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Learning in community: student perceptions and experiences

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Learning in community: Student perceptions and experiences

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ABSTRACT

Meeting the challenges of tomorrow will increasingly require citizens who effectively interact with others and engage in life-long learning that goes far beyond the technical content of most college courses. The challenge for post-secondary educators is to move away from more traditional forms of education toward guiding learning in ways that empower students to take responsibility for their own growth and development as intentional, responsible learners. The purpose of this phenomenological study was to explore perceptions of eight students who experienced learning in community to determine key components that most affected these students' transformations.

Themes that emerged as a result of this research included: self-identified growth and development, continuous reflection, metacognition, high expectations for addressing challenging tasks, interdependence, accountability, and supportive environment. The fundamental structure, then, of learning in community, as perceived by these participants, was a self-recognized transformative development resulting from being engaged in intentional mental processing before, during, and after being challenged with and held accountable for addressing complex, meaningful tasks in an interdependent and supportive environment over time. This complex statement gives rise to a multitude of implications for educators and students.

Following the alternate format, this dissertation included three journal articles. Each of the articles addressed specific key notions identified by the participants as being critical to their transformation as learners. The first article addressed the nature and role of high expectations and the importance of accountability for developing intentional learners. The

second article examined impacts of learning about learning and the positive differences resulting from the deliberate development of community. The last article explored the critical role of moving learners from simple reflection to the new notion of intentional mental processing as a habit of mind.

The journey of becoming an intentional learner is probably best summarized by one of the participants, *"At first we tried to refuse to do what you asked. Then we did it because you made us. And now we do it because it works!"* The message is clear. When educators persist, so will students; as they become intentional learners, students will become the citizens and professionals the world needs.

CHAPTER 1. INTRODUCTION

"We come to college not alone to prepare to earn a living,
but to learn how to live a life." M. J. Riggs

Background of the Researcher

These words by M. J. Riggs[1], an 1883 graduate of Iowa State University, capture the essence of what I believe the purpose of education ought to be at all levels. Reflection about my 28 years as an educator has helped me understand that my work has focused on both helping students master discipline content as well as assisting them with becoming the best people they can be. The following brief description of my professional life illustrates my journey as an educator and provides context for the purpose and need for this study.

My first job as a professional was to teach a general science class for freshmen in high school. Unfortunately, my undergraduate education had not prepared me to teach science. I had much knowledge about science, but I did not know how to teach it. More importantly, in retrospect, I did not know how to help others learn. Oblivious of my own ignorance, I was excited about my new job. I thought I could change the world—save every child. Reality struck quickly. Those freshmen did not share my enthusiasm for science. It did not take me long to realize that teaching science was not my most important job. These students needed to know how to learn. Many of them also needed to learn appropriate behavior (effective interaction). If I could help them understand how to learn and to interact

[1] These words are engraved in stone over the entrance to Room 131 in the Memorial Union. Riggs, an 1883 graduate of Iowa State University, was president of the Alumni Association, and in charge of raising one million dollars for the Memorial Union project. Although the first president of the Memorial Union Board, he died before the ground was ever broken (www.mu.iastate.edu/about.php?page=historicPhotos).

effectively with others, they would be more successful in future endeavors, or in Riggs' words, they would be well on their way "to learn[ing] how to live a life."

This revelation launched me on a quest to become more effective at helping others learn that continues today. Formal training in cooperative learning with Drs. Roger Johnson and David Johnson from the University of Minnesota guided me in developing communities of learners in freshmen science classes before I had ever heard the term "learning community" or even "community" other than as it is used in meaning a town, neighborhood, or school. Not only did I engage students in thinking about science, I also introduced them to interpersonal skills and expected them to practice effective interaction as they worked in teams. My experiences as a secondary science teacher eventually caused me to change my focus from teaching to helping others learn. It became my desire to help all students develop skills that would allow them to communicate effectively and learn for a lifetime.

The next opportunity for my own growth and development on this journey of helping others learn involved more training with the Johnsons[2]—this time as a facilitator for other educators. Following the training, I worked with a team of colleagues to develop an intensive, four-day workshop to help other elementary and secondary teachers learn more about using cooperative learning with students. During the next eight years, I developed and facilitated more than 30 workshops for educators and administrators interested in using cooperative learning in their schools. These experiences led me to Iowa State University where I had the opportunity to develop and facilitate a cooperative learning workshop for

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[2] Brothers and fellow professors in the College of Education and Human Development at the University of Minnesota, Roger and David W. Johnson are the nation's leading researchers on cooperative learning. They head the Cooperative Learning Center which focuses on making classrooms and schools more cooperative places and on teaching cooperative skills—leadership, communication, decision making, trust building, and conflict resolution (www.education.umn.edu/Pubs/ResearchWorks/coop-learning.html).

professors in the College of Engineering. Since then I have worked with many faculty groups at several community colleges and three universities. Many of those groups studied the basics of more familiar learning theories, but others delved into more specific areas of study, such as, classroom assessment techniques, curriculum development starting with the end in mind, and helping students develop habits of mind.

In addition to my work with faculty at Iowa State, I also had the opportunity to work with juniors, seniors, and graduate students in a leadership development program within the National Science Foundation (NSF) Scholarship for Service (SFS) program (see Appendix A for an explanation of the program). A colleague and I developed the two-year program based on nine enduring understandings of leadership. It was our work with those students that led to the current research study. The growth and development of the students as they became intentional learners and supportive members of a community was so remarkable that we knew we had to try to determine factors that made a difference. The initial research question was, "What factors contributed to the growth and development of these students?" After an extensive review of the literature and the selection of the phenomenological methodology to guide the study, the research question was refined to enable the factors critical for learning to emerge from the words of the participants as they described their experiences of learning in community.

Rationale for the Study

Problem

The education of young people today is critical for the future of the United States. Meeting the challenges of tomorrow increasingly will require citizens who interact

effectively with others and engage in life-long learning that goes far beyond the technical content of most college courses. Educators have a responsibility to empower all students to become good citizens who use their minds well. This means so much more than training students to do repetitive exercises and to memorize facts, as more than two-thirds (69%) of lower division students and nearly two-thirds (61%) of upper division students from Iowa State University responded that their coursework "quite a bit" or "very much" emphasized (http://www.celt.iastate.edu/teaching/NSSE2005.html). It means helping students develop "habits of mind, which are defined as dispositions displayed by intelligent people in response to problems, dilemmas, and enigmas, the resolutions of which are not immediately apparent" (Costa & Kallick, 2000, p. xvii). Far too many students graduate from colleges and universities, but remain undereducated, because they have not developed deep understandings of their disciplines or sufficiently refined their critical thinking abilities. Indeed, the National Survey of Student Engagement (NSSE) results for 2005 indicated:

> • Less than half (46%) of seniors and less than one-third (29%) of first-year students reported doing more than what's expected of them.
> • Although almost all (96%) first-year students agree at least slightly that people can develop their academic ability through hard work and practice, close to one-third (30%) did just enough work to get by.
> (http://www.celt.iastate.edu/teaching/NSSE2005.html)

As a consequence, these graduates will likely encounter limits on their options throughout life and on their abilities to make the strongest contributions to society (Licklider et al., 2004).

A primary goal in higher education should be to help students become good citizens who use their minds effectively to solve challenging problems and to seek new insights. This is a need identified not just by educators as Friedman (2005) stated in *The world is flat*: " The

more we push the boundaries of knowledge and technology, the more complex tasks that machines can do, the more those with specialized education, or the ability to learn how to learn, will be in demand..." (p. 239). Indeed, there is considerable evidence our world economy is now driven by knowledge and information. "Those . . . who know how to produce knowledge and information better than others reap the rewards, just as those who knew how to produce cars and steel a hundred years ago became magnates of that era" (Stiglitz, 1999, p. 1). According to Lundvall and Johnson (1994), knowledge can be broken into four different types:

> know what – which involves the transfer of codified information as facts,
>
> know why – which involves understanding basic principles, rules, and ideas,
>
> know how – which involves direct experience, and
>
> know who – which requires direct contact between individuals, the ability to communicate, form relations of trust and so on.

In general, "know what" and "know why" knowledge form the essence of many university courses. Students memorize facts and basic principles from lectures or texts. These two types of knowledge are easier to write down or reproduce. In contrast, "know how" and "know who" knowledge require a more interactive context.

> This is because a large proportion of these forms of knowledge is "tacit"—which means it is either not yet articulated or else it cannot be written down. It has to be acquired either by experience or direct interpersonal contacts. (Ducatel, 1998, p. 10)

The challenge for higher education is to move away from more traditional forms of education and provide learning opportunities that will allow students to develop a mix of both cognitive and interpersonal abilities (Ducatel, 1998).

