Essential Elements of Lessons Designed To Promote Critical Thinking

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Abstract

While many educators commonly identify critical thinking as a goal for learning, they struggle with creating lessons that encourage students to take charge of their own thinking. This paper presents four essential elements of lessons designed to promote critical thinking including ill-structured problems, criteria for assessing thinking, student assessment of thinking, and improvement of thinking. With these four elements in place an iterative process of lesson planning emerges which simplifies the planning process for teachers while engaging students’ thinking to benefit their learning.
Introduction
The critical thinking movement continues to develop in a variety of educational settings. From primary grades through higher education and in non-academic settings, the development of thinking skills and dispositions can and should be a priority. While the philosophical basis and empirical evidence of the value of critical thinking is strong, a continual barrier to greater infusion of critical thinking throughout teaching and learning is the difficulty many educators have in translating the concept of critical thinking into pragmatic, pedagogical approaches. Given this difficulty, the purpose of this paper is to describe the essential elements of a lesson intended to foster critical thinking among students.

The purpose is not, of course, to offer a complete portrayal of educational strategies that would aid the development of critical thinking, but to portray essential elements in and around an individual lesson that provide a structure for the systematic development of student thinking. An assumption of this development is a repetitive cycle of lessons containing the essential elements. In other words, for critical thinking to be fostered it must be explicitly focused on and perpetually present and infused in the curriculum, individual courses and the basic building block of formal education, the lesson plan (Swartz, 2000). The thinking development of students is compromised when critical thinking receives sporadic emphasis. Teachers should not confuse critical thinking with an educational strategy like lecture, small group discussion, experiments, role-play, or debates. Rather, it is an approach to teaching and learning that needs to be infused throughout the educational experience and within these strategies.

The essential elements of lessons designed to promote critical thinking are ill-structured problems, criteria for assessing thinking, student assessment of thinking, and improvement of thinking. They are deemed essential because in the absence of any of these elements, critical thinking is not being completely addressed. These essential elements are derived from definitions of critical thinking, one of the more authoritative of which was developed through a Delphi study conducted by the American Philosophical Association. The expert consensus statement defined critical thinking, in part, as “purposeful, self-regulatory judgment” (Facione, 1997). Norris and Ennis (1989), in a widely cited definition of critical thinking, defined it as “reasonable and reflective thinking that is focused on deciding what to believe or do” (p. 3). Similarly, Paul and Elder (2001) defined critical thinking as “that mode of thinking – about a subject, content, or problem – in which the thinker improves the quality of his or her thinking by skillfully taking charge of the structures inherent in thinking and imposing intellectual standards upon them” (p. xx). While there are many competing definitions of critical thinking that may detract or add to the presupposition of the essential elements, taking these definitions at face value and translating them into instructional approaches supports the widely held belief among critical thinking theorist and researchers that critical thinking is distinct from other forms of thinking primarily due to the metacognitive nature of critical thinking (Ennis, 1991; Facione, 1997; Glaser, 1941; King & Kitchener, 1994; Paul,
Ill structured problems

Lessons promoting critical thinking need to be focused on ill-structured problems. King and Kitchener (1994) described ill structured problems as those which “cannot be described with a high degree of completeness; cannot be solved with a high degree of certainty; experts often disagree about the best solution, even when the problem can be considered solved” (p. 11). Ill structured problems do not have one right answer but better or worse answers arrived at through reasoning and “reflective judgment,” the highest levels of thinking in King and Kitchener’s Reflective Judgment Model. At this stage of development, thinkers recognize the complexity of problems and reach conclusions based on interpretations and assessment of the best available evidence while leaving these conclusions open to revision as new evidence comes to light.

Similarly, Paul (1995) described three types of questions common to all inquiry. Factual questions have one right answer, what King and Kitchener would term well-structured problems. Preference questions are those with no right answer because they are truly dependent upon human preference (e.g. What is your favorite poem? How do you like to relax? Who do you think is an entertaining musician?). Reasoning questions have better or worse answers – the same as ill-structured problems. Determining a course of action, predicting an outcome, judging the adequacy of a theory, interpreting a text, and assembling a case are a few types of problems (with embedded questions) that require reasoning.

Ill-structured problems & reasoning questions are numerous and only limited by the teacher’s imagination. Students may be uncomfortable with these types of problems and struggle mightily at solving them, but the process of persevering until reasonable conclusions are reached is essential to critical thinking – the same process they’ll experience throughout their life. So within each lesson designed to promote critical thinking, teachers need to be sure students are considering ill-structured problems.

Criteria to assess thinking

Once ill-structured problems have been selected, a lesson designed to promote critical thinking needs to provide students with criteria for assessment of thinking. Since a key distinction between critical thinking and other forms of thinking is the assessment of thinking, criteria are necessary. Examples of criteria for assessment include clarity, accuracy, precision, relevance, depth, breadth, logic, significance, and fairness (Paul, 1995; Paul & Elder, 2001). The point is, in all cases where critical thinking is desired, students need to explicitly and consciously use criteria to assess their own thinking and that of others. This is true whether the thinking is being engaged by reading a text, interpreting a painting, analyzing a historical problem, diagramming a football play, or writing an essay. Whatever the ill-structured problem or reasoning question at hand, for critical thinking to occur there needs to be criteria clearly established to assess the quality of thinking. So in a lesson, teachers need to identify the relevant criteria or have students select appropriate criteria to be used to assess thinking.

One example of criteria used successfully in my teaching is clarity.

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Paul & Elder (2001) described how greater clarity in writing and speaking can be achieved when we state, elaborate, exemplify and illustrate. In other words, when learners can state a position or concept, elaborate by giving details, exemplify by providing specific, real examples, and even perhaps illustrate with an analogy, metaphor, picture or chart, they are much more likely to demonstrate a clear understanding. In classes I refer to this as the “SEE technique” (I drop the “I” in the acronym because it doesn’t quite fit – then introduce clarity with musical accompaniment of the Jimmy Cliff song “I can see clearly now”). Interestingly, getting students to practice the technique also improves depth of thinking. For example, in “Foundations of Inquiry,” the required course on critical thinking for all incoming freshmen at Illinois State University, I introduce the criterion of clarity during the first week of class and then require students to use it in all written work for the course. Class discussions are also aided by applying the criterion of clarity. Asking students, “Can you tell us more? Can you elaborate? What is a specific example? Can anyone think of a different example or counter-example? Does anyone see how this issue we’re studying is similar to another issue? Explicitly using criteria like clarity to assess thinking becomes accessible to students as well as instructors and removes a lot of the ambiguity of assessment – something very important when students are asked to assess thinking. Clarity then, is essential to thinking, like breathing is essential to our bodies. In the absence of respiration, the body quickly dies. The same is true of our thinking when it is vague, muddled and unclear.

Before going on, please notice how the SEE technique was used in the preceding paragraph. Can you “see” the elaboration (“In other words…”), the exemplification (“For example…”) and the attempt at illustration in the last three sentences? As students become accustomed to applying the criteria to their thinking, they can also begin to assess how well the criteria are used by themselves and others. So let’s now turn our attention to student assessment of thinking.

Student assessment of thinking

A lesson designed to promote critical thinking needs to involve students in the assessment of thinking (Browne & Freeman, 2000). The ultimate goal is for students to conduct meaningful and valid assessments of their own thinking, something they struggle with but can improve over time with structure and practice (Walker & Warhurst, 2000; Zoller, Tsaparlis, Fatsow, & Lubezky, 1997). The greatest barrier to critical thinking is likely dispositional rather than ability (Facione, 2000; Perkins & Tishman, 1998). The degree to which students struggle with completing assessments and receiving feedback is highly indicative of the dispositions they bring to critical thinking. Closed-minded, self-protective, timid, ambivalent, and apathetic responses to assessments of student work exemplify weak dispositions that can, in turn, become foci for further developmental work. Students’ emotional reactions to assessments reveal dispositions that can become a topic of discussion and learning in classes. And teachers can be valuable role models of strong dispositions when they portray their own struggles with course material and actively seek assessment of their teaching then respond to it in open, positive, and appreciative ways.

While we might hope students would naturally desire critical assessments of
their work this typically is not the case. Most students will only benefit from assessing their own and others work if they are held accountable for the quality of their assessment. Once criteria have been selected, a helpful technique is to have students assess the work of peers and write a narrative explaining strengths and weaknesses and specific suggestions for improvement. Students then give one copy to the author and one to the instructor who can assess the assessment. In this way, students are held accountable for the quality of the peer assessments they complete. The same approach can be used when self-assessments are completed.

Assessments can also be completed by others such as professionals in the discipline, other faculty, or students in another course within the discipline or another major all together. For example, one approach using students in another course within the discipline is to have upper level students complete an assessment of the work of students in an introductory course. Here again, the student completing the assessment must be held accountable for the assessment and it is best if they provide feedback in writing and in person to the original author. In all cases, students completing assessments need to be identified so they feel a greater sense of responsibility and accountability by making the assessment a product eligible for review by the instructor. In cases where students are creating products that would be appropriate for a population not familiar with the discipline students from another major can provide a valuable source for assessment. Examples of how this interdisciplinary work could benefit students would be if a student in communications assessed the work of a student in social work who had developed a brochure, or a biology student who prepared a technical report had it assessed by an English major.

Whatever form of assessment is employed it is important to remember the ultimate goal of critical thinking – for the student to take charge of his/her own thinking thereby becoming self-reliant and self-correcting. Lesson plans designed to promote critical thinking need to feature this regularly.

Improvement of thinking

A lesson designed to promote critical thinking needs to contain strategies for the improvement of students' thinking. Just as an evaluation of a program is worthless unless improvements to the program are made, critical thinking only realizes it's potential when conscious efforts at improving the outcomes of thinking (writing, speaking, reading, listening, creating) are required. Revisions of assessed work are therefore necessary. An ongoing element of lessons needs to be revision and resubmission of student work. In most cases, this can be accomplished in between lessons as homework – an extension of the lesson into students' own time.

Once initial work and assessments have been completed, showing students stronger and weaker examples of their peers work can help the revision process. I have tried a number of approaches including placing excerpts of written work on overheads and discussing it in class. This is usually done with strong and weak examples with student names removed from the examples. Disseminating stronger examples has been accomplished by linking examples to a course web page, and placing copies of student work in a three ring binder left in an accessible place for students. Before placing examples on a web page or making
copies I ask students if they are willing to share their work with others and have yet to be turned down.

Assessments and revisions need to be made public for as Shulman (1999) stated, “Learning flourishes when we take what we think we know and offer it as community property among fellow learners so that it can be tested, examined, challenged, and improved before we internalize it” (p. 12). The process of assessment described above begins to make student work public. Students reporting changes made in an original piece of work to an assessment partner helps complete the process of learning before it is internalized. A course portfolio is useful in this capacity as well. Students compile all work produced for a course in a binder which can be shared. As a part of a lesson the student could be required to share portions of the portfolio with a writing tutor, major professor, professional in their chosen discipline, parent, other concerned adult or, of course, the instructor.

Reflective critique and conclusion
For the past four years I have featured the essential elements and process described above in lessons. As a result I believe students have become more comfortable with critical thinking and especially with the concept and practice of assessing thinking. Prior to using this approach, student assessment of other’s work was often very weak and not helpful. It seemed there was an unwritten rule among students that they can only provide positive comments on other students work and these tended to be very superficial. By infusing critical thinking and placing an emphasis on assessment, students are engaged in higher order thinking and, most critically, held accountable (i.e. graded) for the quality of the assessments they complete.

Incorporating these essential elements of critical thinking into my own lesson planning has been an evolutionary process. Once I learned and came to value the need for students to apply criteria to their own thinking and seek to improve their work the structure of many of my lessons and assignments began to change. For example, in a course I teach entitled “Needs Assessment in Health Education” students have written an action plan near the end of the course in which they must distill what they’ve learned about a health issue, prioritize the needs, and make initial proposals for solutions to the highest prioritized needs (see the assignment at: http://www.cast.ilstu.edu/Broadbear/286actio.htm). When I first started using this assignment several things were missing that are now included. In its current form I ask questions of students, emphasize the purpose of the assignment and provide students with examples of what constitutes stronger vs. weaker performance. Students must also apply specific criteria when prioritizing health needs and these are explicitly stated in the assignment. Students complete peer assessments as they must apply criteria to the work of another student and suggest improvements and are then held accountable for these peer assessments. Changes like these were not difficult to devise or implement, but they were missing until I focused my lesson planning more fully on the essential elements. I do believe the rigor of the assignment has improved significantly as result and students are pushed to engage in deeper, richer, more critical thinking.
When implementing lessons featuring the essential elements, quite a bit of class time is spent having students complete assessments, providing feedback to each other and working on improvements. Some teachers might be uncomfortable with this, fearing the loss of “content coverage.” But this fear is unfounded for two reasons. When students are engaged in this sort of thinking they are still dealing with content. One can’t apply criteria, assess and improve thinking in the absence of content. So it seems reasonable to conclude that content is still covered when focusing on the essential elements. While I admit that this approach may mean sacrificing breadth of content coverage to depth of reasoning, it is a trade worth making. Several authors suggest a more narrow approach on a few key concepts in a course is actually more valuable to learning than breadth of content coverage (Case & Fraser, 2002; Paul, 1995; Powell, 2002; Shell, 2001).

An important benefit I’ve experienced by focusing on the essential elements is that lesson planning becomes streamlined and less time consuming. A predictability to lesson planning emerges where the teacher is introducing a key concept, asking questions and introducing ill-structured problems in various ways to guide student thinking about the concept, having them create products based on their thinking followed by assessments and improvements then introducing the next key concept.

Taken as a whole, the essential elements of ill-structured problems, criteria for assessing thinking, student assessment of thinking, and improvement of thinking imply an iterative process. A pattern emerges for lessons where problems and questions are introduced, criteria established, outcomes (spoken, written, created) developed based on students thinking about the problem or question, outcomes are assessed by the student and/or others and are then improved upon. All products from such an approach can be compiled by the student in a course portfolio for periodic assessment by the instructor. Such a structure infused in lessons captures the essentials of critical thinking.

References
Integrating Course and Instructional Evaluation with a Learning History Approach

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Abstract

Student ratings are the traditional approach to course and instructional assessment, yet this procedure has questionable reliability and validity. Teacher portfolios, while an improvement, also have some shortcomings. An on-line “learning history” approach to course and instructional assessment was tested in a graduate course in the fall, 2000. The characteristics of this technique as applied to instructional assessment are reviewed and compared to the student ratings and teacher portfolios approaches, and results of this initial pilot test are presented. A generic model for adapting this approach to any course is provided along with recommendations for further testing.
Evaluation – of faculty, instruction and/or learning – is a time-honored component of the educational process. Presumably, evaluation should serve several functions, including assessing instructor performance for merit and other personnel reviews, identifying effective and ineffective instructional practices, gauging student reactions to courses and faculty, and providing a context for judging the quality of student learning, to name a few (Braskamp and Ory, 1994). These often competing goals and multiple uses, though, require different kinds of information, making the task of finding and implementing the most constructive and efficient process for evaluation a pernicious issue. This paper will report on an action learning adaptation of the “learning history” technique to evaluation in higher education. The first portion of this paper will review the use of and problems with the traditional student ratings and the more recent teaching portfolio approach. Then, the learning history technique will be reviewed, followed by a discussion of how this technique was used in a graduate course. Finally, the implication of this approach for practice and future research will be considered.

Evaluation in Education

Often, in higher education, course evaluation is equated with end-of-semester student ratings of faculty. A 1982 survey of more than 600 liberal arts colleges found that two-thirds (67.5%) always used “systematic student ratings” for evaluating teaching performance, a noticeable increase from the 55% who had reported on such usage five years earlier (Seldin, 1984). And in both surveys, student ratings of faculty were the most frequently used method of evaluation. By 1993, Seldin found that student evaluations had risen to 86% of the 600 colleges surveyed.

Evidence on the effectiveness and validity of student ratings of faculty, though, has been mixed (Abrami, d’Appollonia and Cohen, 1990, Braskamp and Ory, 1994). In spite of their widespread use, the traditional method of student evaluation can be dogged by three problems: bias, coverage, and focus/contamination. The net effect of these problems raises questions about their suitability for evaluation purposes. Student rating bias is an obvious possibility when adverse treatment (for example, due to grade disappointments or because of disciplinary actions against the student) is joined to a procedure in which anonymity provides a lack of rating accountability. A resulting student animus to the instructor can easily become translated into ratings that may have little to do with the faculty member’s actual performance in the course. In a field experiment with community college students in which respondent anonymity and course grades were manipulated and communicated immediately prior to student evaluations of their instructor, Blunt (1991) found that both factors affected ratings of instructors. Under conditions of anonymity, ratings of faculty were consistently lower than when students were asked to sign the evaluations. Likewise, students in deflated grade conditions also provided lower instructor ratings. Aware of this possibility, instructors can easily gravitate to a position of either complete indifference to student commentary, or to a modification of teaching practices (by limiting demands and assignments, grading easily, and so on) in order to increase the ratings they are given by their students. In a review of grading levels before and after the introduction
of student evaluations of teaching (SET), Stratton, Myers and King (1994) found that grade levels increased 11% after the introduction of SETs. These effects did decay over time, however. Birnbaum (n.d.) surveyed 208 faculty at California State University, Fullerton on their judgments about the effects of student evaluations on student learning and their teaching practices. Almost three of four (72.1%) faculty respondents believed that the use of student evaluations encouraged faculty to dilute the rigor of their courses in order to curry student favor. In the same study, Birnbaum also found that, in a sample of 142 undergrads, virtually all (97.9%) gave higher ratings to easier rather than harder courses.

A second problem with traditional student-based evaluations arises from confusion over whether the coverage of the evaluation process should be formative or summative (Adams, 1997). A formative evaluation would collect information about the quality, adequacy and usage of various instructional inputs (like instructor classroom practices, readings, learning activities, instructional media used and so on). Further, since the ideal purpose of formative evaluations is to provide data so that improvements can be made as the course is being conducted, evaluative information should be collected and made available for use on a timely basis. A summative evaluation, on the other hand, provides an end-of-course review about course outcomes, specifically the quality and extensiveness of student learning in the course. Formative and summative evaluations are not necessarily incompatible. Even so, the requirements for doing adequately either formative and/or summative course evaluation are typically much more extensive than what is produced through standard student evaluations. By the time student evaluations are collected at the end of the semester, processed and reported back to the instructor, for example, it is too late to be of much contemporary formative value. In short, the timing of such traditional student ratings of faculty makes them de facto summative, regardless of any formative aspirations. Moreover, it is questionable how much of the information collected from students can be meaningfully used in the way of summative results. For example, how much does student opinions of instructor teaching practices (a common item included in surveys) say about the quality of student learning (a key criterion of a summative evaluation)?

