well as the appropriate use of lecture, while also offering new, effective ways to replace practices that don't optimizing student learning.

Neuroscience, biology and cognitive science research have made it clear that it is the one who does the work who does the learning. Many faculty do too much of the work for their students, which results in diminished student learning.

To enable faculty to navigate this shift, Terry Doyle presents an LCT-based approach to course design that draws on current brain research on cognition and learning; on addressing the affective concerns of students; on proven approaches to improve student's comprehension and recall; on transitioning from "teller of knowledge" to a "facilitator of learning"; on the design of authentic assessment strategies – such as engaging students in learning experiences that model the real world work they will be asked to do when they graduate; and on successful communication techniques.

The presentation is informed by the questions and concerns raised by faculty from over sixty colleges with whom Terry Doyle has worked; and on the response from an equal number of regional, national and international conferences at which he has presented on topics related to LCT.

Learner-Centered Teaching, like Doyle's previous book *Helping Students Learn in a Learner-Centered Environment*, is filled with many practical suggestions that all faculty can easily adapt. I learned many new ideas on the interpersonal nature of learning centered teaching. I especially liked his strategies for letting our students do the work, using authentic learning and

¹ Phyllis Blumberg is the Director of Teaching and Learning at the University of Sciences in Philadelphia, PA.

assessment tools, using common sense in building relationships with students, ways of sharing power with students, having meaningful discussions, and using instructional patterns. All of these tips are very easy to find as they are often listed in bulleted format or in what he calls figures and listed in the appendix. They are also easy and practical to implement. He lists many practical resources such as examples of authentic learning experiences in higher education and Model Eliciting Activities. Chapter 4, *From Lecturer to Facilitator*, is a great read for faculty who might be resistant to giving up their old teaching methods. It describes many practical, easy to implement ideas for faculty. Carol Dweck's research in this area is so compelling, yet not so well known by faculty in higher education. Doyle does a good job convincing me and I hope other readers that her research has important implications for today's college students and that we can help students to help themselves. The final chapter, *Getting Others to Embrace Learner-Centered Teaching*, outlines important steps that everyone in higher education can benefit from. On the other hand, I was a little disappointed that so much of the book is a repeat from his previous book. However, so much of this is such good advice that it is worth repeating.

This book contains many notable quotes such as:

- "It is a bit ironic that the more 'helpful' a teacher is in terms of giving students answers or solving their problems, the less students actually learn." (page 9)
- "I believe that reflection is the lost art of college teaching." (page 145)

I think the summary chapters where he describes the research base for this book are weak and superficial. Doyle tries so hard to convey the research so that non-cognitive or non-neuroscientists can understand it that too much is lost in translation. Often only conclusions are described, but not enough of the context of the research for the reader to judge if it applies to their situation. The conclusions of the studies on 'hear and see' and 'see and touch and smell' summarized in Chapter 8, *Teaching to all senses* is a good example of this lack of research detail. I question how much some of this research, some of which is based on middle school children, generalizes to higher education populations. If exercise is a key to better academic success, as Doyle proposes, why is the graduation rate of star football or basketball players who do not get drafted to professional teams not 100%? The quality of the research varies from primary literature reported to well respected scientific journals to personal web sites to popular psychology articles in magazines. Some of the research is quite old and there are newer studies that give better insights. The reader does not know if these studies are unique findings or even outliers. Rather than selecting individual research studies it is better to report on trends in research based upon many studies; meta-analyses of literature are good places to look for such research. In fact so little of the book is really supported by solid evidence-based research, that I think a better title would be, *'Putting Experience on Teaching into Practice.'* However, Doyle's experiences are worth reading for most faculty members in higher education.

Mission

Founded in 2001, the Journal of the Scholarship of Teaching and Learning (JoSoTL) is a forum for the dissemination of the Scholarship of Teaching and Learning in higher education for the community of teacher-scholars. Our peer reviewed Journal promotes SoTL investigations that are theory-based and supported by evidence. JoSoTL's objective is to publish articles that promote effective practices in teaching and learning and add to the knowledge base.

The themes of the Journal reflect the breadth of interest in the pedagogy forum. The themes of articles include:

1. Data-driven studies: formal research projects with appropriate statistical analysis, formal hypotheses and their testing, etc. These studies are either with a quantitative or qualitative emphasis and authors should indicate the appropriate domain. Acceptable articles establish a research rigor that leads to significant new understanding in pedagogy.
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3. Reviews: Literature reviews illuminating new relationships and understanding, meta-analysis, analytical and integrated reviews, etc.
4. Case studies: These studies illustrate SOTL and its applications, usually generalizable to a wide and multidisciplinary audience.
5. Comments and communications: Primarily, these are comments based on previously published JoSoTL articles, but can also include book reviews, critiques and evaluations of other published results in new contexts or dimensions

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Authors are encouraged to submit work in one of the following categories:

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- **Reflective Essays on SoTL**
- **Reviews of current themes in SoTL research including meta-analysis**
- **Case studies illustrating SoTL and its applications**
- **Comments and Communications on previous Journal articles, or book or software reviews**

In your e-mail with your submission, please indicate which of the above categories most applies to your submission. Despite their differences, all of these types of submissions should include the author's expression of the implications their work has for the teaching-learning process. This reflective critique is central to our mission in furthering understanding of SoTL. Authors are encouraged to review the [Guidelines for Reviewers](#) in order to understand how their submissions will be evaluated. **Authors are strongly encouraged to study the Reviewer's Rubric that reviewers shall apply in evaluating their submitted work.**

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Style Sheet for the *Journal of the Scholarship of Teaching and Learning*

John Dewey¹ and Marie Curie²

Abstract: This paper provides the style sheet for the Journal of the Scholarship of Teaching and Learning. Manuscripts submitted for publication should adhere to these guidelines.

Keywords: radiation, metacognition, identity theory, constructivism, educational philosophy.

I. General Guidelines for the Manuscript.

The final manuscript should be prepared in 12-point, Times New Roman, and single-spaced. Submissions should be double-spaced. All margins should be 1 inch. The text should be fully left- and right-justified. The title (in 16 point bold) and author's name (in 12 pt. bold) should be at the top of the first page. The author's name should be followed by a footnote reference that provides the author's institutional affiliation and address. The abstract should be indented 0.5" left and right from the margins, and should be in italics.

Except the first paragraph in a section subsequent paragraphs should have a 0.5" first line indent. Use only one space after the period of a sentence (word processors automatically adjust for the additional character spacing between sentences). The keywords should be formatted identically to the abstract with one line space between the abstract and the keywords. Authors should use keywords that are helpful in the description of their articles. Common words found in the journal name or their title article are not helpful.

Pages should be unnumbered since they will be entered by the Journal editorial staff. We will also insert a header on the first page of the article, as above.

References should be incorporated in the text as authors name and date of publication (Coffin, 1993), with a reference section at the end of the manuscript (see below for the desired format for the references). Titles of articles should be included in the references in sentence case. Unless instructed otherwise in this Style Sheet, please use APA style formatting. Footnotes should incorporate material that is relevant, but not in the main text.

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It is essential that authors refrain from plagiarism. Plagiarism is a violation of ethics and, in serious cases, will lead to a manuscript being rejected by this journal. No future manuscripts will be accepted from authors who have submitted a plagiarized manuscript.

¹Department of Educational Philosophy, Indiana University Northwest, 3400 Broadway, Gary, IN 46408, jdewey@iun.edu.

²Institut Pasteur, University of Paris, 75015 Paris, France.

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Major section headings should be flush-left, bold-faced, and Roman numeral numbered. Major section headings should have one-line space before and after. The first paragraph(s) of the article do not require a major heading.

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Sub-section headings should also be flush-left, in italics, and alphabetically numbered. Sub-section headings should have a one-line space before and after. Sub-sub-sections should appear at the beginning of a paragraph (i.e., with an 0.5" indent, followed immediately by the text of the sub-sub-section), with the heading also in italics.

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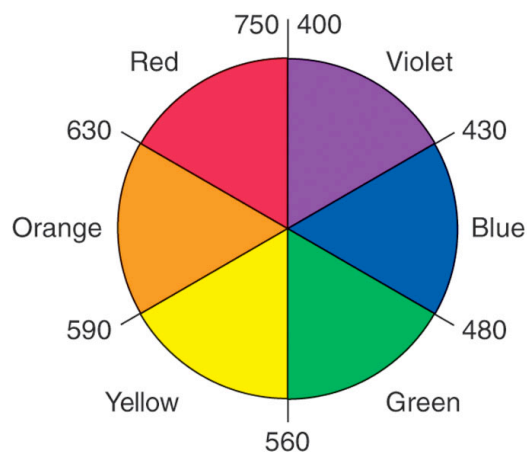


Figure 1. Color wheel with wavelengths indicated in millimicrons. Opposite colors are complementary.

Acknowledgements

Acknowledgements should identify grants or other financial support for this research by agency (source) and number (if appropriate). You may also acknowledge colleagues that have played a significant role in this research.

Appendix

Please insert any appendices after the acknowledgments. They should be labeled as follows:

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References

- Coffin, D.A. (1993). Using the competitive edge. *Journal of Economic Education*, 24 (1), 62-69.
- Garcia, J. and Rodriguez, P. (2002). The determinants of football match attendance revisited: Empirical evidence from the Spanish football league. *Journal of Sports Economics*, 3 (1), 18-38.
- Hamilton, S. J. (1995). *My name's not Susie: A life transformed by literacy*. Portsmouth, NH: Boynton/Cook Publishers.
- Pappas, D. (2004). Fixing the fan cost index: A more realistic view. Retrieved April 21, 2004, from <http://www.baseballprospectus.com/article.php?articleid=2790>.



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Indiana University Purdue University Indianapolis
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josotl@iupui.edu

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