In addition to the shift toward learning-centered institutional approaches, leaders in education, business, and industry are seeking ways to turn their institutions into what Senge (1990) has called learning organizations:

> ...where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning to see the whole together. (p. 3)

The ever-changing world of today and the knowledge economy of the future world demand such organizations. "Being adaptable in a flat world, knowing how to 'learn how to learn,' will be one of the most important assets any worker can have..." (Friedman, 2005, p. 239). The need to tap our capacity to teach and learn is obvious. Unless we, as a society, learn to interact in a diverse, multicultural world we may cease to prosper both economically and culturally (Licklider, 2000). Learning communities in post-secondary institutions show promise for moving in this direction.

Learning communities are powerful vehicles to assist post-secondary educators in engaging students in traditional paradigms of learning where the focus is on "know what" and "know why" knowledge. The literature is replete with current research on learning communities and the benefits for students and faculty (Gabelnick, MacGregor, Matthews, & Smith, 1990; Laufgraben & Shapiro, 2004; Lenning & Ebbers, 1999; Shapiro & Levine, 1999). Quantitative measures supporting student involvement in learning communities are described in terms of student retention, achievement, and intellectual development (Gabelnick et al.).

Little, however, has been written about developing the ability to think deeply or about developing good citizens. What would happen if we developed learning opportunities for all

students that really focused on both *learning* and *community*? Would it be possible, on a large scale, to empower students to take responsibility for their own learning and to learn how to learn for a lifetime while encouraging and supporting the learning of others? Might educators in post-secondary institutions change their emphasis from "know what" and "know why" knowledge to "know how" and "know who" knowledge? If this can be accomplished in higher education institutions, all students will be more prepared to thrive as productive citizens in this information age where the economy is driven by knowledge and information.

Purpose

The purpose of this study was to explore perceptions of students who experienced learning in community to determine key components that most affected these students' transformations as learners. Future examination of those components will likely have implications for post-secondary educators and students.

Research Question

The guiding question for this study was: "How do these students perceive and describe their experiences of learning in community?" These words were deliberately selected to allow the essence of each student's experience to emerge. "How" implies my willingness to put aside my own biases and my openness to hear what the students say. "Perceive" reflects my understanding and expectation that similar experiences most likely have different meanings for different individuals. "Describe" allows participants the freedom to express through personal stories, those aspects of learning in community that are most important to them. "Learning" is nonrestrictive to allow for any learning—irrespective of a

specific discipline. "In community" describes the environment in which the phenomenon occurred.

According to Moustakas (1994), "the first challenge of the researcher, in preparing to conduct a phenomenological investigation, is to arrive at a topic and a question that have both social meaning and personal significance" (p. 104). The question should emerge from an intense interest in a particular problem or topic. My passion for helping others learn in community fueled the excitement and the curiosity required to drive the study. Grounding for the social meaning is two-fold: (1) in the shift toward learning-centered institutional approaches where people are continually challenged to learn and grow together (Senge, 1990), and (2) in the challenge for higher education to move away from more traditional forms of education and provide learning opportunities that will allow students to develop a mix of both cognitive and interpersonal abilities required in the knowledge economy (Ducatel, 1998). The question for this study emerged from my passion for helping others learn, the review of pertinent literature, and an understanding of phenomenological inquiry.

Background for the Study

Recently, I had the opportunity to combine my knowledge of human learning and the principles of learning organizations in a two-year leadership development program for students. As part of the NSF SFS program at Iowa State University, fellowship recipients became part of a cohort of students pursuing degrees in information assurance. These students were required to participate in a two-year leadership development program. As a co-leader of the program, I planned the learning activities with an emphasis on (a) learning about learning, (b) learning about self, (c) purposefully developing community, (d)

deliberately practicing and refining skills to support and encourage the growth of others, (e) practicing metacognition, and (f) engaging in intentional mental processing. In addition to affording plenty of individual talk time, the weekly three-hour meetings provided the opportunity for students to participate in frequent team learning. Multiple resources were used to stimulate discussions about learning, self-knowledge, leadership, and team interactions. Students engaged in a variety of self-assessments to identify personal strengths and areas in need of improvement. Writing in a journal was required to empower students through metacognition and intentional mental processing. By the end of the first year, it seemed these students not only were taking responsibility for their own learning, but they were developing into a productive community of learners.

In my perception, the growth I witnessed as these students developed into responsible learners and supportive community members far surpassed any similar successes with students in my previous 25 years in public education. An excerpt from a junior's journal written in mid-October of the first year illustrates how he took the initiative to be more responsible for his own learning to gain more from lectures:

> *Something I was going to try and do to help me get more out of lectures was to listen more closely. This seems like a no-brainer, but it's harder than it sounds, mostly because it's difficult to just "pay attention", you need a method to your madness in order to succeed.*
>
> *After some careful thought, I figured out how I was going to try and do it. Instead of just sitting there like some wilting plant trying to just soak up the information like sunlight in the hopes that it would help me out, I needed to make myself a lot more active in the class. A lot of professors are very bad at involving the class and making us active participants in our learning, but if they weren't going to do it, I was. So I resolved to take notes in more of my own words, try my own little examples of concepts they were explaining and generally try to become a more active participant in the lecture process.*
>
> *I'm happy to say I think it's paying off. While it was a little bit of a change at first to do this, after a while it became second nature. And as a result of this different approach, I'm getting a lot more out of lectures than I*

> *think I used to. I think the main reason this is happening is because, like our learning readings have emphasized, it's hard to just make yourself remember something. You have to make it fit in your brain somehow. That's what I've been trying to do with my new approach, and, low and behold, it seems to work.*

It was later in the semester that another student realized both the value of completing assignments for self (not for the professor) and the value of recording reflections in a journal:

> *Journaling is still not easy for me and still takes a lot of time, but I am working at it. I am glad that I have these thoughts written down for me to go over in the future. I realize now that having these entries will help me recognize where I have grown, where I need to grow and will help me decide some ways to do so. When I was told that journaling was for me at the beginning of the year I laughed to myself; I knew I was not going to like doing it and I thought it was sort of weird. While I do not take pleasure in writing journal entries, I do enjoy having them. I understand how vital they are for my learning about myself. They serve as great evidence to my development along the way...*

Even the development of community and the commitment thereof was stronger than either my co-leader or I had realized as illustrated by this entry in Pat's journal: *"And even beyond that, I think that when you have knowledge someone else doesn't, you have a fundamental duty to help them understand it, that's how the human race as a whole improves. We should share, not horde knowledge."* Other faculty members involved in the NSF SFS program were amazed as they listened to the cohort interact during a meeting early in the second year of the program. They were intrigued by both the depth of thinking and the amount of support and encouragement within the group. I knew I needed to try to find out what contributed to these developments.

My desire to uncover the essence of the students' experiences—to discover what they perceived contributed to their learning—made this an ideal phenomenological research study.

The methods and procedures for conducting human science research, as suggested by Moustakas (1994) and Colaizzi (1978), guided the study and are explained in Chapter 3.

Definitions

The meaning for common terms used throughout the study are given as follows:

Community of Learners: Group of individuals who interact regularly with a common purpose of promoting the growth and development of every member.

Good Citizens: Individuals who contribute to the common good of society.

Go 'round: Opportunity for every individual within the community, in turn, to express his/her ideas opinions without fear of judgment by others.

Intentional Mental Processing: Investment of resources (time, mental energy, conversation with critical friends, etc.) in personal analysis, critical thinking, and application of new knowledge to daily living; careful thought resulting in insightful revelations.

Learning Communities: Groups of individuals linked by some educational structure or system.

Learning in Community: Interacting within a group of individuals who share responsibility for self growth and development and for the growth and development of every other member.

Metacognition: An individual deliberately engages in thinking about his/her own thinking.

Worthy Team Member: One who practices consistent interaction within a group contributing to the success of the group and promoting the development and maintenance of meaningful relationships; productive member of a community.

Organization of the Dissertation

This dissertation uses the alternate format and includes three journal papers. The format of the dissertation is as follows: Chapter 1 is an introduction to the study including the background of the researcher, the statement of the problem, the purpose, the research question, the background for the study, and definitions of terms used throughout the dissertation. Chapter 2 reviews selected literature pertinent to the study. Chapter 3 describes the methodology used to guide the study. Chapter 4 contains the first journal paper discussing the role and nature of high expectations and the need to hold students accountable for meeting the expectations. Chapter 5 contains the second journal paper describing the impact of community on the learners. Chapter 6 contains the third journal paper discussing the role of intentional mental processing in the development of intentional learners. The general conclusions, limitations, implications for practice, and recommendations for future research are in the last chapter, followed by the appendices and references.