Third, there is the Janus-like problem of focus or construct validity and contamination. In this regard, the key issue is what is being assessed? (Adams, 1997; Scriven, 1995) There are several conceptually distinct aspects of the instructional, educational and learning process that can be assessed, including in-class teacher performance (particularly lecturing style and quality); course planning, design and management (which includes any number of less visible and out-of-the-classroom activities); and student learning. Each construct requires its own distinctive evaluation procedures; for example, evaluating a teacher’s performance during a class is a much different task than evaluating how much students learned by the end of a course. Without a clear definition of what is to be evaluated, the risk of contamination – gathering information about conditions irrelevant to the construct under study – increases.

Ideally, an effective evaluation procedure would include the following components. First, the coverage and
focus of the evaluation should be well defined in terms of the construct being assessed and its formative/summative intent. A comprehensive and focused evaluation process would include a systematic means for compiling important and representative information about both instructor and instructional practice as well as showing linkages and connections between these practices and student learning achievement and reactions to the course. Second, the major instructional inputs and processes used in the course should be identified in order to gather information about how well those inputs and processes worked. Third, this information should be collected at several times during the course and made available to the parties involved as quickly as possible. Fourth, the data-gathering and compilation process should not be too time consuming and/or labor intensive. Finally, a comprehensive evaluation would include multiple voices, including the instructors, students, and any other meaningful stakeholder (like peer evaluators, outside speakers, and so on). Clearly, student evaluations do not meet these standards.

There are at least three reasons why full and complete course evaluations meeting these criteria are not systematically conducted. First, a complete course evaluation meeting the standards noted involves gathering a lot of information, which can make it seem both labor intensive and time-consuming. Second, systematic course evaluation is something that is typically not encouraged or rewarded in faculty evaluation systems (Cerbin, 1994). For the typically harried faculty member, a task that requires a lot of time but which has little if any value in promotion and tenure criteria is a task that will probably not be done. Third, there is a certain methodological inhibition to evaluation. Unlike syllabi, test construction, and other aspects of instructional practice that are more frequently done and have exemplars of practice that can be easily inspected and copied, course evaluation suffers in comparison; there is an aura of procedural uncertainty that shrouds the assessment process. Knowing what kind of information to collect, how to collect it and when is not immediately obvious or clear.

In addition, the first desiderata of correlating evidence on student learning with instructional practices are seldom met. Cerbin (1994), for example, notes that assessments tend to focus exclusively on either student learning or faculty teaching, yet seldom are these two domains of evaluation examined in tandem. Particularly difficult to examine are “how classroom practices contribute to learning outcomes” (p. 95). In this gap, Cerbin recommends a “learning-centered assessment” that would look at the interaction between instructional practices and student learning. This approach is based on using a course portfolio design¹ as a way to carry out a learning-centered assessment. For Cerbin, a course portfolio should contain four core components: (1) a statement of the teacher’s assumptions about teaching and learning, goals for the course and the rationale linking the two; (2) an analysis of student learning based on class work and assignments; (3) an analysis of student feedback; and (4) a course summary. A portfolio can include examples of both instructional inputs and student outputs (like test scores, copies of graded student papers with comments, and so on). The result should be a four- to seven-page overall summary of the course.

As a way to focus on how the instructional process impacts student
learning, the portfolio approach offers an advance over traditional student evaluations. Still, compared to the ideal checklist of elements of a thorough course evaluation, there are several potential limitations. The instructor tends to be the exclusive author and voice, particularly in terms of defining student learning. “The course portfolio has as its center of gravity the data the teacher gathers about students' learning and development…” (American Association for Higher Education, 2001).

While student accomplishments should be included in the portfolio, less certain or systematic is the inclusion of students’ voice. One set of guidelines from Samford University (2001) suggests that examples of student voices like interviews, journal entries, student notes, or reports about instructional experiences are optional. Further, course evaluations in general should be learning activities for the instructor about his or her learning product; when done well, a course evaluation (here, done as a portfolio) should be designed to help the instructor learn and improve. Yet a learning-centered assessment process is summative in nature, putting together the portfolio after the course has been completed. While appropriate on its own terms, this approach does not lend itself to exploring and improving educational processes and their effects as they occur during a course and/or over a semester. As such, this approach would have limited utility as a formative tool to aide in improving the instructional process as it is occurring.

The process of evaluation, assessment and critique can provide an opportunity for students to reflect on their own involvement in the learning process. Yet, assessments do not necessarily involve students in critiquing or managing their own learning while in the course nor is assessment information shared with students. While certainly true in the case of student evaluations, this is also true of portfolios, and the potential value of portfolios as a device for aiding student learning is also missed. On the other hand, an additional benefit of a process that involves students in the assessment process would be to provide a means to help empower the students in gaining influence over their learning.

Are there other approaches to evaluation that may overcome some of these limitations and integrate evaluation efforts, that systematically include the student's voice on a more real-time basis with a reflective critique of instruction and learning, and that can also provide evidence of the learning that is taking place? Can a procedure be created that collects evaluative information from students on a continuous basis and then make that information available to students to assist in their learning and development while also serving as a guide for the instructor in course evaluation? Can such a process be done in an economical, efficient manner?

One potential solution to these questions is the use of a “learning history” approach to program evaluation. The remainder of this paper describes what this procedure is and the results observed in testing it in a graduate course. From this experience, the underlying characteristics of a learning history approach to evaluation will be identified in order to generalize how this procedure could be applied to course, instruction and student evaluation. A comparison of the three approaches to evaluation reviewed here is included in Table 1.
Table 1. A comparison of three evaluation procedures

<table>
<thead>
<tr>
<th>Components of an effective evaluation process</th>
<th>Student Evaluations</th>
<th>Portfolio</th>
<th>Learning History</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well-defined focus</td>
<td>Questionable</td>
<td>Yes, summative only</td>
<td>Yes, both formative and summative</td>
</tr>
<tr>
<td>Major instructional inputs and processes used in the course identified</td>
<td>No</td>
<td>Yes</td>
<td>Yes, along with ongoing critique of those processes</td>
</tr>
<tr>
<td>Regular collection of information as the course unfolds</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Easy to use process</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Includes multiple voices</td>
<td>No</td>
<td>May</td>
<td>Yes</td>
</tr>
</tbody>
</table>

The Learning History Technique

In the 1990’s, management consultants Roth and Kleiner (1998) began developing a new procedure to be used for organizational change and knowledge management in work organizations. Calling it a “learning history,” this procedure involves collecting multiple perspectives on some corporate event, like a company reorganization or new product launch (Kleiner, Roth, Thomas, & Hamel, 2000). The resulting report captures the rich tapestry of thoughts and reactions experienced by people throughout the organization as the event unfolded. Since the primary purpose in creating a learning history is to spur “reflective conversations,” the resulting document is made widely available to members of the organization and is used as the basis for a collaborative review of the process in order to promote organizational learning. According to Kleiner and Roth (1997, page 176-177), “learning histories seem particularly effective at raising issues that people would like to talk about but have not had the courage to discuss openly.”

As a technique, a Learning History is defined by both the procedure used and the resulting report format. As originally formulated, the procedure was designed to elicit and record multiple voices of organizational members across the time span of an organizational change project. Specifically, the procedure involves several steps, beginning with planning the boundaries and scope of the project. Then, a series of “reflective” or depth interviews are conducted by a team of insider participants and outside researchers with a diverse and large sample of people. Even though the primary data collected through a learning history are the reflections and observations of people involved in the
program, other data, like documents, records, observations, and so on, might also be gathered. Then, the data are scoured for common and recurring themes, and a first draft of the report (using the prescribed format) is produced. This report is double-checked for accuracy and significance by showing it to participants. Finally, the report becomes part of a workshop where participants go over the history, consider how typical the events were, and look for how they can use the learning history to extract lessons from the experience.

The format requirements for writing and presenting the report are specific. First, the program under study should be decomposed into its major segments, stages or episodes. These stages become provocatively titled chapter headings of the report. Second, there should be a brief introductory segment to each chapter that describes the nature of what happened, approximate timing, participants, conditions, and so on. Third, the data should be presented in a two-column format using the following guidelines: (1) representative or significant quotes taken directly from the interviews should be listed in the right column; participants are identified by job title only; (2) the left column is reserved for interpretations, questions, observed themes or commentary about what is happening. In effect, the right column is for the voices of the participants, while the left column is for analysis. The document may also contain other information than quotes, such as memos, announcements, or other documents. (A copy of the full report generated for the course reviewed here is available at www.towson.edu/~aclardy. A sample of the learning history for one class session is enclosed in the Appendix.)

Adapting the Learning History

A Learning History approach satisfies many of the desiderata for course evaluation procedures. For example, the learning history for any particular course would be comprehensive, covering instructor and instructional practices as well as student achievement and reactions to the course. Second, the history should contain a complete and thorough description of both the inputs and processes used in the instructional process and in turn, there should be information about how well these inputs and processes worked. Using procedures described below, all of this information can be collected and reported regularly during the course and should not create excessive demands on time or labor. This approach also gathers multiple voices for the evaluation.

I modified and pilot tested the basic approach for creating a learning history in a graduate course I taught in the fall, 2000. There were 17 students in the class; the typical student was a 30 year old, working adult. The course, entitled Change in the Workplace, is a required three credit hour course in Towson University’s masters program in Human Resources Development (HRD). The course met for two and one-half hours once a week for 14 weeks. I had previously taught the course four times. The course has a double focus: to review the historical and current changes impacting the contemporary workplace, and to teach principles of change management. In the field of organizational change, the twin concepts of a “learning organization” and “knowledge management” (Davenport & Prusak, 1998) are important and were an organizing theme for the course. Within the HRD field, the idea of a “learning organization” has

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become very popular (see, for example, Senge 1990). The fundamental concern is how an organization can improve its performance by a self-conscious effort to critique its internal processes and to find and adopt new, more effective practices. In short, the idea is to promote learning. One result of improved learning is that the organization’s storehouse of knowledge will continually be improved; in turn, this also means that knowledge should be better stored, coded and made accessible to all members of the system. To demonstrate these ideas in practice, I treated the course and all class members as an organizational change project with a learning history approach as a centerpiece to the process.

The platform which enabled this demonstration to be tested was the Learn on Line, BlackBoard 5 (BB5) system, the e-learning based instructional system from BlackBoard, Inc. This system allows an extensive range of course management and instructional options through web-based delivery. In 1999, Towson University installed the Blackboard 5 system; it is available to all students at no cost and can be accessed from either on- or off-campus locations. BB5 allows the instructor to create a website for the course. The homepage for the course website contains a set of menu options that allows the following functions: posting of course documents (like overheads, text files, case studies, and so on); providing assignments and assessments (such as course and individual surveys, complete with tabulated results); email communications to members of the class and individual emails directly with the instructor; a section for links on the worldwide web to other, related websites; and a “Discussion Board” format that collects and maintains a historical file of all individual comments and opinions about a “forum” topic. In addition to posting individual comments, the Discussion Board function accepts, stores and makes available for general inspection attachments such as student papers.

In the initial pilot of this project, the primary element used to support the creation of the learning history was through the Discussion Board. Over the period of the semester, students were required to make and post comments to specific questions on the discussion board. The first major modification of this approach to the normal learning history method was that no interviews were conducted; instead, student comments were taken from their posted comments and remarks. For example, during the first week of classes, students were required to post information about their learning goals for the course and about their personal and/or occupational background with organizational change. Then, at three, equally spaced times during the semester, students were required to make entries about what they were learning to a forum called the Knowledge Management Set (KMS). These were preset discussion fora with the same basic question: what have you learned about organizational change to date? In addition, students had to post two class assignments to the Discussion Board. One was a group project designing a Diversity Management program, and the other was a copy of a major paper on some organizational change technique they prepared for the class. In order to demonstrate the knowledge management intention for this course, students posted several of their individual learning products, making what they learned available to all. Students were encouraged to
download copies of other papers that they might want to use later in their careers. Students were expected to complete an assessment of the course and instructional practices. This assessment survey was posted and answered online (instructions in class and with the survey emphasized that all responses were anonymous). A week later, the class was given the composite data from the assessment as part of an instructional module on survey feedback.³

The class was held on Thursday nights. In adapting the learning history approach, each class was treated as a separate event. To write the learning history, I would write a brief summary of what happened the night prior, along with any of my comments or analyses. In effect, in a second modification to the learning history technique, I wore two hats: course participant qua instructor and program observer. Where possible, I would take student comments from various sources, including the Discussion Board or emails to me directly. Even though student comments to the Discussion Board were posted for all to see, if their comments were included in the history, students were only identified as a “student” and not by their name. Then, the updated learning history of the class would be posted as a course document every few weeks. Students could see the evolving history of the course as it was being developed and written.

Three points deserve note here. First, it took about half an hour on average each week to write each entry to the learning history. Other than typing my own comments while writing the history, the inclusion of student comments was a cut and paste operation. Students typed their own comments in response to the questions and assignments they were prompted to provide. As a result, a large amount of material taken directly from students was included fairly easily. Second, because the history was updated on a weekly basis, the result was an on-going and emergent document that provided an almost real-time account of what was happening in the course. By writing my comments within 24 hours after the class was completed, the record of what happened was reasonably contemporaneous. Wearing the hat of instructor, my personal comments ranged from critiques of my own instructional practices, to observations about student involvement in the course, and to ideas for improvements to instruction the next time the course was to be taught. Third, at the end of the semester, I used the complete document as the basis for evaluating what worked well and what did not in the course; these results will be discussed more fully below.

Results

Based on the pilot testing of a learning history approach to course evaluation, the following effects were observed. First, in the regular learning history protocol, the authors are different than the participants. In this class, though, I had to wear both hats as author and participant. One risk in participant observation studies is bias in what is seen and recorded, which may be colored by personal feelings and attitudes about the topic. While my affective responses were included (see the next section), I believe I completed the authoring duties without too much distortion. The main job of the author is to create a short summary of events, obtain and include comments from a variety of people representing a range of viewpoints, and then offer interpretive comments and questions. The
descriptive summary that introduced each section (i.e., each class) was a paragraph that chronicled the sequence of events as they played out in each session. Since this summary was almost a narrative reporting of the agenda followed in the class, there was little opportunity for bias to be introduced. In addition, I made a conscious effort to find both typical as well as atypical comments and include both in the history.

Second, as would be expected from any truly formative evaluation, the act of preparing a learning history for the class had an impact on my performance in the class. The process of regularly writing about my intentions for, interpretations of and reactions to each class shortly after each session as well as seeing and including student reactions to those same events did affect my classroom instructional practices. For example, in one message, a student complained that the class did not always start precisely on time; this was due in large part to the vagaries of waiting on a working, commuting graduate population to park and arrive in class. Nonetheless, I made a conscious effort to start on time thereafter, regardless of the numbers of students present. Likewise, when I wore the participant hat and could present my own personal feelings about my experiences, the result was cathartic. I was able to vent any frustrations and/or doubts I was having with the class or my instructional design. For example, after class 8, I made the following entry after grading the first set of papers required for the course:

I was disappointed by the general level of scope in the first papers, particularly given what I thought approached a cut and dried assignment…. More often than not, the reports were incomplete in covering [some of the key points covered in a history of workplace change]…. In the syllabus, I should explicitly mention including a historical summary as part of the account of workplace change.

After class 10, in an entry labeled “How much is me? How much is them?”, I noted

There is a recurring pattern of students not completing what I think are simple, clear and straightforward instructions. I’m getting both pissed and concerned about this. Why is it so hard to get the basic instructions through?

Normally, I would not think of sharing this type of information with students, but, for me, this means of presenting my version of what was transpiring in the course allowed me to raise issues I was observing in the unfolding of the course. I could step outside the role of distant and isolated instructor to become more of a participant in the learning organization that was the class.

Third, the use of the BB5 system did not require a lot of additional time. On-line collection of student comments made it easy to cut and paste their voice into the history. By channeling student comments into specific sections of the website (the Discussion Board, in particular), I was able to quickly find examples of student voices. The convenience of this means of collecting information comes at the expense of an important feature of the traditional learning history method (personal communication, Roth. 2000): there was no intensive interviewing of participants.
Further, a situation in which students are asked to provide critical information without anonymity does raise flags about compromised and self-serving reporting due to fear of reprisal or a desire to curry the instructor’s favor. I did not have any reason to believe, though, that punches were being pulled. For example, after class 10, one student emailed me with this comment:

I have a concern that I have to “get off my chest” regarding the last project [a review of a student-selected book on change]. I felt insulted in the presentation on [the book] because I had the understanding that we (the grad students) had to pursue more proven or “researched” methods of change management – not a self-help book….I felt that [that student’s] selection was both degrading and diminishing to the level of studies that we have pursued in this course so far. To make matters worse, [this student] was bragging that he was reading the book for another class.

By the end of the semester, the complete learning history contained 37 basically single-spaced pages. After the history was finalized, I reviewed all the remarks and observations it contained. Through this analysis, I was able to identify 16 specific and substantial items to change when I taught the course for the following semester. One would expect that while there might a large number of corrections the first few times a course is taught, one would also expect that the number of corrections should also taper off each additional time the course is taught. As noted, this was the fifth time I taught the course, a point by which one might expect the number of substantial modifications to be few. This suggests that the learning history approach may be a robust method for reflecting on practice in order to generate a continuously constant stream of ideas for course improvement and innovation. I do not believe I would have generated as many corrections in so systematic a manner through any other venue, nor, given my recordkeeping, would I have retained or stored these ideas in a single source for convenient future reference.

The learning history was not without its drawbacks and limitations. Even though the emerging Learning History was posted for student inspection at the website every few weeks, I did not require them to look at it, and most students did not read the history as it was occurring. In addition, I did not include any of the following potentially helpful items in this history. First, the BB5 system provides various aggregate data about when students used the site and what features of the site they used. In general, neither did I include student comments picked up from class discussion. Both kinds of data would have added to the depth of the account. Second, I did not include actual copies of assignments (such as the diversity training plan the students had to design using virtual groups) or the results of a survey which the students anonymously completed about me and the course. At least in this first attempt, examples of student learning were not as systematic as might be found in a Portfolio. Finally, the length of the resulting document (almost 40 pages) is a disincentive for other faculty to review.
Toward a General Learning History Procedure for Evaluation

Based on this pilot test, a more general model for how to apply and use a learning history approach to course evaluation can be proposed. While it is conceivable that a learning history approach can be implemented manually, clearly the advantage goes to using some type of web-based electronic communication process. In principle, while a basic email system could serve the same basic purpose, a web-based instructional support system is the preferred.