CHAPTER 2. LITERATURE REVIEW

The goal of this research project was to identify factors responsible for the growth and development of students involved in the NSF SFS leadership development program. The curriculum for the program was designed to start students on the journey of becoming more effective learners who encourage and support the learning of others—the essence of learning in community. The plethora of information available in these areas could quickly overwhelm and consume both researcher and reader. Therefore, the review of literature is limited to: (a) learning communities, (b) basic fundamentals of selected learning theories, and (c) an exploration of the notion of community.

Learning communities have a long history in higher education. They were developed with the intent of increasing student success in school—both academically and socially. An understanding of the (a) history, (b) structure, (c) benefits, and (d) challenges of learning communities is a critical component of the review of literature. Typically, learning communities focus the learning around a specific discipline. The intent of the curriculum developed for the NSF SFS leadership development program is to help learners understand more about learning in general to empower them to become more responsible for their own learning in all areas of formal education and life beyond the university, necessitating an exploration of the knowledge of learning.

Since a review of all the literature related to human learning is not feasible here, the basic fundamentals of selected learning theories are reviewed. Those particularly relevant to this study include: (a) prior knowledge, (b) social interaction and learning, (c) metacognition, (d) selected biological underpinnings of learning, (e) fundamentals of memory formation, (f)

emotion and learning, (g) transfer of learning, and (h) intentional mental processing of experiences. Each of these components is discussed along with implications for students as they take ownership of their own learning and encourage the learning of others, leading to the notion of community.

According to Webster, a community can be defined as a unified body of individuals, people with common interests living in a particular area, or an interacting population of various kinds of individuals in a common location. Peck (1987) further clarified this meaning as "a group of individuals who have learned how to communicate honestly with each other, whose relationships go deeper than their masks of composure, and who have developed some significant commitment..." (p. 59). While it may be that a community can or will just form on its own, it is likely it could be far more effective and powerful if attention is given to deliberately developing a genuine community. To accomplish such, it is necessary to explore the notion of community, stages of development, and implications thereof related to supporting students learning in community.

Learning Communities

History

Learning communities are not new. Their roots can be traced back to the work of Alexander Meiklejohn and John Dewey in the 1920s (Gabelnick, 2004; Gabelnick et al., 1990; Smith, MacGregor, Matthews, Gabelnick, 2004). Meiklejohn, a distinguished philosopher and an educational theorist, was concerned with the direction of education. He viewed education as critical to democracy and perceived college should be a place to learn and practice citizenship skills. One of his concerns was the specialization and fragmentation

of the curriculum. Meiklejohn believed this led to relationship problems in the classroom and a lack of transfer of learning to real-world situations. His insights into reorganizing the structure of the curriculum led to the formation of one of the earliest learning communities, the Experimental College at the University of Wisconsin, in 1927. The curriculum for the Experimental College focused on democracy in 5th century Athens and 19th and 20th century America. Discussion-centered pedagogy allowed not only for discussion of the "great books," but also the opportunity for students to develop a personal point of view and to connect ideas in the classroom with real world situations. The creation of an academic community was one of Meiklejohn's primary goals. According to Gabelnick et al. (1990), Meikeljohn is remembered for two distinct contributions: (a) his "great book" emphasis on the classics; and (b) his insights about the fundamental importance of structure, curricular coherence, and community. The latter contribution continues to influence the development of many learning communities today.

John Dewey contributed to the pedagogy of learning communities (Gabelnick et al., 1990; Smith et al., 2004). He focused on the individuality of students and recognized the inefficiency of the old paradigm of teaching where professors attempt to fill students with their own knowledge. Dewey believed that more learning occurred through social interaction than through the silence found in many traditional classrooms. He also acknowledged the importance of the educational environment itself, realizing that students bring different experiences and aspirations into the classroom with them. He believed these differences should be embraced—not ignored. The type of education Dewey envisioned required a new relationship between professor and student. Now, instead of being a transmitter of knowledge, the professor would become a partner in the learning experience. Sometimes

considered the father of student-centered or active learning, Dewey believed it was critical for instructors to be purposeful in engaging the learner. With proper structure, the learners would also experience lessons about social control and community life—allowing the professor to become a facilitator of learning instead of an external authority.

According to Gabelnick et al. (1990), Meiklejohn was a philosophical idealist and a proponent of community while Dewey was a pragmatist who focused on the individual. In spite of these differences, both men recognized a need for change in the traditional education system that eventually led to the development of learning communities. Both believed the curriculum should be more integrated, offer students the opportunity to engage in real-world problems, and allow students to develop into good citizens. They also saw the role of the instructor changing from being a professor of knowledge to a facilitator of learning. Historically, learning communities adopted their curricular structure and some pedagogical insights from the work of Meiklejohn and his Experimental College, and much of their theory about the nature of teaching and learning from John Dewey. These historical perspectives have given rise to some of the more typical structures for learning communities that are common in post-secondary institutions today.

Typical structures

Most learning communities have evolved into one of the following four commonly described approaches or structures (Laufgraben & Shapiro, 2004): (a) paired or clustered courses; (b) cohorts in large courses or FIGs (freshmen interest groups); (c) team-taught programs (Gabelnick et al., 1990); or (d) residence-based learning communities (Lenning &

Ebbers, 1999). Each of these structures will be described and an example of each will be given to provide more meaning.

Paired or clustered course learning communities link courses that are taught individually through cohorts and/or through block scheduling (Laufgraben & Shapiro, 2004). Typically, a group of 20 to 30 students enroll for the same two courses. The courses are taught individually, but the faculty may coordinate syllabi and/or assignments. Often the two courses tend to be ones that traditionally enroll large numbers of first-year students such as basic composition or communications. They tend to be more interdisciplinary in nature and promote the opportunities for students and faculty to interact and get to know one another. An example of a paired-course learning community is the Interdisciplinary Writing Program at the University of Washington (Gabelnick et al., 1990; Smith et al., 2004). This program incorporates a writing-across-the-curriculum effort with a learning community. Students have the opportunity to take a writing course that is linked to any one of 27 general lecture courses. Each course carries five quarter-hours of credit. The instructors of the linked courses work together to generate ideas for writing based on questions that arise from the lecture course. The students in the writing course make up only a small part of the students in the larger linked lecture course, but they do become a small community with their own identity and a shared academic experience (Gabelnick et al.; Smith et al.).

The clustered course model is an expanded form of the paired course learning community. Three or four courses are linked in a quarter, semester, or even a year. Although classes are taught independently by the instructors, the students have the opportunity to get to know one another and a community of learners forms (Gabelnick et al., 1990; Smith et al., 2004). Western Michigan University has developed its Honors College Program around sets

of three clustered courses. During each of their first two years, the honors students select a thematic learning cluster. Each cluster consists of two courses limited to 25 honors students and a larger lecture course open to a variety of students. Four clusters are available each semester involving faculty from about a dozen departments around the university.

Common at larger universities are learning communities comprised of cohorts within large courses—often referred to as FIGs (Laufgraben & Shapiro, 2004). This model links at least three courses around pre-major topics and usually includes a peer-advising component (Gabelnick et al., 1990; Smith et al., 2004). Each FIG cohort exists as a subset of about 25 students within the larger classes. The Academic Advising Office at the University of Oregon initiated the FIG model as a means of advising and building social and academic community for freshmen (Gabelnick et al.; Smith et al.). Sets of courses typically taken by freshmen have been grouped into foundation courses for a major. One of the courses is usually a lower enrollment level writing or communications course. During the summer, each incoming freshman is invited to join one of the 17 to 20 FIGs that are built around themes such as Pre-Law, Journalism-Communication, Art and Architecture, and Pre-Health Sciences. Faculty are not expected to coordinate their syllabi or do any type of co-planning. An orientation session is usually held where faculty are welcome to attend and introduce themselves and their courses, but attendance is not required. A peer adviser has the main responsibility for the learning community connection for each FIG. The adviser organizes the first meeting of the group during New Student Orientation Week and facilitates weekly meetings throughout the semester.

Similar to the FIG learning community model is the more complex and academically ambitious Federated Learning Community (FLC) (Gabelnick et al., 1990; Smith et al., 2004).

This model was created and developed by Patrick Hill at the State University of New York-Stony Brook in the mid-1970s (Lenning & Ebbers, 1999). Currently enrolled undergraduate students volunteer to study a special set of three disciplinary courses together in groups up to 40. An overarching theme underpins these FLC courses. Unlike the FIGs, these student groups participate in a program seminar related to all three courses and taught by a Master Learner, a faculty member from outside the disciplines of the federated courses. The Master Learner becomes a learner with the students and is expected to fulfill all the academic responsibilities of a student in each course. In addition to the benefits for students, this model provides immeasurable faculty-development benefits for both Master Learners and faculty members of the FLC (Gabelnick et al.; Smith et al.).