Given a web-based e-learning system, the underlying design of a modified learning history approach to course and instructional evaluation can be built using the following six-point blueprint. First, the course itself would be divided into segments; depending on the type of course and scheduling cycle used, segments could be based on each class, each week, or each instructional topic (that might span class sessions). Soon after completing each segment, the instructor would write a brief description of what happened in each segment. The description would report primarily on the instructional events used but could include other significant events, such as spontaneous discussions of current events or assignment clarifications. The two-column format would be used to record both participant observations and commentary on those observations. Second, the voices of all classes of participants must be solicited and included. Certainly, instructor thoughts, assessments and feelings about the events within each segment would be expected. As a co-participant in the learning enterprise that is a course, the instructor should make comments and observations. At times, those comments may focus on student involvement in the course (what students were doing well or badly); at times, those observations could be self-reflective commentary on what the instructor was doing well or badly. Third, student input would be expected. This can be done by requiring responses to specific questions at several times during the course. For example, students could be asked to identify their learning goals for the course or by asking about their expectations or preferences for classroom management or instructional practices. Other prompts might ask students to identify the key lessons they have learned about a topic, to report on (and even include copies of) activities they are completing (such as lab work or artistic creations), to record their critical opinions about a subject, or to make suggestions and recommendations. Some modest participation grade can be used to encourage thoughtful involvement. Fourth, while more optional, it is possible to include data from survey assessments, like anonymous course evaluations. (In the BB5 system, survey data is anonymous; descriptive data is instantly available.) Fifth, various kinds of student learning outputs, like copies of papers (perhaps already posted and available on-line), should be included. Finally, the Learning History of the class would be posted continuously during the semester. One requirement could be to have students read and respond to the History.

A graphic depiction of this application model is shown in figure 1.
Figure 1. A Blueprint of a Learning History Course Evaluation Structure

REGULAR WEEKLY INPUTS
Instructor inputs:
- Descriptions of what happened in each segment
- Assessments and commentary

COURSE

PLANNED PERIODIC INPUTS DURING THE COURSE
Student voice inputs
Student learning goals and expectations
- Open discussion boards
- Email communications
- Periodic reports on what they have learned
  - Posted student assignments with instructor comments
  - Survey data

SUMMATIVE INFORMATION AND OUTPUT PRODUCTS

System Administration Information
- Usage data from the system: timing, participation

Examples of Student Achievements
Copies of papers and reports
Test scores
Q&A forum

Further Study

The learning history approach to evaluation needs further study. For example, since a learning history is posted during the course, making instructor thinking and reactions more transparent and accessible, it would be interesting to see what effects, if any, a learning history might have on motivation, student learning or instructional quality. For example, would there be any differences in motivation or learning if students were given responsibilities for preparing or maintaining portions of the learning...
history for the course. A student in a subsequent section of this course made this comment about the learning history I had prepared for her class: “It really gave me a different perspective on the class. The comments and observations were surprisingly honest and forthcoming. I can see how this could be a useful tool ...., it seems that it could make individuals more aware of and accountable for their actions/behavior.” Does the use of an e-based medium make any difference in the quality, depth and “honesty” of student comments? Would student comments made directly to an email prompt be any different compared to data collected in interviews by outside third parties? The learning history was used in a course because it was actually part of the instructional content (a technique for knowledge management and organizational change). Can a learning history approach be used in courses where it is not part of the instructional content? That is, can it be used equally well in science, literature or physical education courses? This approach was used with a somewhat older and more mature population of graduate students. Can it be used with a more traditional undergraduate population? Finally, how do faculty and/or administrators compare a learning history report in value to the traditional student surveys and/or the portfolio model? Since this size of a learning history might be four to five times that of a course portfolio, it is important to look at the relative value of this approach in terms of quality, specificity and value of the information provided.

Improving the quality of learning and instruction is a lofty and important goal. Unfortunately, the most common methods of student evaluations are also the weakest in terms of supporting the achievement of that goal. The portfolio approach, clearly an advance, is still somewhat limited in terms of timing and perspective. The learning history approach, using an on-line capability, offers a new way to move toward this goal by integrating various forms of evaluation into one common procedure. Even though this approach is not without its limitations, there are also potential benefits. Based on the first results of the pilot test reported here, a learning history can be a new tool in the quest for educational excellence and deserves further consideration.

Endnotes
1. This procedure has been amplified and promoted by the American Association for Higher Education’s Teaching Initiatives project (www.aahe.org/teaching/Teaching_Initiative_Home.htm). Braskamp and Ory (1994) distinguish between course portfolios (for one course at a time) and teaching portfolios (a composite of several courses).
2. Unavailable and hidden to student view in BB5 is a set of usage reports that indicate when students use the system, how often they access various elements, and who completed what assignments. While this information could be included, it was not in this pilot test.
3. Survey feedback is a technique of organizational change. Members of a social system complete some kind of attitude or opinion survey, say about the leadership practices of their boss, or their job satisfaction. Those results are compiled and then a summary of the results is presented back to the members, typically meeting as a group. The members then study the data to recommend changes and improvements to the system.
4. I continue to use a Learning History for the same reasons in the same course. Now, I include a variety of student products and outcomes, like examples of papers, assignments and survey results.

References


Appendix. Sample Record from the Learning History Document

Class 7. LET THE GAMES BEGIN!

After collecting the assignments due for tonight, we spent about 10 minutes going over assignments again. Dr. Clardy then made the transition into the shift in the focus of this course from looking at the forces impacting the workplace to the question of how to manage change. Tonight was the inauguration of my change management model. We covered the material up to resistance, then did the assignment about force field analysis for poor levels of supervisory performance. This took about 45 minutes. We ended by the Assignment 3 project teams meeting again.

Frustration with students understanding the assignments

Instructor: Again last night, we killed about 15 minutes at the start of class going over what the assignments will be. This included me spending 10 minutes at the break going over Assignment 2. All that plus the first few papers I’ve graded for Assignment 1 were not complete. I’m getting very frustrated. How can we be spending some much time going over the same assignment expectations and still not getting it? I don’t know how I can be any more specific than what I’ve already included in the syllabus, plus the supplemental resources (professional practice paper and examples of prior papers) in Bb5. This is a real problem and I need to investigate what’s causing it. We’ve probably killed close to an hour of class time (excluding the first class) beating these dead horses. I’m running out of patience on this matter.

Instructor: The force field analysis exercise probably should be presented as text, rather than as a hypothetical example circling around examples of poor supervisory performance. Or, perhaps better still, keep the brainstorming listing of poor supervisory practices, but provide a simple version of the conditions in place in the organization: for example, here’s the supervisor evaluation form, here’s a story from the culture, etc. This spoon feeds the answer a bit, though.

Dr. Clardy sent email announcements to all students with a notice about an upcoming SHRM meeting as well as a notice about having posted Learning Organization overheads. Also, the instructor survey ratings were obtained. There were 11 responses of 16 students.
How to be able to use survey data most effectively? This suggests the importance of training and discipline in:

* rational emotional therapy and dealing with irrational beliefs
* humility

Things done well:

- Humor
- Encouraging participation
- Feedback
- Use of exercises and activities

Things to change or improve:

Several comments about the amount of web-based activity and the fact that

**Instructor:** Opening up personal survey data is always a challenge. Curiously, I was more nervous and concerned about seeing this data than I am when I get course survey data (from the university). Possible reasons: it’s more timely and it involves a set of factors which were developed from and with the students.

Interpreting results is always a challenge. Anything less than perfection is riveting and produces feelings of despair or defensiveness or both. How to train oneself to accept the information humbly and to use it constructively without getting defensive or depressed? After 25 teaching and training, that skill still eludes me.

**Student 1.** Encourage student participation. Offer ideas in group discussion. Ie: Have you thought about it this way...

**Student 2.** He should continue to show videos and have small group discussions because the hour is late and I'll fall asleep if he doesn't.

**Student 3.** He motivates the class. Often uses humor to motivate the class. Always answer class questions. Provides feedback on all assignments. I enjoy the mini projects that assigned during class.

**Student 4.** Very good use of class time; exercises are engaging and appropriate (Dr. Clardy is very good at showing connection/relevance); sometimes feel like a guinea pig, although stretching comfort zone, it is challenging and thought provoking.

**Student 5.** Willingness to adjust class schedule and due dates to class needs. Ability to make material interesting - incorporation of exercises and media, etc.

**Student 6.** I enjoy Dr. Clardy's playfulness and creativity in class, and it is a change for me, most instructors being more focused on lecture. He seems very contemporary, very concerned with the well-being and fairness of each of the students. He keeps it light, which is a nice change of pace.

**Student 1.** Start on time & end on time.

**Student 2.** He should stop giving so many course info
they are ungraded assignments. The projects and the readings are plenty of work in themselves.

**Student 3.** Way too much work on the web for students. Even if Dr. Clardy sees this as the way the world is going in terms of communication, it might be too soon to introduce it. I suggest he reduces the amount of web assignments for the students. Perhaps he is before his time?

**Student 4.** There are assignments on course info that are not graded, but they seemed like a mini project. Course info may be over-used.

**Student 5.** I think that this class has a lot to offer and I would like to learn from some of my fellow students (including & beyond the syllabus). They've shown some great ideas and creativity in group work and class discussions. This class has a lot of people who have diverse experiences and backgrounds.

No responses or not sure: 4

**Instructor:** I’m wondering if there were any concerns from students about the anonymity of their responses and whether they hedged their answers in any way.

Students were to complete the first Knowledge Management Set (KMS) entries by this time. All but 3-4 students had done so. A summary of their comments is shown below.

| Student 1. | In a more micro view of change, individualistic resistance to change must be approached by a strong organizational culture AND action. How often organizations talk about change management, yet do not set up the environment or reinforcers for such behavior. Change has to be managed at ALL levels of the organization. I feel that two important characteristics of organizational change is proactive responsiveness and adaptation. By “proactive responsiveness” I mean that an organization may project what customers want and test the product in all forms before distribution, … and fix them in a timely manner. This can apply not only to products issues, but also management policy. Adaptation is simply this: moving out the “comfort zone” of business practices. In the technological revolution going on, it is difficult to develop an original idea and keep it as one. As soon as it gets out, it is changed and adapted into hundreds of other forms. |
| Student 3. | Change applies to the traditional role of HRM as a rule maker. Must keep some ethics as rules. Creating alliances to help |
| Student 4. | The larger context in which change is to implemented must be taken into account. This includes the global setting as well as the full range of organizational practices that either support or inhibit change. Same point by another student. |
| Student 5. | |

**Instructor:** I’m wondering if there were any concerns from students about the anonymity of their responses and whether they hedged their answers in any way.
### Imperatives for change call for new or different roles for HR.

Resistance to change is seen in the Ford Motor example. Resistance is a recurring theme in these comments. Yet companies need to change in order to survive. Another student agrees about the extent and amount of change taking place.

Recognizes a contingent approach to change management. People involvement is important.

#### Techniques: SWOT and SMART

#### Three generators of change:
Employers, employees, government.

#### Student 2.
Human resources has seemed to exist in its own world for years. Acting as the creators and deliverers of "the rules" have been the norm.... Business Partnering within an organization can help to facilitate this move and link HR with the rest of an organization. This partnering can promote organizational change. But, sometimes it seems that we are so eager to change an organization and move forward, that we may forget the "rules" we must keep in order to remain ethical.

#### Student 9.
I agree with Jeannine in terms of ethics & the role HR. I think that for years we've had a mechanistic approach to change (linear cause and effect and "cog in the wheel"), but we're moving into an organic approach (everything is connected and affected by each other and the environment). This certainly opens HR into a role as team member, diplomat, consultant & facilitator. This shift means that the HR professional not only needs to know employee/employer rights, but also have developed skills to work effectively in teams, skills in diplomacy, and interpersonal communications.

#### Student 4.
So far, I have learned a number of important ideas about change: 1. People are extremely resistant to change (as in) the movie that we viewed about the Ford Motor Company, we saw the extent to which the employers resisted the change. 2. While companies like to bury their heads in the sand when it comes to change, analysis and change is the key to a company's survival. If they don't grab the opportunity to change, others will pass them by and they will soon be non-existant.

3. Nowadays, it seems that organizations are in a constant state of change so that it is almost dizzying to think about. 4. It is vital to weed out the important changes an organization must make from the trends and styles of society. To follow every whim of society is a sure key to failure.

#### Student 5.
I feel the biggest thing I have learned so far is that organizational change is not easy to understand or manage. I have also realized that the changes in my office have not been handled in the best ways. Every situation requires a different approach and a different solution. I think the most important thing is to involve people in the change process. No one likes to be forced...
Must look at broad complex of factors.

Problem: how to generate change? How do you create a motivation for change, particularly among long-term staff?

Is it a “discussion” board or a “posting” board?

around when it comes to change.

Student 6. The hardest part about change is preparing for it. I think that in order for companies to be successful in their change, they need to take into consideration two models (Swot and Smart). First the companies need to figure out their strengths, weaknesses, opportunities, and threats. Second I think that the companies need to understand whether or not their change strategies are specific, measurable, achievable, realistic and timely.

Student 7. I believe there are three different types of organization change. The first type of change is being lead by the organization. This incorporates organization hierarchy, policy, procedures, missions, anything that is catered to the organization. Another type of change is lead by the employees (Ford). Employee influenced organization change would include unions and civil rights groups. Finally, government mandates is the third method of change. Examples of mandated change would be EEO, AA, FMLA, ADA, etc.

Student 10. So far, I have learned that diagnosing, planning, conducting and/or evaluating organizational change has to encompass many factors outside of the change itself. What is/will be the impact of the environment? technology? people involved? etc. I’ve never considered the components that forced the transition from colonial to industrial to contemporary workplaces. And I’ve been a part of the change due to technology, so I’ve not known what it would be like to work without a computer and networks.

And I believe honesty is one of the most important concepts that should be involved in any change process. Secretoive or dishonest methods of instituting change just make people resist the ultimate change.

Student 13. The question I have about organizational change appears to be easy to answer. What can a manager do when an organization implements change in procedures and policies -BUT NOTHING CHANGES! For example, a new program has been implemented in an organization along with new staff to train the old. The problem is the veteran employees are resistant to the change-what does a manager do to change their
mindset? Management does not want to terminate the employee/employees because they are valuable to the corporation.

**Instructor:** I’m noticing that the students as a rule are simply posting their comments and not engaging in any discussion on the items posted by others. On the other hand, I’ve resisted responding to each posting, other than the diversity reports. I probably need to prime the pump but responding more frequently.
Sampling Bias: Full-Text Online Databases and Article Selection

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Abstract

The purpose of this study was to examine the affect of full-text online databases on graduate education students' article sampling and selection. Students were surveyed regarding article retrieval behavior and the reason(s) for most utilized method of retrieval. Results of the study indicated that students retrieved significantly more articles full-text online. The significantly higher rate of full-text utilization created a sampling bias that systematically precluded sampling from the full-content universe (i.e., content population). Data also indicated proportions of articles retrieved full-text online did not differ based on time impediments. Qualitative responses revealed that students who relied on full-text online articles identified convenience as the most common reason for its use. Implications for teacher educators and scholars are presented, as well as suggestions for future research.
**Literature Review**

According to Jackson, Brook, and Sisk (1999), college students in professional schools often struggle to allot time for academic tasks involving article retrieval and research reviews. As a result, students place high value on convenience. Rapid advances have increased the availability of convenient electronic sources, including full-text databases (DiMartino & Zoe, 1996). The magnitude of growth was reflected in the addition of more than 40 million documents to full-text online systems between the years of 1983 and 1993 (Tenopir & Burglund, 1993). McDonald and Dunkelberger (2000) purported that increased availability of full-text databases has created greater expectations for access to full-text information among college students.

Use of full-text online databases has been associated with several positive, as well as negative aspects involving search-behaviors and literature exposure. Convenience reportedly contributes significantly to increased use and overwhelming satisfaction with full-text systems. A study conducted by Bane (1995) examined the satisfaction of 140 predominantly graduate students who utilized a full-text database for research projects. Results of the study reflected strong satisfaction with the full-text system, as well as several system attributes including ease of use, timely access, immediate information on relevance, speed, and access to a large number of journals. Positive attributes such as these have lead many to identify full-text databases as the preferred method of search for students and database users (McDonald & Dunkelberger, 2000; York, Sabol, Gratch, & Pursel, 1988).

Despite their popularity, full-text databases have several shortcomings. For example, full-text systems have been found to contain content inaccuracies, poorly linked or missing graphics, indexing weaknesses (Grzeszkiewicz & Hawbaker, 1996), and incomplete articles with missing data (Ebbs & Preston, 1997). The limited number of articles available full-text also represents a significant weakness. According to Carlson (2001), only six percent of academic journals are currently available online. Full-text users in the Bane (1995) survey noted this limitation and reported only 50% of articles available in full-text form. At present, articles contained in full-text databases constitute only a small portion of the available content, as many are not available in full-text form (Ebbs & Preston, 1997). Both the quality and quantity of research exposure are negatively affected. Consequently, student reliance on the current full-text systems may result in inadvertently compromised learning experiences.

Several studies have begun to investigate this issue by examining retrieval behaviors and literature exposure of database users. McDonald and Dunkelberger (2000) studied undergraduate search-behavior and found students equally as likely to limit their search to only full-text databases, as they were to use any of the other non-full-text databases. Additionally, two-thirds of the sample reported always, almost always, or occasionally limiting searches to full-text only. The authors described the results as troubling as students failed to consider other journals in the library. Results of this study were similar to those of a study conducted by York et al. (1988) that found 31% of database users...
expressed an unwillingness to use other sources for research materials.

Similarly problematic has been student willingness to modify research topics to fit the information available in full-text databases. Research by Bane (1995), and McDonald and Dunkelberger (2000) found undergraduate and graduate students often changed research topics according to materials contained in full-text databases and disregarded relevant information if unavailable in full-text form. Results of these studies have lead some to assert that students are increasingly demonstrating an uncritical acceptance of articles in full-text databases (Momenee, 1987). Tenopir (1999) examined survey responses completed by 58 of 100 randomly selected librarians and found the availability of full-text to be of utmost importance for online searches: “full-text often overrides all other factors, in particular for undergraduates” (p. 38). Further, librarians reported that college students frequently rely on databases recommended by peers, rather than seeking the most appropriate database.

Uncritical acceptance can have negative affects including the selection of lower quality articles. Jackson et al. (1999) examined 798 articles utilized by graduate students for a research project before and after the introduction of a full-text database. Results indicated that the number of scientific articles used declined from 27% to 15% over the three-year period, while the number retrieved online increased from 8% to 30%. The authors suggested that the availability of online databases reduces the quality of journal articles used by graduate students.