Team-taught learning communities, also known as coordinated studies programs, are the most direct descendents of the original learning community developed by Meiklejohn (Gabelnick et al., 1990; Smith et al., 2004). Varying numbers of students enroll in two or more courses organized around an interdisciplinary theme (Laufgraben & Shapiro, 2004). These programs are the most complex in terms of curricular integration and faculty involvement. Some programs allow part-time involvement that requires participation in two to five courses, but many coordinated studies programs require full-time student and faculty involvement. The number of participants depends on the number of courses. Typically, the faculty-student ratio is 1 to 20. That means a coordinated study program with three courses would involve 3 faculty members and 60 students. The Evergreen State College was founded with a curriculum based on interdisciplinary coordinated studies programs (Shapiro & Levine, 1999). Programs are year-long and full-time for both students and faculty. A flexible

design allows learning to be centered on real-world problems. Faculty organize seminars once or twice a week based on original sources instead of textbooks.

The residence-based learning community was developed with a primary goal of integrating students' living and academic environments (Laufgraben & Shapiro, 2004). To form a residence-based learning community, one of the other curricular models is adapted to include a residential component. It is designed specifically to integrate diverse curricular and co-curricular experiences. This type of learning community is probably the most complex of the four learning community models described because it challenges and requires change within curriculum, teaching, learning, and housing (Shapiro & Levine, 1999). During the 1970s, Auburn University developed a successful residential learning community (Lenning & Ebbers, 1999). Students were grouped according to curricular majors or intended careers. The University of Missouri-Columbia developed residential learning communities around FIGs (Lenning & Ebbers). As many as 20 freshmen are allowed to take three courses together and live on the same floor in the dorm. A peer adviser is assigned to work with each of the groups.

Learning communities typically are developed to meet a specific need at the institution. Despite the original purpose, however, most learning communities today still resemble one of the four typical structures: (a) paired or clustered courses, (b) cohorts in large courses or FIGs, (c) team-taught programs, or (d) residence-based learning communities. Regardless of the structure, multiple benefits have been recorded for both students and faculty involved in learning communities.

Benefits

Just as there are a variety of ways to structure learning communities, so are the multiplicity of advantages reported from those involved. Numerous studies have been conducted to uncover the benefits of learning communities for college students (Gabelnick et al., 1990; Lenning & Ebbers, 1999; Shapiro & Levine, 1999; Smith et al., 2004). Quantitative measures supporting student involvement in learning communities are described in terms of student retention, achievement, and intellectual development (Gablenick et al.; Smith et al.). For learning community students across the nation, end-of-term retention rates average ten to twenty percentage points higher than typical institutional rates. Two possible reasons for the higher retention rates in learning communities are commitment to peers and total absorption with the program content. This supports a claim made by Tinto (1987) about the importance for entering students to make a successful transition into both the social and academic communities of college.

Examples of rewards in academic achievement and intellectual development for students involved in learning communities are numerous (Lennings & Ebbers, 1999). These results were observed in many different types of learning communities and all types of students: increased GPAs, higher quality learning, more complex thinking, increased quality and quantity of learning, improved connectedness within social and academic realms, greater engagement in learning, increased opportunities to write and speak, a more complex world view, and a greater openness to ideas different from one's own. Even though these findings are impressive, it is important to note that a general evaluation of learning communities is impossible. Learning communities are established for different reasons and each must be evaluated according to the original purpose.

Research suggests that benefits from learning communities are not limited to students (Lenning & Ebbers, 1999). Faculty also reap the rewards. Learning communities provide a safe structure for faculty to change their work environment—to become empowered and to empower students, to shape their work and the work of students, and to develop relationships with colleagues who interact over meaningful issues in pursuit of a more effective education for students (Gablenick et al., 1990; Smith et al., 2004). Other advantages for faculty engaged in learning communities include: continuity and integration in the curriculum, faculty development opportunities, broadened knowledge of pedagogy, promotion of collaborative teaching and learning, increased collegial trust, satisfaction with student success, and decreased isolation (Lenning & Ebbers).

Challenges

Clearly, learning communities produce multiple benefits for institutions, faculty, and students. They also create many challenges in finance, organization, and maintenance. However, it is likely there is a challenge and need that has not yet been identified. There is a noticeable void in the literature discussing learning communities related to the notion of a community of learners. What might be the power of and what might be additional benefits if we created and implemented learning communities where the focus was less on structure and more on becoming an effective learner who learns from and supports the learning of colleagues? To delve into this notion it is important to explore the knowledge about human learning and what is known about developing genuine communities of individuals.

Basic Fundamentals of Selected Learning Theories

Over the last two decades there has been an explosion of knowledge related to the understanding of human learning (Brandt, 1992; Dickman & Stanford-Blair, 2002; Jensen, 1998; Wolf, 2001). Perhaps most important, in a general sort of way, to this explosion is that learning is not just the acquisition of knowledge or facts. Instead, "the new science of learning [has] its emphasis on learning with understanding" (National Research Council, 2000, p. 8). This does not mean that facts are unimportant for thinking and problem solving, but it does suggest that usable knowledge is more than a mere list of disconnected facts. The knowledge must be connected and organized in the minds of the learners as they construct their own meaning for phenomena. While not appropriate here to present a comprehensive explanation of all that is known about human learning, exploration of some key components of that knowledge base is particularly salient to this study: (a) prior knowledge, (b) social interaction and learning, (c) metacognition, (d) selected biological underpinnings of learning, (e) fundamentals of memory formation, (f) emotion and learning, (g) transfer of learning, and (h) intentional mental processing of experiences. Each of these components will be discussed along with implications for helping individuals become learners who seek to understand complex ideas and are better able to transfer their learning to new problems and situations.

Prior knowledge

"What and how much is learned in any situation depends heavily on prior knowledge and experience" (Halpern & Hakel, 2003, p. 39) because individual learners create new meaning based on what they already know. In general, humans are goal-oriented organisms constantly seeking information (National Research Council, 2000). According to Caine and

Caine (1997), "The search for meaning is innate. This search is survival-oriented and basic to the human brain/mind" (p. 104). Even infants are learners who constantly receive information from their surroundings and seek to make meaning based on their own past experiences. "The contemporary view of learning is that people construct new knowledge and understandings based on what they already know and believe" (National Research Council, 2000, p. 10). This notion that new knowledge will be constructed from existing knowledge has many implications for teachers as they plan the learning for their students.

The prior knowledge that learners bring to a new learning opportunity is both an opportunity and a potential problem (Halpern & Hakel, 2003; Perkins, 1992). If the knowledge is accurate, the teacher can help the student build on that knowledge to reach a deeper understanding (Dickman & Stanford-Blair, 2002; National Research Council, 2000). It is quite likely, however, that some of the understandings may be incomplete or even wrong. In this case, it is possible for the understanding that develops to be very different from what the teacher intended. For this reason it is necessary for the teacher to be aware not only of what students know about the given phenomena, but also to be aware of any misconceptions. The students must have the opportunity to make their implicit knowledge and beliefs explicit. The teacher must know what the students are thinking about the phenomena (Resnick, 1992, as highlighted in Brandt, 1992). The easiest way to achieve this is by listening to the learners as they engage with other learners. This leads us to a second important principle of learning—"Much learning occurs through social interaction" (Brandt).

Social interaction and learning

For years the study of learning was dominated by a psychological view that focused only on the individual and his/her thinking alone (Brandt, 1992), but current cognitive scientists consider learning to be largely a social process (Caine & Caine, 2001). Reflection would reveal to most of us that a lot of our learning has been the result of interaction with others. In fact, study groups often form informally outside of class because students realize they learn more when they work with others. According to Brandt, educators who recognize the social nature of learning have transformed their classes from groups of individuals learning on their own into small communities whose members are learning together—the very essence of what a learning community ought to be. If we do not heed this principle of learning, that much learning occurs through social interaction, we are possibly missing much of the potential power of learning communities.

This notion of learning through social interaction means more than just having students practice and recite terminology together (Caine & Caine, 2001; Leinhardt, 1992, as highlighted in Brandt, 1992; Wiggins & McTighe, 1998). It means providing them the opportunity to make their implicit knowledge explicit—giving them the chance to explain their thinking to each other, listen to each other, and help each other explain. Before this kind of learning can take place, an atmosphere of trust and mutual respect must be established in the classroom. In addition, students must learn the skills required for effective interaction during a productive discussion (Brandt). According to David Perkins (1992, as cited in Brandt), they need to learn the idea that claims need reasons and that reasons sometimes have rebuttals. To engage successfully in this kind of discussion, students need to learn to provide evidence and justification for statements or beliefs. They need to take more responsibility for

their own growth and development. They need to be challenged to think more deeply about their own thinking—to develop metacognition as a habit of mind.

Metacognition

Huitt (1997) defined metacognition as the "knowledge about one's own cognitive system; thinking about one's own thinking; essential skill for learning to learn. [It] includes thoughts about (1) what we know or don't know and (2) regulating how we go about learning." Originally, the concept of metacognition was introduced in the context of studying young children (National Research Council, 2000). "For example, young children often erroneously believe that they can remember information and hence fail to use effective strategies, such as rehearsal" (p. 47) to commit the information to memory. More recently, the ability to recognize the limits of one's knowledge and take the necessary steps to correct the situation has been identified as critical for learners of all ages.

Wiggins and McTighe (1998) identified six facets of understanding: (1) explanation, (2) interpretation, (3) application, (4) perspective, (5) empathy, and (6) self-knowledge—all of which are necessary for complete and mature understanding. Probably the most complex facet is self-knowledge—the wisdom to know one's ignorance and how one's patterns of thought and action inform as well as prejudice understanding.

> Deep understanding ultimately is related to what we mean by wisdom. To understand the world we must first understand ourselves. Through self-knowledge we also understand what we do *not* understand: "know thyself" is the maxim of those who would *really* understand, as the Greek philosophers often said. In a sense, Socrates is the patron saint of understanding. He knew he was ignorant, whereas most men did not realize they were. (p. 58)

Metacognition, then, could also be described as self-knowledge about how an individual thinks and why. It demands that learners develop the discipline to seek and find blind spots

or oversights in their thinking to advance their own understandings. One way to help students develop metacognition as a habit of mind is to provide opportunities to ask and answer the following types of questions (Huitt, 1997):

> What do I know about this subject, topic, or issue?
> Do I know what I need to know?
> Do I know where I can go to get some information, or knowledge?
> How much time will I need to learn this?
> What are some strategies and tactics that I can use to learn this?
> Did I understand what I just heard, read, or saw? What is my evidence?
> How will I know if I am learning at an appropriate rate?
> How can I spot an error if I make one?
> How should I revise my plan if it is not working to my expectations or satisfaction?

Struggling with such questions can help students develop their own personally relevant pedagogical knowledge (National Research Council, 2000). "In short, students need to develop the ability to teach themselves" (p. 50). An understanding of the brain and how learning happens will facilitate their ability to do so.

Selected biological underpinnings of learning

Real learning is actually biological brain change (Jensen, 1998; Leamnson, 2000). It is not appropriate here to have a full discussion of how the brain works, but it is appropriate to address two aspects over which learners have much control: promoting the creation of neural networks and healthy choices, as they relate to the function of the brain.

Learning changes the brain because it actually can rewire itself with each new stimulation, experience, and behavior (Erlauer, 2003; Jensen, 1998; Wolfe, 2001). There are two kinds of brain cells—neurons and glia. Neurons give the brain the ability to think and learn. Glial cells provide nourishment for the neurons (as cited in Sprenger, 1999) and filter

harmful substances (as cited in Sousa, 2001) as the neurons branch out and make connections with other neurons, forming the pathways for sending chemical impulses back and forth.

These pathways of neural connections allow for information processing and memory formation. A small amount of the branching and connecting of the neurons is genetically determined before birth, but most of the budding, branching, and reaching out of the neural pathways occurs at a remarkable pace after birth in response to stimuli. These pathways are strengthened and stabilized simply by being used. Throughout life some of these pathways are used and some are not. Those that are not used degenerate (neural pruning), explaining the fact that infants have more neurons and associated pathways than adults (Erlauer, 2003; Jensen, 1998; Leamson, 2000; Sprenger, 1999). The more often a pathway is used, the stronger it becomes. "The stable circuits that enable memory are simply the ones that worked and were therefore used with greater frequency than others" (Leamnson, p. 37). Learning takes place only when the pathways that enable understanding are used repeatedly until they stabilize or when connections are made between existing pathways. In other words, learning is not only brain use, but actually a change in the wiring as a result of that use. Helping students embrace this idea has many implications for helping them take control of their own learning.

The notion that learning occurs [the wiring in the brain changes] as a result of strengthening the neural pathways puts the control of learning directly into the hands of the learner. Learning is a very private matter. It happens only in the head of the individual (Leamnson, 2000). This means that external agents cannot actually cause learning, but can only influence the likelihood of it. Faculty do have a responsibility to guide and direct the thinking and actions of their students, but it is the individual learner who "must think deeply

and repeatedly about something" (p. 37), and in multiple ways before learning will occur. A more thorough understanding of the impact a balanced diet, sufficient sleep, and regular exercise have on brain functioning will likely help prepare students to accept this responsibility for learning.

Particularly important for undergraduate students is the notion that what they put in their bodies and what they do with their bodies directly affects their brains and learning (Erlauer, 2003; Sprenger, 1999). Neurotransmitters, the chemicals that carry information from one neuron to another, are at work continuously—even during sleep. Although only 2% of the total body weight, the brain uses nearly 20% of the total caloric intake (Sousa, 2001). The more challenging the brain's task, the more energy it must consume. The challenge is to provide the brain with a steady supply of the substances required for high performance—oxygen, glucose, and water (Sousa). The greater understanding students have of the importance of healthy eating habits, the more power they will have to influence their own growth and development.

Fresh fruits and vegetables are important sources of glucose required to supply the brain with energy (Erlauer, 2003; Sousa, 2001). Water is important to move neuron signals throughout the brain (Sousa). Foods high in carbohydrates are believed to cause the release of the inhibitory neurotransmitter serotonin, which causes sleepiness, whereas foods high in protein are believed to prevent the release of serotonin, resulting in increased alertness and ability to focus (Sprenger, 1999). Many individuals are in the habit of eating one or two large meals a day, but several small, healthy snacks throughout the day are actually better for the body and brain (Erlauer).

Water is also essential for healthy brain functioning (Sousa, 2001). Since the brain is made up of a greater percentage of water than any other organ in the body, dehydration will decrease the efficiency of the brain (Erlauer, 2003; Jensen, 1998). Water is required to move signals from one neuron to another—critical for thinking and learning. The most obvious result of insufficient water for the brain is lethargy, common in classrooms, but a lack of water also causes stress (Erlauer).

As the percentage of water in the blood decreases, the salt levels increase. Muscles typically react to this change by constricting, and blood pressure increases, resulting in feelings of tenseness and stress. Drinking water will not automatically eliminate the factors causing stress, but some of the stress symptoms will be reduced if the body and brain have plenty of water. Students would be wise to heed the old wives' tale that the body needs eight cups of water a day (Erlauer, 2003). Not only does the body need the water, but it is also needed for optimum brain functioning. Eating a balanced diet and drinking plenty of water are not the only health habits college students need attend to in order to enhance the ability of their brains to think and learn. Equally important and challenging are healthy habits of sleep and exercise.

Sufficient sleep is absolutely necessary for optimal brain functioning (Erlauer, 2003; Sousa, 2001). The process of encoding and transferring information from short-term memory into long-term memory is a slow process that is easier when the brain is not occupied with external stimuli. It is far more efficient during particular sleep cycles. Most adults need between six and a half to eight and a half hours of sleep each night. Most college students do not get enough sleep, which affects their ability to think and learn. It may even impact their exercise during the day—another important factor for healthy brain functioning.

Exercise increases the flow of blood in the body, bringing more oxygen to the brain. Not only does this increase in the oxygen level provide more energy to the brain and relieve stress, it also "promotes the production of hormones that enhance the growth and strengthen the connections between the brain cells" (Erlauer, 2003, p. 46). Sitting for extended periods of time will reduce brain function by decreasing oxygen levels and promoting physical fatigue. Students who maintain their fitness levels with regular exercise will also enhance the ability of their brains to think and learn.

Real learning does create changes in the brain. Neural pathways must be used repeatedly to transfer information to long-term memory. Many factors affect the efficiency of the brain in this process of rewiring that we call learning. College students can influence their learning and memory by developing healthy habits of eating a balanced diet, drinking plenty of water, getting regular exercise, and sleeping six to eight hours every night. Once learning (rewiring) occurs, the knowledge is stored forever. However, the brain does not automatically know how to use new knowledge. Understanding the fundamentals of memory formation will allow the learner to become more effective at storing, retrieving, and using knowledge.

Fundamentals of memory formation

Advanced technologies of recent years have revealed much about the processing and storing of information in the brain, what we think of as memory. Positron emission tomography (PET) scans and functional magnetic resonance imaging (fMRI) allow scientists to see images of the brain while a person performs different tasks–they can actually follow as information is stored and retrieved (Sprenger, 1999). Detection of specific areas of the brain

used for different functions has revealed more storage areas than were originally thought. More will likely be discovered with the invention of better technologies, but the information available now can be used to help students with the processes of memory formation and learning.