As currently utilized, availability of full-text databases may have reduced rather than expanded student exposure to quality research articles. The problem can be conceptualized using research terms. Literature reviews should be based on a comprehensive sample selected from the content universe (i.e., population). This process is governed by the principles of sampling. Of critical importance in research is the selection of a sample that reflects the larger population or content universe. While sampling is often described in terms of individuals, samples and populations technically consist of observations (Heppner, Kivlighan, & Wampold, 1999). In the case of literature and research reviews, populations and samples are composed of the articles available and those selected for review respectively. According to Borg and Gall (1989), the “method of selecting a sample is critical to the whole research process” (p. 215). Selection from a restricted sample significantly diminishes results of a study and can substantially weaken the validity of a review by introducing bias. Students who utilize only full-text databases for research reviews often present their research as if they are relying on the entire content universe for a given topic.

Although existing literature indicates that college students express a preference for, and satisfaction with, full-text databases, limited empirical evidence exists comparing articles retrieved using full-text and non-full-text methods. Bane (1995) indicated that published research on the impact of databases is needed due to the popularity of this research tool. Studies examining the sampling and retrieval behaviors of graduate students are also lacking. The behavior of graduate students is of interest as Tenopir (1999) has suggested that advanced users might demonstrate retrieval behaviors that differ from others. According to McDonald and Dunkelberger (2000), “the greatest fear
... is that students might be too eager to take the easiest route and be satisfied with whatever article they find online, instead of the ones more ideally suited to their research” (p. 305).

Method

Sample
The sample for the current study consisted of 191 graduate students enrolled in a graduate education program in Western New York. Professors in the education department were invited to offer participation to students in their graduate courses. Only courses that required assignments involving research reviews were invited to participate. Based on this criterion, participation was offered to 206 graduate students from a variety of courses in the teacher education program. From the population of 206 eligible students from 13 classes, 191 usable surveys were completed. This represented a 92.7% completion rate.

Participants ranged in age from 21-52 years. Although the age range varied substantially, 77.5% were between the ages of 21 and 30, and the overall median age 25 years. Due to the college’s close proximity to the Canadian border, information was also collected on country of citizenship. The sample consisted of 169 Canadian students (88.5%), 21 American students (11%), and one student identified as “Other” (.5%). Course sections meeting the inclusion criterion were given an invitation and briefing one class period prior to administration of the survey.

Instrument
The instrument used in the current study was a survey, a method of examining research behaviors recognized and common in studies involving computer and database use (McDonald & Dunkelberger, 2000). The anonymous survey was researcher-generated, consisted of 12 items, and required approximately 15 minutes to complete, including review of the implied consent form. Survey items included background demographic information, number of articles retrieved using one of two methods, and the reason(s) for retrieval method preference. Background demographic items included data on participants’ age, college rank, academic department, citizenship, and type of assignment on which the survey responses were based. Several items on the survey also gathered information on time impediments that affect time availability. These included items involving employment, number of hours employed, children, number and age(s) of child(ren), and number of hours per week spent commuting to and from college classes. An additional item was included on the settings where participants had online access.

Two items were used to answer the primary research questions involving sampling bias in retrieval methods and the reason(s) for method preference. A three-part item was used to gain specific information on the students’ self-reported method of article retrieval. Specifically, participants were required to identify the “Total Number of Articles Obtained Using Full-Text Online Databases,” “Total Number of Articles Obtained Using a Library/Academic Setting,” and the “Total Number of Articles Reviewed” overall. This last category represented the sum total derived by adding the number retrieved using both online and library/academic settings.
In order to assess “why” students utilized one particular method of retrieval, an open-ended item was included. For this item, participants were required to provide a reason(s) for using one method for the “majority” of their articles. Participants were instructed to provide a reason(s) for the method that constituted the “majority” of the articles only, unless the number of articles was evenly split between retrieval methods. “Majority” was operationally defined as more than 50% of the total articles obtained.

**Procedures**

Graduate school of education faculty were invited to offer participation to students in their courses. Faculty were informed that students were eligible to participate in the survey if the course(s) included a research proposal, research paper, article critique(s), or other assignment that required a research review. Courses in which full-text online sources were prohibited were not eligible. A total of 13 course sections met inclusion criterion.

One class period prior to formal administration of the survey, a scripted invitation letter was read to eligible students by the course professor. The scripted letter provided an overview of the study, and indicated that participants would need to review their references in order to accurately identify the number of articles retrieved by either going to a library/academic setting or using an online full-text database. Students were also informed that participation was voluntary and anonymous, and that non-participation would not affect course performance/grade. During the invitation session, an operational definition of each retrieval method was read aloud. In addition, each student was given a written operational definition of what constituted an article retrieved using an online full-text database and what constituted an article retrieved in a library/academic institution (i.e., non-online full-text).

The following class meeting, researchers administered the formal survey. Course professors were required to leave the classroom to avoid potential coercive influence. The letter of implied consent was read aloud by the researcher prior to administration of the survey. Students were informed that completion of the survey constituted implied consent. Each researcher then read an administration script verbatim to each course section. Researchers read general directions, as well as each item aloud to ensure comprehension and accuracy. Verbatim invitation and administration scripts were used to increase reliability across administrators.

**Results**

Quantitative and qualitative methods were used to determine whether graduate education students demonstrated a sampling bias, and if so the reasons for the bias. Two primary statistical procedures were employed to examine the data. Initially, mean scores were compared for actual number of articles retrieved using full-text online or library/academic setting. Analyses of variance were then conducted to determine whether the proportion retrieved using full-text online differed based on demographic characteristics and/or time impediments. Qualitative responses were then used to determine the reason(s) “why” students utilized a particular sampling method.

Mean scores were initially compared for actual number retrieved. Results of the t-Test (Table 2) indicated a significant
difference in the number of articles retrieved using each method, \( t(109)=9.54, \ p<.001 \). A significantly higher number was retrieved using full-text online than library/academic setting.

Table 1
Means and Standard Deviations for Average Number of Articles Per Subject Retrieved Using Online or Library/Academic Setting

<table>
<thead>
<tr>
<th>Article Retrieval Method</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Online Full-Text</td>
<td>7.57</td>
<td>8.23</td>
</tr>
<tr>
<td>Library/Academic Setting</td>
<td>2.07</td>
<td>3.34</td>
</tr>
</tbody>
</table>

Table 2
\( t \)-Test for Paired Samples (two-tailed)

<table>
<thead>
<tr>
<th>Online Full-Text versus Library (N=191)</th>
<th>( t )</th>
<th>df</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>9.54*</td>
<td>190</td>
</tr>
</tbody>
</table>

\*p<.001

Due to variability in number of articles retrieved resulting from differing assignments (e.g., fewer for article critiques compared with research proposals), proportion of articles retrieved full-text online was used for subsequent analyses. Several types of demographic data were collected including Demographic Characteristics (Yes/No), Categorical Characteristics, and Cumulative Number of Time Impediments (Table 3). Three ANOVA’s were conducted to determine whether demographic factors were associated with the proportion of articles retrieved full-text online (Table 4).
Table 3
Descriptive Statistics for Proportion Retrieved Online: Demographic Characteristics (Yes/No); Categorical Characteristics; and Cumulative Number of Time Impediments (Hours Employed, Commuting, and Children)

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Proportion Online Full-Text</td>
<td>191</td>
<td>75.05</td>
<td>31.21</td>
</tr>
<tr>
<td><strong>Demographic Characteristic</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are you employed?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>67</td>
<td>74.92</td>
<td>31.64</td>
</tr>
<tr>
<td>Yes</td>
<td>124</td>
<td>75.13</td>
<td>31.10</td>
</tr>
<tr>
<td>Do you have children?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>148</td>
<td>76.22</td>
<td>30.11</td>
</tr>
<tr>
<td>Yes</td>
<td>43</td>
<td>71.01</td>
<td>34.80</td>
</tr>
<tr>
<td>Do you have computer access at home?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>22</td>
<td>70.44</td>
<td>33.87</td>
</tr>
<tr>
<td>Yes</td>
<td>169</td>
<td>75.65</td>
<td>30.91</td>
</tr>
<tr>
<td>Do you have college lab computer access?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>54</td>
<td>77.10</td>
<td>32.29</td>
</tr>
<tr>
<td>Yes</td>
<td>137</td>
<td>74.24</td>
<td>30.86</td>
</tr>
<tr>
<td>Do you have library computer access?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>36</td>
<td>80.14</td>
<td>25.59</td>
</tr>
<tr>
<td>Yes</td>
<td>155</td>
<td>75.05</td>
<td>31.21</td>
</tr>
<tr>
<td><strong>Categorical Characteristics (Children, Employed, Commuting, Computer Access)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of Hours Employed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemployed</td>
<td>68</td>
<td>73.82</td>
<td>32.70</td>
</tr>
<tr>
<td>1-20 Hours Per Week</td>
<td>81</td>
<td>76.23</td>
<td>32.13</td>
</tr>
<tr>
<td>21+ Hours Per Week</td>
<td>42</td>
<td>74.79</td>
<td>27.35</td>
</tr>
<tr>
<td>Number of Hours Commuting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-3 Hours Per Week</td>
<td>78</td>
<td>74.68</td>
<td>33.25</td>
</tr>
<tr>
<td>4-6 Hours Per Week</td>
<td>61</td>
<td>79.96</td>
<td>27.41</td>
</tr>
<tr>
<td>7+ Hours Per Week</td>
<td>52</td>
<td>69.86</td>
<td>31.94</td>
</tr>
<tr>
<td>Computer Access</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access In One Setting</td>
<td>26</td>
<td>76.27</td>
<td>36.84</td>
</tr>
<tr>
<td>Access In Two Settings</td>
<td>60</td>
<td>77.21</td>
<td>26.48</td>
</tr>
<tr>
<td>Access in Three Settings</td>
<td>105</td>
<td>73.5</td>
<td>32.41</td>
</tr>
<tr>
<td><strong>Time Impediments (Hours Employed, Commuting, Children)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Two Impediments</td>
<td>16</td>
<td>75.31</td>
<td>38.10</td>
</tr>
<tr>
<td>Three Impediments</td>
<td>49</td>
<td>80.64</td>
<td>29.82</td>
</tr>
<tr>
<td>Four Impediments</td>
<td>56</td>
<td>71.46</td>
<td>30.95</td>
</tr>
<tr>
<td>Five Impediments</td>
<td>38</td>
<td>78.58</td>
<td>25.57</td>
</tr>
<tr>
<td>Six Impediments</td>
<td>21</td>
<td>74.18</td>
<td>34.10</td>
</tr>
<tr>
<td>Seven Impediments</td>
<td>11</td>
<td>57.60</td>
<td>34.10</td>
</tr>
</tbody>
</table>
Table 4
ANOVA (Proportion x Demographic Characteristics; Proportion x Categorical Characteristic; and Proportion x Time Impediments)

<table>
<thead>
<tr>
<th>Proportion x Demographic Characteristic (Yes/No)</th>
<th>F</th>
<th>df</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employment</td>
<td>.041</td>
<td>(1,181)</td>
</tr>
<tr>
<td>Children</td>
<td>.668</td>
<td>(1,181)</td>
</tr>
<tr>
<td>Home Access</td>
<td>.176</td>
<td>(1,181)</td>
</tr>
<tr>
<td>College Lab Access</td>
<td>.153</td>
<td>(1,181)</td>
</tr>
<tr>
<td>Library Access</td>
<td>.246</td>
<td>(1,181)</td>
</tr>
<tr>
<td>Employment x Children</td>
<td>.169</td>
<td>(1,181)</td>
</tr>
<tr>
<td>Home x College Lab x Library</td>
<td>.363</td>
<td>(3,181)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Proportion x Categorical Characteristic</th>
<th>F</th>
<th>df</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children</td>
<td>.411</td>
<td>(1,183)</td>
</tr>
<tr>
<td>Hours Employed</td>
<td>.071</td>
<td>(2,183)</td>
</tr>
<tr>
<td>Hours Commuting</td>
<td>1.287</td>
<td>(2,183)</td>
</tr>
<tr>
<td>Computer Access</td>
<td>.280</td>
<td>(2,183)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Proportion x Time Impediments</th>
<th>F</th>
<th>df</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time Impediments</td>
<td>1.97</td>
<td>(5,174)</td>
</tr>
</tbody>
</table>

*p<.05

Results of the ANOVA for Proportion x Demographic Characteristic (Table 4) indicated non-significant differences in proportions of full-text online retrievals for Employment, F(1,181)=.041; Children, F(1,181)=.668; Home Access, F(1,181)=.176; College Lab Access, F(1,181)=.153; Library Access, F(1,181)=.246; Employment x Children, F(1,181)=.169; and Home x College x Library, F(3,181)=.363. These results indicated that graduate students in the sample demonstrated similar proportions of full-text online retrievals regardless of whether they indicated Yes or No to these demographic characteristics.

Additional items gathered information on actual numbers of children, hours employed, hours commuting, and locations of computer access (Table 3). Responses to these items were categorized for comparison purposes. Specifically, Children was categorized into subjects with or without; Employed into zero hours per week, 1-20 hours per week, and 21+ hours per week; Commuting into fewer than four hours, four to six hours, and more than six hours; and Computer Access into access in one setting, two settings, or three settings. Results of the ANOVA for Proportion x Categorical Characteristic (Table 4) indicated no significant differences in proportion of full-text online retrievals for Children, F(1,183)=.411; Hours Employed, F(2,183)=.071; Hours Commuting, F(2,183)=1.287; and Computer Access, F(2,183)=.280.

A final ANOVA was conducted to examine the cumulative affect of increasing numbers of impediments on full-text online proportions. Results of
the ANOVA (Table 4; Proportion x Time Impediments) indicated no significant affect for number of impediments, F(5,174)=1.97. Specifically, proportions of articles retrieved full-text online were not significantly affected by the presence of more or fewer time impediments.

Subjects were also required to indicate the reason(s) for using one retrieval method for the majority of articles. Qualitative responses were categorized to reveal several common reasons for retrieval method preference. A total of 27 surveys were excluded from qualitative analyses due to subjects reporting an even split between retrieval methods. From the remaining surveys, a total of 303 qualitative responses were analyzed and categorized. Subjects provided between one and four reasons for method preference, with the average number per subject 1.85. For students who utilized full-text online for the majority, four distinct categories emerged including convenience; online selection was greater, better, or at least as good; library deficiencies; and poor library skills. A total of 273 responses were given for full-text online preference. Approximately 78.75% of responses involved convenience, 10.98% indicated that online selection was greater, better, or at least as good; library deficiencies; and poor library skills. Six responses (2.19%) were unable to be categorized.

For students who utilized the library/academic setting for the majority of retrievals, a total of 30 responses were provided. These fell into three categories including setting characteristics (ease, support, and familiarity), online full-text inadequacies, and printing. Approximately 63.33% of the responses involved setting characteristics, 23.33% online full-text inadequacies, and 13.33% printing explanations.

Discussion

Results of the current study strongly indicated a sampling bias in favor of full-text online sources among those in the study. This finding empirically validates previously noted concern involving the potential negative affect of full-text online resources on literature selection of college students (e.g., Bane, 1995; McDonald & Dunkelberger, 2000). Specifically, graduate education students in this study reported a significantly higher number of articles retrieved using full-text online databases over articles obtained at a library/academic setting (non-full-text online).

Examination of the number of full-text online articles indicated that students reported approximately 75% of all retrievals from full-text online sources. This result is consistent with previous research that found undergraduate and graduate students expressed a preference for full-text databases (Jackson et al., 1999; McDonald & Dunkelberger, 2000). Although some have suggested that more advanced users, such as graduate students, might utilize different retrieval behaviors (Tenopir, 1999), the current sample of graduate education students demonstrated a similar sampling preference to that of undergraduate students.

Additional comparisons were conducted on variables that commonly affect time availability including employment, number of hours employed, children, number of children, and hours commuting to and from college classes. Access to computers was also
examined to determine whether increased access affected the proportion of full-text retrievals. For students in the current study, the proportion of articles selected full-text online was similar across all time availability categories, as well as the number of settings in which students had computer access. This result is significant as students with few or no time impediments demonstrated a similar sampling bias toward full-text online retrievals as students with many time impediments. Lack of association between time availability and full-text proportions suggested that the sampling bias was pervasive, and not contingent upon time impediments. Students also failed to differ in proportion of online retrievals based on number of locations for computer access.

The sampling bias toward full-text online databases is significant as only six percent of academic journals are currently available online (Carlson, 2001). At present, full-text databases do not possess the volume of articles needed to represent the content universe (i.e., population of articles). Of those in the study, 45.5% (n=87) used only full-text online articles, whereas only 8.4% (n=16) used library/academic articles exclusively. Students who relied on full-text online sampling restricted the available articles to a limited sample that was significantly smaller than the overall volume of existing information. This type of sampling behavior is systematic and excludes the majority of available resources. As previously noted, observations that systematically differ from the population represent a biased sample (Heppner, Kivlighan, & Wampold, 1992). This systemic sampling bias is additionally concerning as Jackson et al. (1999) found full-text use to be associated with lower quality journals and fewer scientific studies in literature reviews.

Additional evidence of sampling bias was expressed in response to the open-ended item requesting a reason(s) for using one method of retrieval for the majority of articles. For students who used full-text online articles for the majority, convenience was by far the most common reason noted (i.e., 78.75% of all responses). This result is consistent with numerous studies that found convenience to be central to student retrieval behavior (e.g., Bane, 1995; Tenopir, 1999; Joswick & Stierman, 1997). Reliance upon full-text databases because of convenience suggested that participants were content to use the articles available in full-text form. According to Gay (1987) and Borg and Gall (1989), the use of samples merely because they are available is a common, but substantial error in research. At present, articles available through full-text online databases constitute a restricted and limited sample of the existing literature. Interestingly, 10.98% of respondents indicated that the online selection was greater, better, or at least as good as the overall available information.

Graduate education students in the current study appeared largely unaware of the limitations of full-text online databases, and if aware were willing to settle for the articles available in full-text form. The large number of responses indicating convenience as a reason for use appeared to place significantly greater value on convenience over other factors including content. Results of the current study provide empirical support for Jackson et al. (1999) contention that full-text databases promote convenience over other research factors such as content and quality. Whether resulting from lack of awareness of limitations or
need for convenience, the graduate education students in the current study demonstrated a systematic sampling approach that was indicative of a sampling bias.

The current study has significant implications for teacher educators, as well as graduate students. The demonstrated sampling bias requires careful attention, as students will likely continue to fail to access and review critical information not available in full-text online form. Teacher educators can address the issue of sampling bias by restricting the number of allowable articles retrieved from full-text databases. Students can also be required to hand in photocopies of actual articles to ensure adherence to full-text limitations. These externally imposed parameters will help facilitate sampling from a larger content universe and increase student exposure to a broader range of available scholarly work.

In addition to externally imposed full-text restrictions, students can be educated on the limitations of full-text databases. Strategies for conducting comprehensive and representative literature reviews will promote more thorough sampling of the existing content universe. Sampling and sampling bias instruction should also be emphasized such that students understand the implication associated with biased and restricted reviews. This is particularly relevant to the field of education as sampling bias has been identified as one of the factors that weaken educational studies more than any other (Borg & Gall, 1989). Careful instruction and externally imposed restrictions on full-text sources are two strategies that might generate more balanced and representative literature exposure.

According to Bane (1995), students must be monitored to avoid habits that lead to poor research, and be guided to appropriate sources. Student pursuit of convenience poses a significant challenge to the development of solid research skills. The recommendations noted above address McDonald and Dunkelberger’s (2000) caution that college faculty need to guard against full-text dependence so “classroom assignments and research do not suffer” (p. 303). Although results of the current study justify concerns over literature sampling among graduate education students, they also provide direction to college faculty seeking to train highly informed and skilled professionals.

Although results of this study indicated a selection bias in literature sampling and exposure of graduate education student, several limitations warrant mention. The sample was composed of graduate education students from a single college only, making generalization to other colleges and disciplines inappropriate. In addition, a large portion of the sample consisted of Canadian students, further limiting generalizations. Based on these limitations, further research is needed. Future research might expand the sample to overcome the potential limitations previously noted. Comparisons across academic disciplines might also prompt changes in focus and research behaviors taught to students in areas where sampling biases are identified. Additional research involving the literature sampling behaviors of professors and scholars would also be of interest as biased practices among that population have significant implications for the future direction of research and knowledge. Based on increasing reliance on electronic tools, there is an urgent need for research examining the
impact of technology on research behaviors (DiMartino & Zoe, 1996).

References

Learning Outcomes and Self-Assessments of Baccalaureate Students in an Introduction to Nursing Course

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Abstract  
This study investigated how students (N=64) assessed the process and meaning of their learning of course competencies, using critical reflective inquiry. At the conclusion of an introduction to nursing course, beginning students were asked to reflect upon what and how they had learned, to consider what course competencies they had met, and to identify the learning experiences that facilitated them. Written responses were categorized and coded by course competencies using the selective coding method, and then ranked for degree of self-assessment (SACD). A significant relationship was found between final grade in the course and SACD ($r=.676$, $p<.000$), as well as GPA at beginning of junior year ($r=.420$, $p<.037$). This study of student reflexive practice contributes to an understanding of the process of competency development in nursing students as they progress from novices to competent generalists.

Introduction

Expertise is a prized attribute in nurses that is developed over time and practice, and cannot be taught in one classroom. It is the culminating step in the ongoing evolution of a nursing student from beginner to expert clinician. Nursing education has as its goal the creation of competent providers of basic nursing care, and is also concerned with this evolution of the novice nursing student into a competent generalist by graduation, and ultimately an expert nurse. An attribute of an expert nurse is one who uses mindful practice to reflect upon one's skilled nursing care practices, decision making, and patient-family-health care team interactions (Benner, 1982; Epstein, 1999). Mindful practice is a reflective experience that transforms immediate experience through its automatic cognitive processing (King & Hibbison, 2000).

One learning strategy that can be used by educators to support the development of mindful practice in students is reflexive practice, which provides opportunities for critical reflection on events, interactions, choices made and outcomes of one's choices through the use of diaries, journals, class and small-group discussion, and other critical reflection exercises (Brookfield, 1995). Little is known, however, about how these reflexive practice activities are associated with nursing students’ learning processes as they progress from novices to competent generalists, and then to experts in nursing care. Specifically, little is known about how beginning nursing students evaluate their own learning of the competencies that demonstrate their understanding and application of course content, and how this self-evaluation relates to their success in each course and in their academic program.

The purpose of this non-experimental field study is to investigate how students in a beginning nursing course self-assess their learning of course competencies without prodding or cueing, using the process of critical reflective inquiry. Naturalistic inquiry was the method used to investigate this process of academic development. Naturalistic inquiry is a process of observation and questioning that attempts to not disturb or manipulate the naturally occurring phenomenon under study (Streubert & Carpenter, 1995). The phenomenon under study was: (1) the degree of mindfulness that students displayed about their own academic growth, and (2) the ability to link their learning activities to the degree of personal learning they experienced. The primary research question that guides this naturalistic inquiry is: Is ability to critically reflect, demonstrated by richness of recall, description, explanation and insight, associated with other indices of academic success?

Sophomore students in a baccalaureate nursing program at a North American university were the subjects of this study. The independent variable used for general linear model multivariate regression analysis was self-reflection ability as demonstrated through responses to a critical reflective inquiry exercise (Self Assessment Content and Description, or SACD). Contextual variables were: count and richness of description of competencies that each student claimed he/she had learned, high school standardized academic testing (SAT) total score, age and gender of student. The dependent variables were: progression in the program as measured by course final grade, GPA at beginning of junior year, and registration in junior year courses. Results of this study describe the beginning stages of the process by which students become...
competent and aware of their competence as providers of basic nursing care. Results also contribute to the body of nursing knowledge about this process of competency development in nursing students as they progress from novices to competent practitioners of general nursing care.

Literature Review

The conceptual framework that guides this study is based upon Pat Benner’s (1984) model of skill acquisition as a developmental process in nursing students as they progress from novices to experts (Carlson, Crawford & Conrades, 1989). This model was, in turn, adapted from the Dreyfus model of skill acquisition which postulates that skills are learned and performed in a progressive manner, by which the learner progresses through five stages of proficiency: novice, advanced beginner, competent, proficient and expert (Benner, 1984; Dreyfus & Dreyfus, 1980). The expert is defined as a reflective practitioner who works intuitively, drawing almost unconsciously on a repertoire of context-specific paradigm cases (Rolfe, 1997, p. 93). Key to this process is the role of experience as the engine that drives the progression, as nursing students begin to test and refine their hypotheses and skills and challenge their assumptions and expectations. This phenomenon is considered the students’ immediate, or primary experience of any event, and it is the transaction between this immediate experience and the students’ interpretation of it that generates the learning that occurs (Ryan, 1994).

Reflection has been defined as: the retrospective contemplation of practice undertaken in order to uncover the knowledge used in a particular situation, by analyzing and interpreting the information recalled (Fitzgerald, 1994, p.67), or thinking back about something of interest (Pierson, 1998, p. 165). The student uses reflection as the primary process that imbues experiences and cognitions with personal meaning. It is this experiencing of an event and its subsequent interpretation that is termed the mediate-immediacy (Ryan, 1994, p. 29) learning that occurs when primary experience together with reflective experience transforms learning through cognitive processing or layering. A goal of nursing education is to produce nurses who engage in this mindful practice.

Nurse educators often use the reflective process to assist students in contemplating and reviewing their actions and then translating the self-knowledge that is produced by that activity into an intuitive grasp of the learning event (Colina & Medina, 1997; Rolfe, 1997). One example of this is the common use of clinical logs or journals requiring students to reflect upon their clinical experiences and then connect them to concepts, information or theories taught in the classroom (Chambers, 1999; Marland & McSherry, 1997). Key to this learning experience is the educator’s provision of sufficient time for students to process their recalled events, and use of questions that facilitate this self-examination, as well as structuring a safe environment in which learning can occur (Billings & Halstead, 1998). Benner’s research uncovers these hidden mental processes of learning ( Paley, 1996) that generate perceptual awareness and a growing competency in the nursing student (Benner, 1982; Carlson, Crawford & Conrades, 1989). This growing demonstration of a perceptual awareness by the student can be described as working from an intuitive base (English, 1993), or an Aunderstanding without rationale (Benner & Tanner, 1987, p. 23). This intuitive practice is based upon an ability to recognize...
relationships between and among events and responses (Benner & Tanner, 1987). It can be taught by helping students to focus on the whole event, or Gestalt, and using feedback gained from reflection to review the accuracy of their assessments and clinical judgments. This process is termed reflexive practice (Colina & Medina, 1997).

Reflexive practice can be taught through the use of the twin processes of reflective inquiry and critical reflective inquiry. Reflective inquiry uses controlled and directive reflection to analyze an event or problem in order to improve practice (Schmeiding, 1999). Critical reflective inquiry uses the steps of: (1) describing an event or incident of practice; (2) comparing these self-narratives with ethical standards and scientific information, and theories; then (3) identifying how individual aspects of the event shape one’s response and affect one’s practice; and (4) comparing one’s intentions in responding with one’s actual clinical response. Results of this self-analysis are deeper understandings of the conceptual frameworks that guide one’s practice (Kim, 1999; Smith, 1998), since it is considered an effective way for learners to connect theory learned in the classroom with clinical experiences (Davies, 1995). The understanding that is created can further direct and change behaviors, thus demonstrating the learning that has occurred (Chambers, 1999).

Reflexive practice is an intentional learning activity, with a goal of improving practice (Andrews, 1996; Richardson & Maltby, 1995), but it has its limitations. It should be used in situations where students understand that they will not be judged and their reflections will not be evaluated or graded, in order provide a non-restrictive environment that facilitates such reflection (Saylor, 1990). However, it is recognized that reflexive practice leads to the development of tacit knowledge, which is a form or automatic knowing based upon learned theory and prior experiences, that cannot be immediately brought to mind, but guides clinical response (Clinton, 1998). This tacit knowledge is also called intuitive practice (Benner & Tanner, 1987).

Nursing educators seek to develop a sense of cognitive and personal awareness in nursing students, called a personal knowing, or the inner experience of becoming a whole, aware self (Carr, 1999, p. 26.). Personal knowing has been linked with a growing self-confidence, as students are able to make sense of their new experiences (Munhall, 1993). This sense of personal knowing is facilitated through the use of educational approaches that incorporate reflection, recall and contemplation of events and responses (Wilkinson, 1999). Key to this educational approach is the tenet that neither experience alone nor contemplation of a proposition in isolation transforms learners and propels them through the stages from novice to expert (Heath, 1998). Rather, it is the contemplation of experience, or reflection-in-action, and reflection-on-action which produces the transformation of the learner, heightening self-awareness of one’s personal knowing and integrating cognitive learning with emotional and experiential learning (Jacobs-Kramer & Chinn, 1988; White, 1995). This study of the development of nursing students from novice to competent generalist investigates the first stage of this transformative process by examination of the reflective abilities and contextual variables of students in a beginning nursing course as they develop this tacit knowledge along with development of technical skills.
Methods

Research design
The assumption used in this non-experimental field study was that adult students in a beginning nursing course can use the process of critical reflective inquiry to identify and examine their demonstration of specific outcome-based competencies introduced in the course. The two research questions that were developed from the primary research question and guided this investigation were: (1) How are student self-assessments related to contextual variables such as age, gender, course grade, high school SAT score, GPA and academic success as evidenced by progression in the program? and (2) Are student self-assessments predictive of academic progress in a baccalaureate nursing program?

Subjects
The subjects of this study were 64 students in their first semester of a NLNAC-accredited baccalaureate nursing program, or 86.6% of their class. This purposive sample of students represents the number who volunteered to participate in this study, and their participation was not linked to course grade. The University’s Human Subjects Review Committee approved this study, and treatment of participants was in accordance with the ethical standards of the APA. All students had already participated in reflexive practice exercises as part of the course activities, but as this was a within-group design, this prior experience would not bias the results.

Instrument
The Self Assessment Content and Description, or SACD, learning exercise, was the primary instrument used in this study. The SACD was developed by the co-author and principle investigator for this study, in order to determine if students knew if and how they were mastering the competencies required in their course. The SACD is a learning exercise that uses the steps of critical reflective inquiry (Schmeiding, 1999) to assist learners to connect classroom content to learning experiences (Davies, 1995). Their reflective answers are recorded by the students, and then coded by the investigators to yield contextual variables of count and richness of description of learning experiences related to course competency and degree of insight regarding how they reached their learning objectives in the class. Critical reflective inquiry occurs when students are encouraged through guided self-reflection, to derive meaning from their behavior (Streubert & Carpenter, 1995). It requires students to think critically about designated activities (in this case, identified learning experiences) and in this case, how they enabled students to gain behavioral competencies necessary for course completion.

After the last day of the course, after their grades had been recorded, students who agreed to participate were asked to respond to four reflective activities:

- Review your course competencies, which are listed in your course syllabus (these were available to all).
- List each competency that you have demonstrated in this course.
- Identify the learning assignments that facilitated your learning process.
- Discuss how these assignments assisted you in learning the competencies listed in step #2.

These four directed self-reflective activities were based on the reflective framework of description (activities one and two, above), justification (activity three), and critique.
Procedure

The baccalaureate nursing program uses nine learning outcomes for its evidence-based education program. These nine outcomes, measuring critical thinking, cultural competence, political awareness, use of ethics, communication, nursing care, management skills and professional practice, are leveled and sub-divided into competencies for each course and year of learning. For the Introduction to the Discipline of Nursing course, these outcomes were leveled and sub-divided into forty-six behavioral competencies that students must demonstrate by the completion of the course.

All students had been told that their participation in this study would be completely voluntary, and their responses would contribute to the study of critical reflection in nursing students. They were assured that their course grades were already recorded and their answers could not be used in final grade calculations.

The two co-investigators then coded student written responses to the SACD learning exercise independently by first grouping responses by behavioral competency identified by the student. Competencies were counted and then scored initially by two independent coders blind to the names, grades or gender of the participants, using the following pre-determined key:

- One point: The student had identified the competencies learned, but could not identify any learning exercises that facilitated learning, or how they had learned them.
- Two points: The student had identified competencies and linked learning exercise to them, but could not explain how the exercise assisted learning.
- Three points: The student had identified learning exercises, linked them to the competency they assisted, and the student was able to explain how the exercise assisted in their learning of the competency, demonstrating reflection-on-action.

The first two scores required an identification of behavioral competencies, and an identification of the activity that facilitated the learning. However, the third score required rater judgment regarding the degree of detail employed by the student in describing how a particular learning experience had facilitated new learning by the student. To ensure stability in rater judgment, each rater had been orientated to this rating system and provided with several written descriptions illustrating how students describe how they had used learning experiences to facilitate their learning. A score of three for each competency meant that the student had a degree of awareness regarding how a specific activity performed in a particular setting had effected internal change; that is, students were self-aware of the processes they had used intuitively to grow cognitively as learners, as structured by these learning exercises.

Final scores were then decided by inter-rater consensus. This scoring of student narrative responses yielded an ordinal data set (Boulmetis & Outwin, 2000) that could be used to measure degree of student mindfulness, from a low score (score of 1) to a high score of 3. A retrospective document analysis was performed to gather data...
Data analysis
Descriptive statistics were used to characterize the sample, and to determine which course competencies were readily identified by students. A multiple correlation coefficient, R was performed to determine the index of the magnitude of the association between the variables to address the first research question. Data were analyzed by general linear model multivariate regression analysis to address the second research question.

Data/ Results

Descriptive statistics for the sample
Characteristics of the sample are presented first. Mean age was 25 (range=19-55). Most (72%) were age 24 or younger, and 84.6% were female. Most (80.8%) were single, never married. Mean GPA one year after entering the nursing program, as they entered their junior year was 3.0 (range=2.40-3.61). SAT total mean for this group of students was 863.91 (range=600-1130). Final grades for the Introduction to Nursing course, calculated prior to this exercise, ranged from 2.7 to 4.0 on a 4.0 grade scale. 38.5% had taken a critical thinking course concurrent with this course.

Descriptive statistics for course competencies identified
Overall, students stated that they had demonstrated 67.39% (31 of 46) of the behavioral competencies they were expected to learn in the course. For the critical thinking competencies, 65.4% identified that they had learned critical analysis techniques, 53.8% said they were learning professional development, 38.5% were able to apply previous knowledge, 23.1% participated in problem-solving, 23.1% had identified factors that impacted their own development in the nursing role, 23.1% supported their views with references, 19.2% compared previous knowledge to new knowledge, 11.5% supported their views with reasoned arguments, 7.7% examined new approaches, and 7.7% had identified health issues important to nursing.

For the cultural competencies, 46.2% said they had integrated their client’s culture when providing nursing care, and 53.8% said they examined their own cultural beliefs. For the coordinator of community resources competency, 15.4% examined their client’s enabling health behaviors, and 3.8% helped their clients access health resources. For the political awareness competencies, 7.7% said they had learned to discuss nursing’s role in shaping health care policies.

For the ethical and legal competencies, 11.5% said they had learned to examine the beliefs and rights of others. 7.7% had advocated for their clients by informing them of rights. 3.8% had identified ethical and legal standards that could create ethical dilemmas. For the effective communicator competencies, 53.8% demonstrated effective writing skills, 30.8% demonstrated writing that was clear and organized, 19.2% said that their writing was consistent with University standards, 19.2% said they had used various models when communicating. 11.5% said that they had used information technology in managing information, 7.7% had used the library services to enhance their communication.

For the competent care provider competencies, 11.5% said they had identified nursing resources for consultation and learning. For the professional role...
model competencies, 15.4% said they had exhibited professional behaviors that fostered a positive image, and 3.8% said they had recognized nursing’s contribution to public health and wellbeing. For the manager of care competencies, 34.6% said they had assumed personal responsibility for meeting course expectations, 26.9% said they had evaluated their own actions in carrying out course assignments, and 3.8% were able to identified job descriptions for adjunct health care providers. To summarize, 100% of the critical thinking, cultural, coordinator of resources, and effective communication competencies, 75% of the professional role model competencies, 50% of the competent provider of health care competencies, 50% of the political awareness competencies, 37.5% of the manager of care competencies and 30% of the ethical and legal competencies had been identified by a student or students as having been learned in this course.

Multivariate analysis results
Multiple correlation coefficients were calculated to measure the degree and direction of any relationship between the variables of: degree of reflexive practice score as measured by responses to the SACD, gender, age, SAT total scores, progression in program, GPA at beginning of junior year, and final grade in Introduction to Nursing course. A significant relationship was found between final grade in the Introduction to Nursing course and SACD (r=.676, p < .000), as well as GPA at beginning of junior year (r=.420, p < .037). Table 1 displays results of multiple correlation coefficients on all variables.