The more students understand about memory and the use of strategies or mental models to access information stored in the brain, the more control they will have over their own growth and development as learners. Knowledge of the differences between short-term and long-term memory is critical for all learners. Separate storage areas exist for permanent memories and temporary memories (Sprenger, 1999). Most neuroscientists divide the temporary memory into two categories: (a) short-term memory (Sprenger), also called immediate memory (Sousa, 2001), or sensory memory (Wolfe, 2001), and (b) working memory (Sprenger; Sousa; Wolfe). Although they disagree on the name of the first stage in memory formation, they do agree that information remains here for only 15 to 30 seconds. The function of the short-term memory is to decide whether to process the sensory information as it comes into the brain or to discard it immediately (Wolfe). Much of the processing occurs subconsciously (Sousa). Two factors that seem to have the biggest impact on whether the brain initially attends to arriving information and whether this attention will be sustained are meaning and emotion (Wolfe).

If the information is meaningful for the individual or if it is tied to emotion, the information is more likely to be sent to working memory (Sousa, 2001; Wolfe, 2001). Understanding this has many implications for students. Students have no control over the way information is presented to them in class, nor should they, but they do have total control with the way they choose to process the information. Making connections with knowledge

they already have or with relevant experiences will help provide the meaning required to move the incoming stimuli from the short-term memory to working memory. In addition, students have control of their emotions. Intentionally taking an interest in the phenomenon or tying it to something of emotional importance could be enough to supplement the process of moving information into working memory.

The working memory is the second temporary memory. It is here the conscious processing of information occurs (Sousa, 2001; Sprenger, 1999; Wolfe, 2001). The working memory is limited by both space and time. It can process only a few items at once. Preschool children can deal with only one or two items at once and the number increases with age. The maximum for most individuals seems to be seven. Once students understand this limitation they can learn strategies to circumvent it, such as chunking. Remembering a phone number as a list of ten digits is highly unlikely, but remembering it as two chunks of three numbers and one chunk of four is relatively easy for most learners. One of the differences between experts and novices in a field is their ability to chunk information (National Research Council, 2000; Wolfe). Experts tend to organize information into larger chunks while novices work with isolated bits and pieces. Even though students cannot increase the number of pieces of information they are able to retain in working memory, they can learn to increase the amount of information in each piece. This helps to overcome the limitation of space in the working memory, but students also need to heed the limit of time.

Without rehearsal or constant attention, information will remain in working memory for only about 15 to 20 seconds (as cited in Wolfe, 2001). Deliberately processing the information can extend that time limit for hours, depending on the age of the individual and how the information is processed. Adolescents and adults can process items in working

memory for 10 to 20 minutes before becoming fatigued or bored (Sousa, 2001). Then their focus begins to drift. To recoup that focus, some change needs to occur in the way the information is being processed, such as applying it instead of just thinking about it or making connections to prior knowledge and meaningful, relevant experiences.

Knowledge of this time limit will empower students to extend the length of time information remains in their working memories. This might be either a blessing or a curse. The blessing is the potential for processing the information long enough or in a way that will increase the likelihood it will be moved into long-term memory. The curse, however, explains the reason so many students can do well on an exam but do not retain the information once the exam is over. The cramming that students typically do the day (or night) before a test is enough to place the information into their working memories. Once the test is over, they cease to process the information and it is dropped from working memory without entering the permanent storage areas of the brain to be recalled for future use. Helping students understand the limitations of time and space in working memory will give them the power to move more information into long-term memory for permanent storage.

Recent technologies have identified multiple specific areas of the brain where information is stored and retrieved (Sousa, 2001; Sprenger, 1999; Wolfe, 2001). Sprenger has identified five memory lanes that seem to work well for helping students who want to enhance their memory formation: (1) semantic, (2) episodic, (3) procedural, (4) automatic, and (5) emotional. An understanding of the basic characteristics of each lane, including the type of information stored, how it is stored, and how it is retrieved, will empower students to use their brains more effectively.

The semantic memory lane stores facts, dates, symbols, and bits of information–data learned from words. Most of the information comes from lectures or textbooks. As the sensory memory receives the bits of information, it will sort and sift the incoming data. Prior knowledge or interest may capture the attention of the learner and move the information into working memory. Repeated processing will be required for long-term storage to take place. Although the semantic memory seems to have an unlimited capacity, it also has its drawbacks. This memory lane is a difficult one in which to rely for learning because it requires numerous repetitions to cement the information in permanent memory. Once there, the retrieval of information must be stimulated by associations, comparisons, and similarities. Most classes rely heavily on semantic memory, but it is also the most unreliable memory lane. It often fails learners, necessitating the development of other memory processes.

Retrieving information from the episodic memory lane is easier. This memory lane involves location and circumstances. Also called contextual or spatial memory, it stores information associated with the location and the circumstances where the learning took place. The episodic memory has unlimited capacity, forms quickly, is easily updated, requires no practice, and is effortless (Jensen, 1998). As an individual tries to recall information learned in a specific setting, invisible information will likely be revealed. The context of the environment in which the learning took place actually becomes a part of the context of the memory. For example, it is episodic memory that allows us months or years later to describe a vacation or a birthday party without having had to rehearse or repeat it as one would have to do with semantic memory. Helping students understand this phenomenon will assist in retrieving information stored in the episodic memory lane. A word of caution here is appropriate. Since many experiences and memories arise from the same or similar situations,

this memory lane is also easily contaminated. The greatest benefit may be to help trigger other memory lanes through associations or other mental connections.

The procedural memory lane, sometimes called "muscle memory," stores memories of actions done by the body. Examples include riding a bike, driving a car, and tying a shoelace. The steps involved in completing a procedure are stored in memory once they become routine. This means that learners need to engage in the specific actions repeatedly until the neural pathways become well defined. As the memories become more efficient, they can be performed with little conscious thought or recall. This characteristic of procedural memory allows us to do two things at once. For example, procedural memory allows us to drive home from work as we search our working memory or episodic memory to help us recall a list of groceries we need to pick up before going home. Care must be taken when doing two things at once. Even though different parts of the brain are used for these memories, the brain can shift attention easily. Being distracted while driving may result in not noticing a red light until the last minute–triggering our automatic memory as we quickly apply the brake.

The automatic memory, also known as conditioned response memory (Jensen, 1998), is activated by specific stimuli. Instant associations trigger a memory, initiate a behavior, or recall stored information. For example, hearing only a few words of a song playing may prompt a specific memory from years earlier. As a person approaches and stretches out his/her hand, without a thought we reach out to shake hands. In the classroom, typical information stored in the automatic memory lane includes the alphabet, multiplication tables, and the ability to decode words. If information was stored in long-term memory by flashcards or other similar methods of repetition, it is likely stored here. Important to learners

is the notion that this memory lane often causes other memory lanes to open – quite often it will be the emotional memory that opens.

The emotional memory lane is the most powerful and takes precedence over any other kind of memory. Research suggests that negative emotions may be the easiest to recall (as cited in Jensen, 1998), but all emotional experiences are more easily recalled than neutral experiences. The emotional memory may be triggered by any other memory and may actually take over the logical mind. In addition to the effect on memory, emotions influence cognition in other ways.

Emotion and learning

Recent research on the brain has had an impact not only on our understandings of cognition and memory formation, but also on our understandings about emotion and its roles in learning. The glimpses of the brain made possible by new technologies "have made visible for the first time in human history what has always been a source of deep mystery: exactly how this intricate mass of cells operates while we think and feel, imagine and dream" (Goleman, 1995, p. xi). The flood of neurobiological data has helped us understand how the brain's centers for emotion can bring about a fight-or-flight response, move us to rage or tears, or facilitate learning and memory formation. Although much of the data is beyond the scope of this project, particularly salient for students is the impact of emotion on (a) attention or engagement with a phenomena, and (b) memory formation.

"Emotion drives attention, and attention drives learning" (Sylwester, 1995, as cited in Wolfe, 2001, p. 86). Our brain is constantly receiving incoming information and must instantly decide what to keep and what to sift. Because the biological pathways related to

how the brain evaluates incoming information are important for understanding the role of emotions on brain activity, they are overviewed here. The first decision, made by the thalamus and hypothalamus, is whether the information needs immediate attention, including fight-or-flight action, or whether more cognitive brain processing is appropriate (Erlauer, 2003). The hypothalamus controls the body's fight-or-flight response. The thalamus sends the information to the amygdala and to the cortex. While the amygdala evaluates the amount of emotional relevance connected to the stimulus, the cortex (the thinking part of the brain) begins the process of sorting, making sense, and categorizing for long-term memory. The entire process of attending to and sorting incoming stimuli usually takes less than two seconds (Wolfe, 2001). The fight-or-flight response is really more like a reaction or reflex than it is a deliberate or intentional thought.