Table 1. Correlations between variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>SACD</th>
<th>Gender</th>
<th>Progression</th>
<th>GPA</th>
<th>SAT</th>
<th>Age</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>SACD</td>
<td>-0.210</td>
<td>0.364</td>
<td>0.216</td>
<td>-0.164</td>
<td>0.114</td>
<td>.676**</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>-0.109</td>
<td>-0.182</td>
<td>0.018</td>
<td>0.016</td>
<td>-0.327</td>
<td>0.138</td>
<td>-0.054</td>
</tr>
<tr>
<td>Progression</td>
<td>0.364</td>
<td>-0.182</td>
<td>0.276</td>
<td>0.135</td>
<td>-0.228</td>
<td>0.177</td>
<td></td>
</tr>
<tr>
<td>GPA</td>
<td>0.216</td>
<td>0.018</td>
<td>0.276</td>
<td>0.132</td>
<td>0.072</td>
<td>.420*</td>
<td></td>
</tr>
<tr>
<td>SAT</td>
<td>-0.164</td>
<td>-0.327</td>
<td>0.135</td>
<td>0.132</td>
<td>-0.428*</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>0.114</td>
<td>0.138</td>
<td>-0.228</td>
<td>0.072</td>
<td>-0.428*</td>
<td>0.083</td>
<td></td>
</tr>
<tr>
<td>Grade</td>
<td>.676**</td>
<td>-0.054</td>
<td>0.177</td>
<td>.420*</td>
<td>0.000</td>
<td>0.083</td>
<td></td>
</tr>
</tbody>
</table>

*p < 0.05 **p < 0.01

A general linear model multivariate regression analyses was performed, using the reflexive practice score as the independent variable, and progression in the program, measured by overall GPA at the beginning of junior year, registration in junior year courses, and final grade in the Introduction to Nursing course, as the dependent variables. Results suggest that the reflexive practice score was a significant predictor of progression as measured by final grade in the course (adjusted $R^2 = .541$, $F = 15.139$, df = 2, $p < .000$). The reflexive practice score did not significantly predict registration in junior year courses nor did it predict GPA at the beginning of junior year (see Table 2 for display of results).
Table 2.
General linear model multivariate regression analysis to predict GPA, final course grade and registration in junior year courses (N=26)

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Dependent Variable</th>
<th>Type III Sum of Squares</th>
<th>R2</th>
<th>Adjusted Mean square</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>SACD</td>
<td>GPA</td>
<td>.446</td>
<td>.049</td>
<td>.223</td>
<td>1.616</td>
<td>.221</td>
</tr>
<tr>
<td></td>
<td>Final Course Grade</td>
<td>1.583</td>
<td>.541</td>
<td>.792</td>
<td>15.139</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>Registration</td>
<td>.646</td>
<td>.119</td>
<td>.323</td>
<td>2.617</td>
<td>.096</td>
</tr>
</tbody>
</table>

Discussion

In the paper, we had to make decisions to help set goals, and to logically organize our thoughts. This made the transitions easier.

As this quote from one of the students in this study demonstrates, beginning nursing students not only can identify what they have learned, but how and by what mechanisms they have learned it. In this study, the identification of competencies learned and how they were learned is illustrative of how beginning nursing students represent nursing and how they view themselves as beginning providers of nursing care. This is important to the understanding of how novice nursing students develop into competent generalists by the time of graduation, because learning is context dependent. In other words, students’ learning is affected by their perceptions of themselves and of the tasks at hand (Cowman, 1998).

Based on the descriptive analysis of the competencies identified in this study, the overall majority of students in this beginning nursing course already view themselves as critical thinkers, culturally competent at a beginning level, effective communicators, and able to manage resources. However, they enter the nursing program after attending college-level courses that introduce and integrate these concepts into course work, and have had opportunities to assimilate these attributes into their own personas. It could be that it is easier to recognize learning that involves these competencies because they are familiar with the concepts, and their perceptions are already positive regarding their own learning of these concepts. They have a much more difficult time identifying the learning competencies associated with a more sophisticated understanding and application of the nursing role.

Upon reflecting on the results, I was surprised that only 50% of the competent provider of health care and 37.5% of the manager of care competencies were identified in this study. However, this might occur because the assessment learning exercises associated with this course provided the first opportunity for these students to interact with clients in the nursing role. It might take longer than one semester for most nursing students to recognize these competencies and to perceive themselves as learning these roles.
It was not surprising, however, to discover that the ethical and legal competencies were the hardest group of competencies for students to recognize as having been learned in this course. The students enter this course having taken a bioethical philosophy course, which introduces the commonly used ethical principles such as deontology, utilitarianism, and beneficence. The Introduction to Nursing course requires groups of students to apply these principles in addressing certain ethical dilemmas in health care. It could be that results reflect a general uncertainty or discomfort with using formal procedures as a guide to resolving ambiguous, political and/or unpopular issues in health care. Their difficulty with identifying their own learning in this area might be a characteristic of novice students.

Results of this study were also surprisingly useful in revising the course after the first year of instruction. The SACD yielded results that were useful in three domains of education (assessment, teaching, evaluation). Student self-reflection scores were used as indicators of student capacity for self-reflection at one point in time (assessment); results were used to revise learning activities to strengthen student learning of particular constructs (such as ethics and manager of care); and results were also used as a subjective measure of the effectiveness of a course in achieving specific learning objectives (evaluation).

We returned to the original course with altered assumptions about the importance of student awareness of their own learning in their mastery of course learning objectives. It appears that when students are aware of the use of particular learning exercises in achieving certain learning objectives, they can then actively direct their own learning, contriving to bridge the distance between what they know and what they need to know, or what they can do and what they need to do. Accordingly, we revised the learning activities used to help students achieve competency in ethical and legal and manager of care constructs at this is level, to assist them in consciously directing their own learning in these areas. The new learning activities not only required more self-reflection, but also required students to engage in directed learning activities outside of the classroom, linking them to their life at home and with friends and family. We expect that this added dimension to learning and broadening of application of classroom content will be transformative for them. It will serve to strengthen their awareness of their own understandings of course concepts in these areas, and the cognitive processes they used to learn.

Further studies of student mindfulness as they continue in school might yield useful information about the phenomenon of continued cognitive development in adults and the role that reflexive practice plays in its development. The cognitive development of adult students is of concern to all educators, regardless of discipline. Reflexive practice, critical analysis and student mindfulness are cognitive practices that are not limited to the nursing profession, but have been identified, studied and discussed in other disciplines, such as education and medicine. This naturalistic inquiry can be adapted for use by educators in determining degree of mindfulness in students, and in tracking the development of mindfulness in their discipline over time as they progress in their program of study.

Conclusions
...cognitive development is an apprenticeship—it occurs through guided participation in social activities with companions who support and stretch [one’s]
understanding of and skill in using tools of culture (Rogoff, p. vii).

Results of this study suggest that one factor, an ability to self-reflect upon the processes involved with one’s learning, might be a characteristic that is connected with academic progress. Reflecting on one’s practice can also expand a student’s understanding of and respect for the complexities of the nurses’ role (Baker, 1991). This critical reflective analysis of one’s own learning process can be used as a learning tool as well as an evaluative exercise for student and educator alike (Chambers, 1999). The results also raise the question of whether and/or how much the ability to act intuitively, to reflect critically upon one’s experiences, and to contemplate and review in a mindful way, can be taught. In other words, it would be useful to know if the ability to engage in reflexive practice or to develop a mindful practice is inherently innate, and can be improved through guided teaching/learning experiences designed to improve critical reflection, or is a learned skill that anyone can master with opportunity and experience. Additional information about the importance and nature of this mindfulness in nursing students would encourage nurse educators to design experiences that could challenge students to reflect upon, interpret and derive personal meaning from their learning experiences. Information about the learned and/or innate nature of these cognitive processes would also add to our understanding of the role these reflexive practice exercises should play in curricular design and delivery.

On another level, this exercise can also be used by faculty to determine if the learning opportunities they have designed actually enable students to reach the desired outcomes, or objectives, of the course. For example, if very few or no students can identify any learning activities in the course that enabled them to “Examine the interrelationships of personal beliefs about parenting, childrearing, parent-child relationships and the role of family in society” (a learning objective from a graduate-level course developed, taught and evaluated by the co-author), then it behooves the faculty to re-examine the learning activities applied in the course for “goodness-of-fit.” A learning activity might have content validity but not contextual validity. This means that although a learning activity might produce a certain outcome in one setting, it might not be effective in a different type of setting, so it would not “fit” the setting. The SACD-learning activity described here might be adapted by educators in other disciplines to determine if the learning activities designed for a particular course had resonance, or contextual validity, in that course.

Although the content of the course was nursing-related, the SACD process could be examined for use by faculty in other disciplines such as social work, child development or education, to enhance their student’s reflexive practices as well as to determine if students are aware of their own mastery of course objectives or standards relative to their discipline. This might be particularly useful as faculty prepare for accreditation at their Colleges/Universities, and are challenged by the same questions (“Are student self-assessments related to any contextual variables?” or “Are student self-assessments predictive of academic success?”) as the ones that generated this study.

There is a need to examine the uses and meaning of reflexive practice as a learning tool in nursing education. This study takes this examination to another level, as students’ self-perceptions of their learning are identified, coded and scored at the beginning of their nursing program. This allows for a tracking of this self-concept and learning process.
their view of learning throughout the course of their undergraduate education. This completed study illuminates the complex internal strategies involved in the whole process of learning for nursing students. It adds to nursing education knowledge about the potential uses and value of reflexive practice, not only as a learning exercise, but also as a confirmatory process that cements a new nursing graduate’s self perception as a competent provider of basic nursing care.

The SACD assessed student capacity for self-reflection at one point in time, enhanced student self-reflective abilities through participation in the guided learning exercise, and provided a subjective evaluation of the effectiveness of identified learning activities used in the course in achieving required learning objectives. The quote used at the beginning of this section was originally used to describe the cognitive development of children. But it is apparent that our cognitive abilities continue to evolve throughout adulthood, providing new opportunities for self-discovery and concept mastery. This continued cognitive self-development in adults can be assessed, enhanced and evaluated by development of learning exercises, such as this one, that have uses in assessment, in instruction or delivery, and in educational evaluation.

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The Good, the Bad, and the Ugly: Using Experiential Learning in the Classroom

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Abstract
Academic experiences designed to promote active learning can be thrilling and memorable educational opportunities for students and their instructors. Unfortunately, they can also be miserable failures for students lacking necessary skills and motivation, and for instructors lacking necessary resources and support. This paper describes two active learning projects, both successful in many ways, and draws from them observations and lessons on the failings of active education for some students, and the burdens placed on instructors.
Introduction

Experiential learning is not a new concept. Originally derived from apprenticeship programs, experiential learning strives to give students the opportunity to put into practice the theories they learn in the classroom. Proponents are quick to point out that active learning goes beyond memorization and requires students to become engaged in the process. This leads to deeper understanding and longer retention. Moreover, research indicates that student satisfaction is greater when the classroom environment encourages student involvement.

Business schools have particularly embraced experiential learning. The new American Assembly of Collegiate Schools of Business (AACSB) curriculum guidelines (1993) stress the importance of providing students with the necessary competencies or skills to be successful businesspeople. As a result, experiential or “hands-on” activities have become an integral part of undergraduate education. Many instructors work extensively to incorporate as many active learning experiences as possible into their classes. Employers use them as criteria for selecting graduates. Universities use them as a recruitment tool. For the most part, experiential learning has provided many positive outcomes for students and faculty. Nevertheless, there are drawbacks to active learning that rarely are discussed in academic forums.

For two semesters in 2000, we supervised two active learning projects. One project brought twelve seniors together to compete in the 37th Annual International Collegiate Business Policy Competition (ICBPC). Substituting for the capstone strategic management class, students competed against other students from universities across the country. For a semester, students created and operated a virtual company in a highly aggressive environment.

The second project was an entrepreneurship class that brought together business students to actually create, manage and market a music CD over two semesters. The student company, Starving Students Production (SSP), produced and sold a rock CD, “Code Red: Destination Unknown.” Both projects were very successful. Students in the policy competition won first place. The entrepreneurship project won the Southern Business Award for Innovation in Teaching. Nevertheless, both successes came at a very high cost. In this paper, we will look at both the good, bad, and ugly sides of experiential learning and discuss strategies for increasing success.

The International Collegiate Business Policy Competition

Computerized business simulations are experience-compression exercises. The instructor puts students into small teams, each representing top company management. Every company is in the same industry and each company sells a product. Initially, each team inherits a company with identical characteristics. Team members then proceed to make all the strategic, marketing, production, financial, and managerial decisions for their firm. The administrator processes their decisions. The simulation program compares decisions submitted from every team and determines how each company performed in the industry.
based on the direction and the quality of the decisions. Students get quick feedback as they can typically pick up the results within an hour of submission. They then make decisions for the next period. Each decision typically represents either a quarter or a year in the life of the company. Computer simulations generally last throughout a ten to fifteen week period.

According to Faria (1987) computer simulation use across the functional areas of a business school education is fairly widespread. His study showed that almost two thousand four-year colleges and universities used simulation games, whereas 95% of the AACSB schools used simulations in some aspect of the curriculum. In an updated study, Faria (1998) reported that simulation use had increased to 97.5% of AACSB schools. Faculty report that simulations provides students with a scenario for more realistic decision-making, creates a sense of urgency for the students as they compete with classmates, and provides quick and objective feedback. In addition, researchers have found a direct relationship between the use of simulations and student satisfaction (Walter, Coalter, and Rasheed, 1997). Learning via simulations builds up student’s confidence in analyzing revenue-cost-profit economics of a business, helps them understand how functional pieces fit together, and develops the powers of managerial judgment.

We have been using computer simulations in our strategic management courses for over ten years and we had been very interested in the International Collegiate Business Policy Competition (ICBPC). Unlike most simulations in which competition takes place among teams in the same university, the ICBPC enables student teams from all over the globe to compete. Students submit decisions via the Web every week from January until April. In April, students travel to San Diego for a weekend to compete in an intensive phase where they make approximately six decisions and give a final presentation about their company to a panel of business executives. During the competition, teams also submit a business plan, goal attainment reports, and an annual report (Cotter & Fritzsche, 1995).

In the spring, 2001 we competed in the ICBPC for the second time. In our first attempt, we encountered many of the difficulties that any novice encounters in a new situation. We did not plan ahead for the required business plan and annual report, and we did not appreciate the production values that some schools put into those documents. We had no idea what information was supposed to be in a goal attainment report. Consequently, we were always pushing against deadlines and the quality of the reports was seriously lacking. It is important to note that in the first year, we ran the ICBPC as a club. Anyone who wanted to be part of the team could join but no one would receive academic credit for the experience. Luckily, eight people expressed interest. Later most students indicated that they enjoyed the experience even though they did not win.

Learning from experience, we decided to organize the competition as part of a regular class offering. In order to attract a wide variety of different business majors, we stipulated that our class would substitute for the capstone business class, Strategic Management. We also limited the class to fifteen students since we knew that this class had to work as one group. In the beginning, registration was light but as we started to market the course within the college and individually soliciting students, the course filled.
During registration, we also needed to raise money. It costs $1000 to register a team for the simulation. In addition, it costs approximately $200/student/night to send four or five students to San Diego to represent the class. Even with every student contributing $50 as a course registration fee, we were far from our goal. Fortunately, a local bank donated enough money to ensure participation.

There was virtually no syllabus for the course. Not, at least, in the sense of a planned sequence of topics and readings. ICBPC administrators determine all the dates for the decisions and reports. On the first night, we explained how the simulation worked and what we had learned from the previous year, along with some basic concepts in strategic management and decision-making. After that, students had to make decisions, analyze the results and decide what actions to take for the next week. At first the decision making process was tortuously slow; typically decisions took about six hours and hunches often substituted for solid analysis. As they struggled, questions and concerns from the students triggered decisions about which topics to cover and how to cover them. As the semester continued, students developed spreadsheets and forecasting tools, along with policies and decision rules that helped the decision making process.

As with the SSP project, some students were more proactive than others. Some students became quite excited about getting the results back while others just sat back and watched the others work. Since students were expected to take initiative and volunteer to work on tasks, this lack of participation became extremely frustrating when reports were due. For example, students had divided the business plan into sections with everyone assigned to complete a part. On the night before the report was due, three students still had not done their parts and only five students showed up to proofread and make final corrections.

Five students went to San Diego for the intensive phase. We selected these students by eliminating any students who could not make the trip and having the remaining students make a presentation and answer questions about their company. Knowledge of the simulated business and participation in class became our criteria for selection. Interestingly, the students were polled anonymously for their nominations and they chose the same individuals to represent the class. With the most motivated students in San Diego, the concentration on winning became very intense. During the three-day event they got little sleep as they worked on making decisions and preparing the final presentation. Up until the final ceremony, we had no idea how the students fared against other schools. According to game rules, we could not watch any other presentations. Since presentations and reports account for 50% of the final score, any school could have won even if their company was not the industry leader. Fortunately, our students placed first. We were happy to see the students rewarded for all their efforts.

Starving Students Productions

The idea of teaching entrepreneurship is not new. Many universities are recognized for their entrepreneurship programs (Enbar, 1999; Ivancevich, 1991) and while only 16 four-year colleges offered an entrepreneurship course in 1971, most business schools offer at least one course today. Spurring this growth in entrepreneurship...
education is the fact that new business
corporations have doubled over the
last 20 years (Dickerson, 1998). Our
primary objective with this project was to
give students the opportunity to develop
their skills by starting and operating an
actual business. In effect, we were
implementing a “learning by doing”
approach.

The course, begun in Spring 2000, was
comprised of a two-semester course
sequence. We chose the spring-fall
sequence to ensure that we would have
a full twelve months to complete the
project. As we designed the course, the
marketing plan and fund raising would
be completed in the spring semester,
summer interns would keep the project
moving through the production stage
and in the fall, students would sell and
market their product. The accounting
year and academic year would end on
December 31.

Our product, a musical CD, was based
on a similar project that had been
successful at Elon College in
Pennsylvania. Two years prior to our
project, Elon students had produced and
sold a jazz CD. Since we were located
near Nashville, Tennessee, we had a
number of musicians, recording studios,
and technical advice within a fifty-mile
radius. We also liked the idea of selling
a CD since it was a product that our
students already knew and could get
excited about.

Sixty-five students expressed interest in
participating in this business
experiment. We limited the class to
twenty students. To make a final
selection, we asked students to fill out a
questionnaire that included major,
course expectations, and the amount of
time they were willing to put into the
project. We selected students without
regard to grade point average since
research indicates that academic
standing is not a good predictor of
entrepreneurial success (Olson, 1985).
Because we anticipated that much out-
of-class work would be required, time
availability became a major selection
criterion. We also were interested in
students that had some skill to bring to
the business such as experience with
recording studios. Our final selection
contained junior and senior business
administration majors. There were an
equal number of males and females
and, although the age range was 20 to
45, the average age was 21.

To reinforce the concept that students
would have personal responsibility for
running a business, all students were
required to purchase two shares of
company common stock at $10 a share.
This was more symbolic than practical
as the total cost of the project was
estimated to be $15,000 based on the
Elon project. At the end of the venture,
any profits would be split equally among
the twenty students after a small,
undetermined percentage was placed
into a fund to support future
entrepreneurship projects.

When the students arrived the first day,
they were unsure exactly what would be
expected of them. They looked to us to
provide the goals and, sometimes, the
answers. They were accustomed to
taking notes, reading text, and
answering test questions. However,
these skills are not very helpful in
running a business.