The most basic function of the brain is for the survival of the living organism. The ability of the brain constantly to scan its environment, sift and sort stimuli, and quickly decide on a plan of action helps protect us from danger. Since the pathway from the thalamus to the amygdala is much shorter than the pathway from the thalamus to the cortex, the emotional part of our brain (amygdala) receives the information first. This activates the fight-or-flight response for protection when faced with danger, but also explains the "less-than-rational response" (Wolfe, 2001, p. 87) the brain sometimes makes in highly emotional situations. If we remember that emotion drives attention and attention drives learning, we can understand that strong emotions become the focus of the mind rather than attention to content. This, for example, is likely the source of "math anxiety" that blocks thinking in statistics classes for some students.

The fight-or-flight response to stress actually produces physiological reactions in the body (Erlauer, 2003; Wolfe, 2001). Once the amygdala interprets an incoming stimulus as a threat, it sends a message through the hypothalamus to the entire body preparing it to meet the demands of the stressful situation. Typical physical reactions include rapid pulse, increased blood pressure, tense muscles, overly active senses, sweaty palms, and increased readiness for movement.

Most individuals can easily recall an experience of their fight-or-flight response. For example, while driving leisurely home from a day at work a deer suddenly darts directly in front of your car. You hit the brake hard, skid a bit, and eventually pull your car over and stop on the shoulder of the road. You notice that your heart is pumping wildly, your hands are still tightly gripping the steering wheel, and your palms are sweating. You are actually afraid. The unconscious emotional reaction when your brain realized you were in danger triggered your automatic memory so you hit the brake. These strong physiological reactions that trigger physical action and help us survive when faced with danger also have a significant effect on learning and memory formation—both negatively and positively. The key is to help students identify physiological changes that are happening in their bodies, analyze them to see if they are hooked to emotions, and identify the emotions. They can then intentionally engage the thinking part of their brains, not just the emotional or fight-or-flight reflex. This will allow them to manage emotional responses, which is critical for peak performance.

Optimal learning should be the goal for individuals as they become skilled at managing their emotions and taking responsibility for their own growth and development.

According to Caine and Caine (1997), optimal learning takes place in a state of relaxed alertness.

> Relaxed alertness is the state in which we experience low threat and high challenge at the same time. A runner at high speed is both relaxed and performing at her maximum. Threat and fatigue inhibit brain functioning, whereas challenge accompanied by safety and belief in one's abilities leads to peak performance. (p. 153)

Knowing one's self—the fine line between challenge and threat—will empower students to enhance the impact of challenge on memory formation and to decrease the interference threat has on optimal brain functioning.

Challenge has the potential to provoke strong emotional reactions that can produce learning quickly. When students understand their brains seek challenge (Caine & Caine, 1997), resulting in positive strong emotions, they can find their own emotional hooks to enhance their memory formation. For example, fans of professional sports don't have to sit down and study every night to "learn" specific details and statistics related to their favorite player or team. Because of their emotional involvement in the game, they are capable of "one-trial learning" (Leamnson, 2000, p. 38). The lesson, then, is that students can become just as involved with the content of their courses if they intentionally provide their own emotional hooks. For example, the details of atmospheric conditions required for the development of a hurricane likely will be easier for a student to commit to memory if his/her family was affected directly by hurricane Katrina. Controlling their emotional involvement will enable students to set goals and challenge themselves to take risks inherent in deep and meaningful growth and development. Knowing one's self, again, becomes vital because that which challenges one individual might pose a threat to someone else.

Learning to manage emotional threats is critical because the human brain doesn't distinguish between physical danger and psychological danger. It triggers the same physiological chain of events in either case (Wolfe, 2001). The stress response is helpful when faced with physical danger, but it can interfere with normal cognitive functioning. This explains why rational thought sometimes is absent in highly emotional situations. Understanding this will help students understand why cognitive processing is usually difficult in situations their brains interpret as threatening. Students can learn to recognize when the automatic stress response has taken over the rational part of their brains, identify their own steps to return to the state of optimal learning (relaxed alertness), and practice these steps until they are automatic.

It is possible for learners to control many, if not all, of the factors resulting in a state of relaxed alertness–giving them much control over their learning and memory formation. Unfortunately, just because information has been learned (stored in memory) does not mean the individual knows how to use it. Learning is situated, specific to the situation in which it is learned (National Research Council, 2000; Perkins, 1992). Therefore, it is necessary to help learners transfer the knowledge to new situations.

Transfer of learning

A major aim for undergraduate education is for students to use all they learn in their post-secondary education to solve the problems they will face in the future. This transfer of learning—using concepts in a situation different from where they were learned—is one of the most powerful principles of learning (Sousa, 2001). It is sometimes referred to as the "so what?" phase of the learning process. It requires the learner to (a) search long-term memory

for any past learning that is similar to or associated with new phenomena, and (b) project the degree to which the learning will be useful in the future. It is critical to understand that while the brain does many things automatically, transfer is not one of them. Using learning in a situation different from that in which it was learned requires intentional mental action on the part of the learner.

Transfer of learning relates back directly to the rewiring of the brain and the process of learning actually making a pathway stronger. Searching the brain for information stored in memory that is related to new information will strengthen existing pathways. The second part of transfer involves making connections to different situations that would not necessarily happen if a student's thinking were to follow only one pathway. Therefore, in addition to making existing pathways stronger, faculty have an obligation to help students make connections between pathways. This means students must be involved in looking at phenomena in multiple ways and from diverse perspectives. Helping students learn to ask and answer the following types of questions will promote the ability to facilitate their own transfer of learning as a habit of mind:

> How is this similar to something you already know? How is it different?
> How have you used this kind of information in the past?
> What is another possible perspective in this situation?
> What events in your life might be affected by this phenomenon?
> In what other situations might this be useful?
> How could this skill be used in a new setting?
> What other groups of people might need this information?
> What implications are there for you as a professional?
> How might this knowledge or skill impact your professional development?
> What impact does knowing this have on your future?
> Why is this knowledge important for a professional in your discipline?

In addition to making learning more relevant for the learner, attending to transfer of learning will empower students to provide their own answers to "Why do we have to do/learn

this?" This puts the responsibility where it ought to be—with the learner. Obviously, taking responsibility for learning means the learner must engage in much more mental activity than students typically do or faculty expect of them. One way to help learners develop the critical habits of mind for deep learning is through the intentional mental processing of experiences.

Intentional mental processing of experiences

Learning from experience is powerful for most individuals, but rarely will they "extract all the potential meaning that is implicit or move beyond their current meanings without being challenged" (Caine & Caine, 1997. p. 121). One key to helping students use their experiences to engage in deeper learning is active processing, which, according to Caine and Caine (1994), is:

> the consolidation and internalization of information, by the learner, in a way that is personally meaningful and conceptually coherent. It is the path to understanding, rather than simply to memory. ... The pervasive objective is to focus on the process of our learning and extract and articulate what has been explored and what it means. In effect, the learner asks in as many ways as possible "What did I do?", "Why did I do it?", and "What did I learn?" (pp. 156-157)

(Note: Because of common misconceptions associated with the phrase "active learning," I am using "intentional mental processing" in place of Caine and Caine's phrase: "active processing.") The more questions the individual asks and answers, the deeper the learning is likely to be as a result of the experience. As Perkins points out in the article "Learning as Biological Brain Change" (Leamnson, 2000), "Learning is a consequence of *thinking*—it's less the doing than the thinking, the reflecting on that doing that counts" (p. 37).

In their book *Connecting leadership to the brain*, Dickman and Stanford-Blair (2002) refered to a similar kind of thinking within a discussion about reflective intelligence.

> If information patterns are the currency of intelligence, reflection is the compounding of returns on the original investments in their construction. That is, reflection is the ultimate stringing together of patterns of information through serious consideration—a conscious bending back—of constructed knowledge to proactively explore further configurations, implications, and applications thereof. In effect, the reflective qualities of your brain engage in examination of how that which is mentally constructed might best be invested—exploited might be a better word—to the advantage of survival interests. (p. 95)

While a full discussion of the reflective nature of intelligence is beyond the scope of this study, the basic notion of engaging students in meaningful reflection fits with the active processing suggested by Caine and Caine (1994). It further supports rephrasing that notion as intentional mental processing. In addition to the questions of "What did I do?" "Why did I do it?" and "What did I learn?" Dickman and Standford-Blair probably would add, "How did I do it?" and "What if...?" One way of helping students learn to ask and answer these kinds of questions consistently for themselves for most experiences—to engage in intentional mental processing as a habit of mind—is through a reflection journal.

Faculty typically ask students to do mental processing in different ways, such as responding to teacher-directed questions, discussing with team members following activities, or sharing their thinking during large group discussions, but it has more meaning for students if they actually record their thinking on paper.