We did not structure the company,
Starving Student Productions (SSP). We
hoped that a structure would evolve
from the class and a leader would
emerge. This proved to be problematic
since no structure or leader emerged.
Students used a one person, one vote
model. We also did not assign students
any particular task according to major.
Students volunteered for tasks. For the
most part, students did select
assignments they felt the most comfortable in completing. Consequently, our accounting students did much of the company's books and the computer information majors created the Web page.

The first series of tasks focused on marketing research and market segmentation. Students researched area residents, students, music retailers and secondary sources (i.e., Billboard magazine, Entertainment Weekly, Variety, Census data). Based on this research, students decided to produce a rock music CD featuring a compilation of independent rock artists from the region, sell it for $12.99 to 16-30 year olds, and distribute it at area music and electronic stores as well as via the Internet. As students began to make decisions for their own company, they felt some power. They were business people.

Most students stayed excited until the problem of finding funds became apparent. The recording studio wanted their fee, in this case, $400 per song track for 12 songs, in advance. A few students volunteered to oversee the fundraising efforts of the company but by the end of the first semester, the students had obtained no new funding beyond the initial stock capitalization.

Fall marked several new changes. SSP was in debt. Over the summer, they had elected to borrow money from a number of sources. By September, they owed over $14,000. Since SSP had acquired debt, we imposed several new conditions. We formed a peer committee to oversee student performance and to provide a means to discipline freeloadin behavior. We required students to keep journals and record daily their activities in SSP as a way to gauge individual participation. Furthermore, to encourage everyone’s participation and to raise the needed break-even funds, each student was responsible for selling 100 CDs. Although selling 100 CDs would not be the final determinant of grades, it was a mandatory quota to receive a grade. Two students did not like the individual sales goal and withdrew from the class. Finally, we took more control of the class by setting deadlines for specific activities to take place. During the first semester, it became apparent that students liked to postpone decisions. By fall we had lost the luxury of time. There were only sixteen weeks left to sell enough CDs to repay thousands of dollars in loans.

Even with the changes, things did not always go according to plan. The original timeline called for CD production to be completed over the summer with the product delivered in August. Unfortunately, production difficulties occurred and another company had to be quickly found to manufacture 100 CDs (at a premium price) to sell at a scheduled Release Party. This was a major hurdle. Even worse, although approximately 125 people attended, only four CDs were sold. Therefore, the relatively expensive Release Party (venue rental, sound system rental, security, promotion costs, etc.) was financially unsuccessful. The loss of innocence was also significant. Many students had thought they would sell their entire allotment of CDs at the release party.

During the fall CD sales continued to be slow. Now the class was split into three factions. Approximately thirty percent of the students were developing new strategies to sell the CD. They planned another party on campus featuring some of the bands. This would be more successful than the first party in terms of CD sales. Some students started to go to various classes to promote and sell the CD. Fifty percent of the students just
watched the others work. The remaining twenty percent of SSP members became the vocal critics of other students, the entire project and us. This was a very difficult time for everyone involved in the project. Although we did set some goals to make sure that everyone contributed and debts were paid, we did not want to direct the process. We felt it was important for students to find their own methods to sell CDs if they were going to learn about entrepreneurship. Consequently, we offered suggestions and waited for students to become motivated.

A wall of tension built up in the class. This tension escalated when we made it clear that we still expected everyone to sell 100 CDs. By constantly reinforcing this goal, most students understood that they were in considerable danger of failing the course. At this point, some students did not care about the business. They only thought in terms of passing the course.

To say things were bleak by November would be a serious understatement. However, just when some students had lost all hope, an alternative presented itself. The university bookstore management offered SSP the opportunity to staff a sales cart in the regional mall. The bookstore would pay the students 20% commission on all sales of licensed University merchandise and allow them to keep all proceeds from the sales of the CD. This sounded like a good deal to students so they voted to work the mall cart from November 20 to January 1.

Students worked over 890 hours at the cart. An analysis of participation at the cart showed that the most proactive students in the class put in 244 hours even though many of these students had already sold their 100 CD quota. These students were still very motivated. They arraigned special activities like having the college mascot appear at their cart. They had promotions such as buy $50 worth of merchandise and receive 10% off of the CD price. They often showed up at the cart during their spare time to encourage other students.

Students who were most critical of the business worked 159 hours even though they had not reached their individual target. These students saw the cart sales as a way to meet their quota. Some of these students proved to be good salespeople. Nevertheless, they often chose to work at the cart during class time to avoid class, did not try to clean up the cart, or put out new merchandise. When working, they often ridiculed other students who were attempting new sales strategies. These students continued to complain.

A third group, who had remained relatively inactive throughout the class but also were relatively non-complaining, contributed the remainder of the hours. It is this third group that became interesting. One of these students commented after working eight straight hours at the mall, that “being in business is hard work.” As these students became successful at selling their CD to mall customers, their confidence and satisfaction grew. They started keeping a running tally of who sold the most CDs in any day awarding the “salesperson of the day.” They even started to have fun with the task. One time they bought a small train set and attached a Santa doll to the tracks. Overhead was the slogan “Buy a CD and Save Santa”. This may have been in questionable taste for some children and adults but it did appeal to their target audience and helped sell CDs.

Fortunately, the mall cart revenues generated sufficient revenues to more
than cover all CD production and marketing expenses. This was not the ideal culmination of the SSP CD business plan but it did point out the importance of being flexible and responding to environmental threats and opportunities. Consequently, this project did make a small profit. All unsecured creditors (including the professors) were repaid; student-held stock was repurchased; and a portion of the earnings was reserved to fund future entrepreneurship projects.

**The Good**

Implying that instruction via pure lecture is insufficient for teaching management skills, Mintzberg (1975) argued that cognitive learning “no more makes a manager than it does a swimmer” (60). November (1997) suggested that problem-based learning experiences that simulate the work environment are an appropriate bridging tool between academic study and the learning of attitudes and behaviors that will be required in the workforce. Both the Intercollegiate Policy Competition and the Starving Students entrepreneurship project created learning environments that were realistic and problem-based. Therefore, there were many reasons why we entered into these projects enthusiastically.

From a student’s perspective both projects provided practical experience. Students were forced to confront real problems and to use their own creativity to find solutions. For instance, the ICBPC students quickly learned that they had to develop effective spreadsheets and decision-making tools if they were going to be successful in a very competitive industry. When the Code Red CD ran into production difficulties, students had to find alternative strategies to have a CD available at the release party. Both projects also forced students to develop people, presentation, decision-making, and sales skills. When ICBPC students realized that they were going to present their annual report to managers from Intel and Cisco, they spent all night revising their graphics and practicing their speech. Such preparation generally does not happen in a regular class where students are presenting to their classmates. One SSP student remarked that he had decided that Code Red was not going to sell itself so he decided to go door-to-door in his dormitory to convince students to purchase the CD.

From a faculty member’s perspective, both projects allowed us to become consultants to our students. In both classes, we wanted the groups to be successful. As a result, we bounced around ideas with the students. Students saw their options and then decided in which direction they would go. Sometimes they made good choices, and, other times, they did not. Not using a traditional lecture format and working towards a common goal made us feel more like coaches than faculty.

From the university’s perspective, both activities helped showcase the school’s ability to offer “hands-on” activities to students. The College of Business gained regional recognition for having their faculty win the Innovation in Teaching Award. Local television, radio, and newspapers carried stories about the ICBPC student’s success in San Diego.
The Bad

Faculty have debated the merits of experiential-based learning and even though we believe that it should be a critical component to a business school’s curricula, we acknowledge there are some disadvantages. Some of our students came away from the project disappointed. For example, although we were clear that not everyone could go to San Diego, some students in the ICBPC were disappointed that they did not have the opportunity to travel and meet their competition in person. In the SSP case, students were amazed that the university and community did not embrace their project as wholeheartedly as they did. This became painfully obvious when few people or institutions were willing to contribute to the project. As a result, students were forced to borrow over $10,000 in order to manufacture Code Red. Both projects required that students spend considerable amount of time outside of class doing work for the class. We suspect that some students may have initially enrolled in the class assuming that there would be less work because there were no exams. Two ICBPC students were also encouraged to drop when it became clear they were not interested in contributing. Another ICBPC student complained that decision-making frequently went an hour or so after the scheduled end of class. In SSP, two students actually dropped the course after the first semester because they felt it was going to be too much work.

We also had our share of difficulties. Although our students were in the traditional 21-24 age range, they brought with them various experiences and maturity levels. Since these projects called for independent, self-motivated students, our best students indicated to us that they felt that both classes provided a great learning opportunity. Other students expressed frustration. In hindsight, the latter student group would probably perform better in a more structured setting.

Also, given the type of activity, we were often forced to make choices over what material to cover in class. In both classes, we were unable to cover the breadth of material that we normally cover in a traditional class. Part of the reason for this lack of time to cover material comes from the fact that “hands-on” projects tend to take on a life of their own. Classes are often driven by environmental events. For example, students spent over 800 hours in the mall between Thanksgiving and Christmas. During that time, the focus in class was on how to sell to consumers, how to display merchandise, how to keep track of inventory and even one class on how to operate a cash register. Moreover, just as students found the projects time consuming, we also found that we had to devote considerable time outside of class to allow for consultations or even in the case of SSP, working at the mall when no student in the class could be at the cart. A wide range of strategic business issues arose during the ICBPC competition, but it was almost impossible to predict which issue would filter to the top of students’ consciousesses until it emerged from their deliberations in class.

Finally, it became difficult to manage student and the school’s expectations. During the ICBPC, both the students and the Dean often asked if we were going to “win”. Even though we kept emphasizing that learning rather than winning was our main objective, we
worried that our students would feel like failures if they did not bring back a trophy. From an administrator’s view, there are drawbacks to experiential learning. Both projects cost money. In SSP, the college lent the students $2500. Fortunately, the students were able to pay the money back but it was a risky investment. The ICBPC cost $3000. Last year, a regional bank established funding for the venture. Nevertheless, at a time when money is scarce on university campuses, it can be difficult to explain how $3000 can be allocated to fifteen students. Lastly, many universities use number of students in a class as a measure of faculty productivity. Both of these projects had limited class sizes of 15-20 students. Obviously not all classes can be that small and still maintain an adequate faculty/student ratio.

The Ugly

Unfortunately, there were even some ugly sides to both projects that we feel are important to acknowledge so that others who attempt these types of projects can avoid the pitfalls. In the SSP project, a few students failed the course. In each case, the students did not make any attempt to sell their CDs. One student went so far as to ridicule students who were working in the class. Two of the students believed that they could not fail since this was a new course. Since the capstone course is necessary for graduation, the students had to repeat the traditional strategic management course. However, this occurred only after they appealed their grades through three collegiate appeal processes and lost each appeal.

Most of our students want to travel. In some cases, going to San Diego was the first time some students had ever been on an airplane. Although we are the chaperones, it can be very difficult watching a group of university students who are old enough to go places alone and yet sometimes lack the maturity to make wise decisions. For example, during our strategic competitions, we have had a student lose his wallet at the airport on the first day so we had to finance his daily expenses and explain to security why he had no identification. On another trip, we had to search for a student who disappeared apparently in search of marijuana.

In all cases, these projects are team-taught. Since the SSP project was a two-semester class, each instructor received credit for teaching one class. With the ICBPC, one instructor received credit for the class one year and the second instructor received credit the next year. There are advantages to a team-taught system. Two instructors can split the time devoted to the class between them, making the class more manageable. Two instructors also bring difficult insights and experience to the project. However, if the instructors do not work as a team, the experience can be a nightmare. With SSP, the class was designed and initiated by two instructors. Before the second semester began, one of these instructors left for another school and a third instructor took her place. The replacement instructor was not as fully integrated into the project, and thus, could offer only limited support. Some of the students took this personnel change as an opportunity to try to create a rift amongst the instructors. Thus, when the goal of selling 100 CDs appeared unreachable to some of the students, they tried to lobby the replacement instructor to change the rules.
Some Remedies

Hindsight can be twenty-twenty. At the same time, reflection does prevent us from making the same mistakes twice. Given the year we have had to reflect on our experiences, there are some things that we would do differently. First, we would have a better selection process for choosing students for the class. Originally, we just asked students how much work they were willing to put into the projects. As opposed to what some of the literature indicates, we found that students who had a marginal GPA did not do well in the class. For class projects, GPA may be an indication of a student’s willingness to put effort into a class. Interviewing students could provide an opportunity for a realistic job preview. Additionally, assigning a task prior to acceptance into the course would give additional information as to student willingness and ability to return a quality product on time.

We would make sure the class is a credit-bearing course. In the ICBCP class, we originally started the project as a club activity. Given the amount of work involved in making decisions, many students could not become involved in the project given their academic course work. We found that giving course credit allowed us to attract more students to the competition. In addition, as a club, we received no course credit for spending hours with the activity. As a class, the project could be counted toward our course load requirements.

We would set realistic expectations for both the students and the administration from the very beginning of the project and keep repeating them throughout the activity. Our most important objective was in the process not the outcome. Everyone involved in the project needs to know that the experience is beneficial regardless of the result. Eighty percent of all new business owners go out of business. It was amazing that SSP did not go bankrupt but even if it had, students would have learned many valuable lessons.

At the end of any project, we would encourage students to write letters of support. This will help fund-raising later and help recruit new students. Funding is critical. We would try to secure all the funds needed for projects prior to the beginning of the project. When Elon College did their CD project, they had funding from the Coleman Foundation and their institution. SSP started out with stock money from the 20 participants, but there was no money committed by either the College of Business or the University. We would not undertake this type of project unless there is some funding. In our case, we had to loan students a considerable amount of money to keep the project afloat. Most professors cannot afford to take such risks.

Even though experiential projects tend to be unstructured, we would set firm guidelines for classroom participation. In the SSP example, students were given a quota of 100 CDs to sell. The idea of having a quota is a good one and is used commonly in businesses. However, students tend to have a short time horizon and do not allocate their time well. Students have become accustomed to waiting until the end of the semester to write the term paper or read the text. This is not a realistic strategy when selling a product. A smaller goal of 10 CDs every two weeks would have prevented some students from waiting until the last minute to sell CDs. Weekly assignments and major projects every three or four weeks aided the process during the ICBPC competition.
Business owners face timelines on a daily basis. SSP and ICBPC students had a very difficult time making decisions. This points out the importance of setting specific timelines to make sure that critical tasks are accomplished on schedule. Also, students have little real experience making decisions, even in colleges of business. Students require a huge investment of time and support from the faculty, especially in the earliest stages of the project, in order to be successful.

It was difficult sometimes for us to sit back and let the students make decisions that we felt were inappropriate. Two examples in SSP were the rental of an expensive sound system and the purchase of 5000 bumper stickers to promote the CD. However, SSP was a student-run business and all promotional decisions were based on the student owners' votes. Even though faculty interference would seriously dilute the independence of the firm and control of the owners, we would spend more time pointing out the financial and marketing implications of every decision. The ICBPC team had initial problems forming a consistent strategy, could not maintain any kind of profit margin, and seemed obsessed with price-cutting. It took diplomatic, if relentless, questioning challenging and probing before clear goals, strategies, and tactics began to emerge.

Finally, there is the issue of time and effort. These projects are much more demanding than traditional classroom based courses. The physical and emotional demands on faculty can be extraordinary. In this instance, no additional compensation or release time was provided, and resource constraints were keenly felt, despite much favorable publicity and regional recognition. As a result of our experience, we strongly recommend that faculty considering such projects seek and obtain prior commitments of administrative support from their department and college. Even the most promising projects will be imperiled if starved of the most critical resources – faculty time and attention, and the minimum budgetary support to finish the job.

References


Providing Support for Faculty Who Wish to Shift to a Learning-Centered Paradigm in Their Higher Education Classrooms

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Abstract
Research shows that students who experience a learning-centered paradigm outperform those who experience a more traditional teaching-centered paradigm. Faculty are generally not well prepared to adopt a learning-centered paradigm, and trying to do so without ongoing support is difficult, at best. We describe a model used at Iowa State University that provides the program and process necessary to help faculty make such a paradigm shift. Introductory and advanced workshops are coupled with ongoing bi-weekly meetings to help faculty develop the strategies and understanding of the learning process that are necessary to develop a learning-centered classroom. The approach used here could serve as a model for other colleges and universities wishing to help faculty who wish to make such a change.
“We won’t meet the needs for more and better higher education until professors become designers of learning experiences and not teachers” (Spense, 2001).

Introduction

There is no question that we need better higher education. Classroom professors lament the fact that students don’t perform well on exams, that they seem indifferent to materials being taught, and that they don’t seem able to transfer what they have “learned” even from one class to the next, let alone from the university setting to the rest of their lives. Employers demand more than just technical knowledge of university graduates. They also want graduates who can think on their feet, work effectively in teams, communicate effectively, and create new knowledge that will give their employers the advantage in today’s fast-paced world (Gardiner, 1994; NSF, 1996; Brown and Lassole, 1998). Students complain that they don’t see the relevance of classroom material to what they want to do for the rest of their lives. And through it all, frustration grows.

Meanwhile, a revolution is underway in some college classrooms. Once regimented to lectures, tests and student apathy, these classrooms are evolving into active, interesting and engaging places to be. The key is engagement, a notion that emphasizes a move from a passive to an active learning environment. Teachers and students alike are discovering what cognitive research of the past decade has shown; a world of difference exists between rote recall of facts and a deeper understanding of the principles underlying facts and processes. It is at this deeper level of understanding that true learning occurs, learning that can be transferred to the world beyond the classroom.

“Effective learning strategies almost always require the learner to participate” (Sanders, 1998). That statement is at the heart of attempts by faculty on many campuses to create a more learning-centered atmosphere in college classrooms. “Triggered by the 1983 report, A Nation at Risk, that warned ‘the educational foundations of our society are presently being eroded by a rising tide of mediocrity’, learning-centered efforts were energized by a second wave of reform reports that began appearing in the early 1990’s. These reports focused the reform efforts on a common theme: to place learning first. A 1993 report, An American Imperative, called for ‘putting student learning first’ and ‘creating a nation of learners.’ In 1994 the Education Commission of the States urged a reinvented higher education system that would reflect a new paradigm shift centered on learning. In 1995 the Association of American Colleges and Universities issued a paper titled, The Direction of Educational Change: Putting Learning at the Center.” (O’Banion 1998).

Underpinning the learning revolution is a growing recognition that facing the challenges of the 21st century will require more than minor adaptations to current practice (Mullin 2001). Current instructor-centered methods simply cannot sufficiently effect the complex outcomes (higher order thinking skills, problem solving, the ability to see from diverse perspectives, ethical reasoning, and life-long learning) that a prepared citizenry needs. Effecting these outcomes will require many changes in
the way faculty members approach the job of helping students learn. Leading those changes will be faculty who are skilled in designing educational experiences that make students active participants in their own learning.

The question isn’t whether students who are actively involved in their own learning fare better than those exposed to a more passive style. That active learning techniques work is well documented in the cognitive research literature (Salvin 1990, Nastasi and Clements 1991, Gough 1987, Marzano et al 2001, National Research Council 2001). Not only do students involved in active learning situations out-perform those who learn through more passive classroom approaches, but also most of them actually prefer learning-centered classrooms once they understand the new set of expectations (Qualters 2001). The question is, what will help educators on college campuses move toward a learning-centered paradigm—both in belief and in action?

The shift to a learning-centered classroom atmosphere presents several challenges for college campuses and for faculty. Such a change is not easy, even for those who wish to make it. While some faculty have been successful in implementing a learning-centered approach in their classrooms, many dedicated faculty with genuine interest in improving classroom instruction grope for better ways of doing their jobs but are hampered by their own past experiences and lack of training in cognitive science. They are hindered further by university, college, and departmental administrators who cling to the idea that “teaching is telling, learning is absorbing, and knowledge is subject-matter content” (Spense, 2001). Learning-centered strategies are based on knowledge of how students learn. Yet most faculty know little about how students learn. Moreover, because college professors have seldom learned much about teaching in the first place, they know even less about new views. What are needed, in order to surmount these obstacles, are opportunities for faculty to come together as learners to learn about learning.

To make lasting change, faculty need a chance to experience learning in a learning-centered atmosphere. They need opportunities to practice in their own classrooms with continuing support from those knowledgeable about practical applications of current cognitive research. They also need the support of their peers who are experiencing the same trials, tribulations, rewards, and joys of designing learning experiences for their students. Providing these kinds of learning opportunities is the mission of Project LEA/RN™ (Learning Enhancement Action/Resource Network).

The Model

Project LEA/RN™ at Iowa State University, is one model for providing support for faculty as they move from a teaching-centered to a learning-centered paradigm. Initiated by an Education Leadership professor in 1993 in response to requests from the College of Engineering, it was further expanded through a USDA Higher Education Challenge Grant to introduce additional faculty at Iowa State University and Alabama A&M University to the theory and practice of a learning-centered paradigm.
Project LEA/RN™ is not simply a program. More importantly, it is a process. Grounded in research (Licklider, et. al. 1998), it draws on several core elements of adult learning theory: critical reflection, purposeful discussion with colleagues, accountability, and action (Cranton, 1994, Knowles, 1994, Mezirow, 1991). These critical aspects of learning are operationalized in Project LEA/RN™ through its core structures that apply best practices from staff development research (Joyce and Showers, 1996, Sparks and Richardson, 1997, Darling-Hammond, 1998, Sparks, 1993). In the program, participants (faculty members, administrators, teaching assistants, and staff) meet bi-weekly for two hours in large group sessions (15-20 members) led by a facilitator with a strong background in learning and pedagogy. Large group sessions are conducted using a learning-centered approach so that educators experience learning in the same ways their students will. Participant learning is extended in several ways including individual practice in the classroom, utilization of learning partners, and collaborative inquiry into educational literature. These structures support the most critical aspect of learning: reflection (Brookfield, 1995, Schon, 1983 & 1987). Opportunities to reflect, practice, and see themselves through the eyes of others enhance learning and enable LEA/RN™ participants to achieve student learning.

These structures also acknowledge that learning takes time. For both personal and institutional changes to take root, assumptions must be confronted and challenged. All aspects of the project are oriented to this need for individuals to confront assumptions coupled with the opportunity and support necessary to assist in making desired changes.

Each aspect of the program is grounded in learning theory and has a particular curricular focus. For instance, the focus for first-time participants exploring learning theories and the application thereof includes: interactive strategies designed both to involve students in their own learning and to develop their interpersonal skills with others; effective questioning strategies; articulating purpose of instruction; identifying student learning outcomes; and planning lessons. The curricular focus for ongoing participants depends on the needs of the group and what they want to accomplish, but most typically the groups next identify the need to learn about and apply theories and strategies for assessing student learning.

Higher Education Challenge Grant

This manuscript focuses on work supported by a Higher Education Challenge Grant and the reaction of participants to the Project LEA/RN™ model of support. The Challenge Grant supported four introductory workshops, one advanced workshop, and bi-weekly meetings during the three-year span of the project. Seventy-four faculty, teaching assistants, or teaching staff participated in one of the introductory workshops including six faculty from Alabama A&M University. Eleven faculty, including three from Alabama A&M, participated in the advanced workshop. Twenty-seven of the participants were involved in bi-weekly meetings for at least one year, with some being involved for all three years of the project.

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Providing Support for Faculty Who Wish to Shift to a Learning-Centered Paradigm in Their Higher Education Classrooms

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In its simplest form, Project LEA/RN™ involves an introductory four-day workshop, an advanced four-day workshop, and bi-weekly two-hour meetings during the regular school year to provide additional learning opportunities and a support group for faculty who are working to apply what they have learned to their particular classroom situation. Both the workshops and the bi-weekly group meetings immerse faculty in a learning-centered environment so the educators can experience many of the things their students will experience as the new paradigm is implemented in their classrooms. Workshops and bi-weekly meetings are facilitated or co-facilitated by faculty and staff from the College of Education who not only are well grounded in current research in learning-centered instruction, but also can assist novices with transferring research into practice.

The introductory workshop focuses on comparing a competitive, teacher-centered approach to a cooperative, learning-centered approach. Participants frequently work in small groups during the workshop as they experience specific learning-centered strategies. The workshop also introduces participants to the necessary elements for effective teams (Johnson et al. 1998), allows them to learn specific team skills that contribute to more effective team functioning (Johnson et al. 1991), and gives them a safe place to practice teaching team skills. Central to the workshop is the notion of faculty taking time to confront their beliefs about learning. In addition to experiencing several specific learning-centered strategies for enhancing student achievement, faculty have opportunities to begin to adapt the strategies for application in their own classroom settings as they work together to plan specific lessons for their particular courses. Typically, these workshops involve from twelve to thirty participants from numerous disciplines. The cross-disciplinary interactions help faculty internalize the concepts of learning theories as they confront their beliefs and assumptions about teaching, learning and students.

Observations

During the introductory workshop, participants often struggle with their own beliefs about how college-level courses should be taught. Much of the struggle revolves around their own past experiences, successes, and failures with a teacher-centered paradigm (lecture format), and an ingrained sense that they must “cover” the material. Curiously, there seems to be an all-pervasive assumption on the part of participants that if they cover the material in lectures, students learn it. If that were entirely true, complaints about students not performing well on exams or about students not being able to transfer knowledge from one situation to another or from one course to another should be much less pervasive than they are.

The struggle with beliefs usually begins to manifest itself during the second day of the workshop and is most often heard first from those whose disciplines are in the “hard sciences.” Paraphrased, it goes something like this:

“I can see how this might work in a history class, but I can’t see how I can use it in chemistry (or math or engineering,
etc.). I have to cover the whole book on introductory chemistry (or math or engineering, etc.), and I don’t have time to do these things."

As the workshop progresses, there usually is a softening of this stance as participants begin to experience learning in a different way and interact with colleagues from many disciplines. Those who keep an open mind and genuinely want to make changes usually begin to see applications in their own classrooms for at least some of the pedagogical strategies they are experiencing. The following comments are from participants in the introductory workshops.

“I was having trouble understanding how I could implement some of these concepts in the classroom and now, after this workshop and interfacing with others in the group, I think I have a better understanding of the concepts and how they can be utilized effectively in the classroom.”

“I can see where some group activities can be used in a technical course. Previously, I saw them as difficult to use here. I have seen the usefulness and how to facilitate people talking in a course. I can recognize the difference in questions and how to rethink and restructure questions even more than before.”

“My course is Field Botany, so it’s intended to be holistic, relaxed, and interactive, yet I had no idea how to make it work successfully. Modeling from our facilitators showed me how to bring about active student interactions yet how to reign it in and set limits if things got too off topic.”

The advanced workshop introduces faculty to more complex strategies for creating learning-centered classrooms and extends their abilities to apply more highly structured activities. In addition to expanding the number of strategies faculty may use, the advanced workshop delves more deeply into research findings related to learning and learning-centered paradigms. Participants continue to develop ways to adapt their own new learning for application in their classrooms. Participants are asked to continue to confront their own beliefs about learning and teaching. They continue to shift their focus from a teaching-centered paradigm to a learning-centered paradigm throughout the workshop, but the resistance to that change is less pronounced. This is probably due to the fact that the advanced workshop is self-selecting for participants who already know something about learning and learning-centered classrooms because of participation in the introductory workshop. Those people who elect to participate in the
advanced workshop tend to be those who genuinely want to make the shift in paradigms. They tend to be open-minded enough to realize that there are probably applications for the new ways of designing learning experiences in their classes even though they may not see them immediately. In addition, participants in the advanced workshop seem more willing to risk doing things differently in their classrooms and appear much more comfortable discussing both successes and failures with the colleagues they have come to know and value.

When asked why they came to the advanced workshop and what they expected to gain, typical responses were:

“I felt the need for reinforcement of the principles learned in the first workshop. Also, [I] expected to get additional tools to improve my teaching. I like the people I’ve met with similar interests in improving teaching so this is a support group.”

“My Project LEA/RN™ group and the first workshop have given me ideas to increase the cooperative learning for the students. It has given me the language of learning and a supportive atmosphere to pursue improving labs and what the students will get out of it.”

“This workshop was important for me as a way of reviewing information about applying cooperative learning in my classroom, to help consolidate and practice information and ideas I have already tried, and to deepen my understanding and appreciation of this approach. The workshop framework is an excellent way to get an overview of a variety of issues and to reaffirm my commitment to cooperative learning.”

“My confidence level has increased due to clear instruction, modeling and opportunities to practice and receive feedback. Because of increased confidence, I will use the interactive strategies more often and take a few risks in stretching my expectations for what students can contribute and take with them from their own learning experiences.”

Experience with Project LEA/RN™, both as a part of the Challenge Grant and as a part of the program since its inception, suggests that workshops are sufficient to start the faculty shift from teaching-centered to learning-centered classrooms, but the workshops by themselves aren’t sufficient to maintain the effort. To ensure that faculty have a chance to continue to build on their successes, to find out how to create successes from their failures, and to continue their own learning, ongoing support and on-site technical assistance
is necessary. That support is provided in the form of bi-weekly meetings during the academic year, led by the same facilitators who led the workshops. The facilitators plan each meeting as if it were a lesson for students in the classroom, as, indeed it is, complete with expected educator learning outcomes. The facilitators are committed to providing experiences for the participants that are based on learning—they expect faculty to do what faculty ask students to do including assignments to implement their learning in their own classrooms between meetings. During the two-hour meetings, participants have a chance to discuss what has worked for them as well as what needs improvement. The interaction in the group is typically rich with ideas for new approaches to creating learning-centered atmospheres in classrooms. Additional readings are often assigned between meetings, and there is an expectation that participants will try a specific strategy in their classroom during the intervening time between meetings. The meetings help hold participants accountable for continuing the conversion to learning-centered classrooms as well. Participants who continue to be involved with Project LEA/RN™ through the bi-weekly meetings typically continue to enhance the learning-centered environments in their classrooms. Those who don’t attend the meetings often make marginal or no progress in implementing changes in their classrooms after the newness of the workshops wears off.

Fifty of the seventy-four participants in the project responded to a post-project survey. Those fifty led learning for students in sixty-one different courses in 18 departments from 5 different colleges. Of those fifty respondents, thirty-nine had an opportunity to attend bi-weekly LEA/RN™ meetings. Responses for those individuals were categorized by the frequency with which the respondent had attended bi-weekly meetings. Categories were “Always”, “Frequently”, “Infrequently”, and “Never”. Participants were asked to rate the impact of changes they made in their classrooms on a number of student behaviors. Response options were “Much Worse”, “Worse”, “No Difference”, “Better”, and “Much Better”. Table 1 shows the percentages of participants who responded with “Better” or “Much Better” for each of the student behaviors by frequency of the respondents’ participation in bi-weekly group meetings. When divided into the four categories, the number in each group is relatively small, so additional investigation is needed to substantiate statistically the differences, but the percentages of responses in each group are suggestive none-the-less.

The most striking difference is between those who elected not to attend bi-weekly meetings and those who did attend, regardless of the frequency of their participation. Involvement in the bi-weekly group meetings gives participants an opportunity to fine-tune their learning-centered strategies for their particular classroom settings. The meetings not only help hold participants accountable for continuing efforts to enhance student learning, but also provide the assistance and support faculty need to explore ways to turn failures into successes.
Table 1

Percent of participants reporting “Better” or “Much Better” student behaviors based on participant frequency of attendance at bi-weekly LEA/RN™ support meetings

<table>
<thead>
<tr>
<th>Frequency of Attendance</th>
<th>Interaction with other students</th>
<th>Interaction with instructor</th>
<th>Willingness to discuss material</th>
<th>Willingness to ask questions</th>
<th>Learning in General</th>
<th>Preparation for Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Always (n=6)</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>83</td>
<td>67</td>
<td>50</td>
</tr>
<tr>
<td>Frequently (n=11)</td>
<td>91</td>
<td>82</td>
<td>73</td>
<td>73</td>
<td>91</td>
<td>45</td>
</tr>
<tr>
<td>Infrequently (n=10)</td>
<td>90</td>
<td>70</td>
<td>90</td>
<td>80</td>
<td>90</td>
<td>40</td>
</tr>
<tr>
<td>Never (N=12)</td>
<td>67</td>
<td>58</td>
<td>58</td>
<td>58</td>
<td>33</td>
<td>17</td>
</tr>
</tbody>
</table>

The pattern of participant responses for "Learning in General" and "Preparation for Class" appears to be different from the other four student behavior categories. In all categories except "Learning in General," those who always attended bi-weekly group meetings had the highest percentage of participants reporting better or much better student behavior. A lower percentage of participants who always attended reported better or much better "Learning in General" observed among their students as compared with those who frequently or infrequently attended. Given the findings of other researchers about improved performance of students in learning-centered classrooms (cited earlier in this paper), a 67 percent response level by those who always attended bi-weekly meetings is somewhat surprising. Certainly, small sample size may be entirely responsible for the discrepancy. However, the possibility that faculty begin to hold higher expectations for student learning as a result of participation in Project LEA/RN warrants further study.

As faculty begin to understand more about student learning they may begin to hold higher expectations for student achievement. Those who always attend bi-weekly meetings for more than one year often begin to explore the use of classroom assessment techniques (Angelo and Cross, 1993) and other methods to assess student achievement of intended learning outcomes more frequently. These techniques provide faculty with numerous ways of quickly determining whether students are learning the important points for a class period or a unit covered. Faculty who begin to use these techniques are often surprised by the amount of confusion or misunderstanding that remains with the students at the end of a class period. In more traditional classrooms, that confusion and misunderstanding may not become evident until exam time. Once this discovery is made, faculty then have to decide how to address the problems. It is possible that the lower response percentage in this category is a result of faculty reacting to initial learning rather than the final learning achieved by students at the end of the course. Further inquiry is needed in this area. However, the trend of lower response percentages from participants who never attended bi-weekly groups than for those who did attend holds, even for this category.

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The percentages for all participants reporting better or much better "Preparation for Class" on the part of students was lower than the other five categories. This isn’t surprising because the initial emphasis of Project LEA/RN™ is on approaches to learning led by faculty in the classroom rather than strategies for increasing preparation for class. However, bi-weekly groups do occasionally discuss the problem of how to get students to do a better job of preparing for class. It is possible that a shift in emphasis in Project LEA/RN™ could lead to participants implementing more strategies that would improve student preparation for class. Despite no direct emphasis on approaches to promote student preparation for class, higher percentages of faculty who received ongoing support through bi-weekly meetings reported that students were better prepared for class as compared with faculty who never attended bi-weekly meetings. This indicates it may be worth investigating, among students, their thoughts about preparation for class in more learning-centered classrooms.

It is encouraging that strong percentages of all faculty who participated in on-going learning opportunities reported better student interactions with each other and with the instructor, better willingness to discuss material, and more willingness to ask questions. Learning theories tell us these are all behaviors that enhance the likelihood for learning to happen.

Reflections

Several things have become apparent during the course of the project that can be of assistance to others who may implement a similar program.

Participation in such a project should be voluntary. Those who enroll in the workshop because they have a genuine desire to change their teaching styles are much more likely to invest the time and effort necessary to be successful than are those who are “asked” to attend by their department heads. As the joke goes, “How many psychiatrists does it take to change a light bulb? One, but the light bulb has to want to change.”

A facilitator with expertise in education and leading effective professional development should plan and lead the workshops and on-going meetings. Not only must facilitators have a firm grounding in literature related to teaching, learning, and the learning-centered paradigm, but they also must be adept at helping faculty transfer that research to their own practices. That background is essential for helping participants maintain focus, grounding the workshops in sound research findings and for helping faculty make connections across disciplines. In addition, facilitators have the responsibility to ensure that all meetings and interactions are safe so that faculty will honestly reflect about, and share with colleagues, what is happening in their classrooms.

Both the workshops and the bi-weekly meetings should be conducted in a learning-centered style. Much of the initial “conversion” from teaching-centered to learning-centered thinking takes place because participants are intrigued by the experience of being immersed in a learning-centered workshop.
Workshops alone will not create the kind of substantial paradigm shift that is needed in higher education. Workshops create the initial excitement and interest, but bi-weekly meetings maintain the interest and build on the basics learned in the workshops. They provide the ongoing support and on-site technical assistance research has shown is critical for effective faculty development (Joyce & Showers, 1996).

And finally, university administrators who are eager to see faculty shift to a learning-centered paradigm must be willing to provide base level support for a program such as Project LEA/RN™. Faculty must be able to depend on the availability of introductory and advanced workshops as well as bi-weekly support group meetings. That level of long-term dependability is difficult if not impossible to achieve based entirely on soft money support.

Final Thoughts

Indeed, we must do a better job in higher education of preparing students to meet the challenges they will encounter after their collegiate years. It appears that faculty working and learning together in a structure like Project LEA/RN™ may well move us in that direction. One student, involved for several years in the learning revolution in the Department of Forestry, had this to say about his experience:

I have gained from Project LEA/RN™ in several aspects, both social and academic. Socially I have gained a group of friends who will be valued colleagues throughout my career. These colleagues that I learn with on a daily basis are a motivation beyond myself. I learn as fast as I can so I can be a greater asset to the group. Academically, we went from being spoon-fed concepts to hunting for knowledge to feed ourselves. I can spend the rest of my life getting fat on ideas. The concepts I worked hard to gain, hold value for me. Therefore, I grasp and hold onto them tenaciously."

Making this kind of difference with students is what we ought to be about. There is a substantial time and energy commitment on the part of educators to change post-secondary student learning experiences, but it certainly seems worth the effort.

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