> Journal writing connects students with their emotional selves and core values. Through writing, students become aware of the relevance of their belief systems. Through writing, they begin a healthy habit of reflecting on moral values as they consider problems and issues that come up in their studies and in their daily lives. I have found that students *want* to discuss topics that touch on important moral questions. (Wanket, 2005, p. 74)

This is the purpose of the reflection journal as students take responsibility for their own learning and development within the community of learners. Students often will engage in

deeper thinking while recording thoughts in their journals. In addition to framing and guiding their thinking throughout the course, the journal will provide evidence of growth and development along the journey.

Students will bring a myriad of experiences with keeping journals. It is not unusual for high school students to have been required to keep a journal for one or more of their classes. Many students keep personal diaries, but those are probably a different kind of reflection than our goal of intentional mental processing. Also popular today is blogging (posting personal thoughts on the Internet for others to read), but again it is likely a different kind of thinking than intentional mental processing. Along with the diverse experiences of writing in a journal will be varied attitudes. Some students will welcome the challenge, but others will likely resist. Three factors will be important for overcoming the resistance: (1) helping them understand the purpose; (2) helping them learn how to engage in intentional mental processing through writing in their journals; and (3) holding them accountable for thinking and writing.

The goal of intentional mental processing always must be for deeper thinking and ultimately deeper learning. It is not just the final stage in a lesson or a time of reflection following an experience (Caine & Caine, 1997). It includes thinking critically, asking and answering probing questions, exploring alternative perspectives, solving real-world problems, and searching for big ideas and broad applications of new concepts. Intentional mental processing leads to deeper understanding, relevant insights, and mastery of the discipline. Students who develop this habit of mind will become effective citizens who can continue their learning in new situations throughout their lives.

Once students understand the purpose and value of recording their thoughts in a journal they will need direction to develop skills in intentional mental processing. Two simple suggestions offered by Wanket (2005), a high school English teacher, are applicable for learners of all ages: date every entry, and write without ceasing. The journal will become a log of their thinking. Students will learn to read through their journals and track their own growth. There will be times that dates of an entry are important to them. In addition, early on, students will likely need to force themselves to make entries. Specific dates will be reminders of minimum expectations set either by self or by instructor. "Write without ceasing" helps remove the burden of perfect writing. Some students are likely to be inhibited by their perceived skills as writers. Encouraging them to go wherever their minds wander will usually lead to more original insights and creative thinking.

Once the students get used to the idea of recording their thoughts in journals, they will be more receptive to additional guidance. My own experience has been that one of the most important notions to help students internalize is the idea that they are keeping the journal for themselves—not for me. Students have become so accustomed to having instructors tell them how they did and how to improve that they often hesitate to think for themselves. It is not until students truly embrace that idea of ownership that they are ready to explore and expand their own thinking. At this point, providing prompts to inspire deeper thinking is important. In addition to questions listed earlier, other possibilities include:

How can I use this?
Why did I react that way?
How is this similar to something else I understand? How is it different?
What other applications might there be? What are the implications thereof?
What does this mean for me as a professional?

Frequent use of prompts provided by the instructor will help students learn to form their own questions—allowing them to manage, over time, their own learning by extracting and articulating what has been explored and what it means. However, most students need an additional boost before they develop the habit of journal writing—to be held accountable.

My own experience with students, along with similar experiences of my colleagues, indicates that they are more likely to meet high expectations if they are held accountable for their actions. Indeed, preliminary analysis of data gathered for my own research about students involved in a similar program is revealing that, when interviewed, participants said a critical component of their transformative mental development was being held accountable. This proved to be as simple as collecting and reading their journals periodically throughout the semester. While reading the journals, I was always mindful that the purpose of the journal was for the student to engage in intentional mental processing and was not for my benefit. Therefore, I tried to limit my own comments to questions [prompts] that would encourage the kind of thinking I desired for the students.

Intentional mental processing as a habit of mind empowers students to take responsibility for their own growth and development as learners (Caine & Caine, 1997). It is the pathway to deep understanding instead of simply to memorization. It allows them to take charge of their learning in a way that is personally meaningful and conceptually coherent. As they delve into the hearts of their disciplines and uncover personal meanings, students better understand themselves. Additionally, Wanket's (2005) experience with her students supported clinical evidence

> that daily writing practice helps students succeed in all areas of school writing. Studies also show that students gain psychological benefits from such daily positive journaling tasks as gratitude lists and reflections on pleasant

> memories. And the sense of community that journal sharing time builds is priceless, it creates bonds and helps students understand one another in a way no other activity does. (p. 76)

As students learn more about themselves and their own beliefs and understandings, they will likely become more comfortable sharing more of their thinking and insights with others. Their developing self-honesty will promote honest communications with others which is an important component of learning with others. Thus, having students engage in intentional and purposeful thinking through journal writing will not only enhance cognitive processing of knowledge, but it also can promote the development of community.

Exploration of the Notion of Community

In our culture, the word community has been applied to almost any group of individuals—a town, neighborhood, church, professional organization, social group, dorm or residential building—regardless of how well or poorly those individuals communicate and interact with each other. Peck (1987) would argue this is a false use of the word:

> If we are going to use the word meaningfully we must restrict it to a group of individuals who have learned how to communicate honestly with each other, whose relationships go deeper than their masks of composure, and who have developed some significant commitment to "rejoice together, mourn together," and to "delight in each other, make others' conditions our own." (p. 59)

Peck views community as multifaceted, with "each facet a mere aspect of a whole that defies description" (p. 60). All facets of community are interconnected and interrelated. One cannot exist without the other. Some of the most salient characteristics of a true community that he has identified include:

- inclusivity – everyone is welcome;
- commitment – members of the group must commit themselves to one another;
- consensus – decisions are arrived at through consensus;

- realistic – multiple frames of reference inspire more realistic decisions;
- contemplative – examines itself and knows itself;
- safe place – where individuals are free to be themselves;
- laboratory for personal disarmament – a safe place for experimenting with new kinds of behavior;
- place of conflict – where conflict can be resolved without physical or emotional bloodshed and with wisdom and grace;
- leaderless – all are leaders; and
- spirit – a spirit of peace prevails.

Traditional learning communities likely fall along a continuum defined by Peck's (1987) notion of the false use of community on one end and his meaning of true community on the other. The ultimate goal for a community of learners ought to be to reach true community. But how does this happen? According to Peck, genuine communities develop in one of three ways: (1) in response to crisis, (2) by accident, or (3) by deliberate design. Students often form their own study groups in response to crisis. Some of those communities may even move toward Peck's notion of true community by accident, but most of them dissolve once the crisis (test or course) passes. The development of a true community of learners must occur through deliberate design, but is this possible? Peck believes it is. He has had much success not only with building true communities, but also with helping others learn how to transform groups of individuals into genuine communities. The key is to follow a few basic principles—laws and rules—of community building. These are explained best by describing stages Peck has identified in the community making process: pseudocommunity, chaos, emptiness, and community.

Development of true community takes time and requires both effort and sacrifice on the part of individuals. The first stage, pseudocommunity, is characterized by false pretenses. This does not mean that members are consciously dishonest, but rather they attempt to be loving and accepting by telling "little white lies" or by withholding some of the truth about

themselves or about their feelings, to avoid conflict. While this kind of behavior might promote a seemingly smooth-functioning group, it crushes individuality, intimacy, and honesty. Individual differences, therefore, are denied instead of valued. Members tend to speak in generalities, pretending that all have the same beliefs. More importantly, members allow one another to get away with making those blanket statements just to avoid conflict. A pseudocommunity is easy to recognize: individual differences are discouraged, and the group is really quite boring. It is not until individual differences not only are allowed but actually encouraged that a group will move to the second stage of community, chaos.

It is easy to recognize groups in chaos. Instead of trying to hide or ignore individual differences, they are out in the open and the group is trying to obliterate them. It is a time of fighting where the goal is winning. It is a time of struggle, but the struggle is not merely noisy. It is uncreative, unconstructive, and unproductive—it is chaotic. The leader of the group is often attacked and one or more members of the group will attempt to replace the designated leader. He or she will usually suggest a solution through organization. One solution for chaos is organization, but organization and community are incompatible. As stated earlier, true communities are leaderless—all are leaders. For organization to occur, a leader must step forward. It follows then, that organization and community cannot exist simultaneously. If the goal is community building, organization is an unworkable attempted solution to chaos. The proper solution is to recognize that the group is in chaos and that chaos is preferable to pseudocommunity. Fighting is better than pretending there are no differences, but it is still painful. A group in chaos unconsciously seeks to get out of chaos. It will either go back to pseudocommunity, disband, or resolve to work through chaos by moving into the third stage, emptiness.

The stage of emptiness in community development is a time of sacrifice. It is necessary for members to empty themselves of all barriers to communication. Behaviors during the time of chaos can be used to identify precise barriers—feelings, assumptions, ideas, and motives—that filled the minds of individuals and made them impervious to listening to others. Giving up these barriers is not easy. It is a sacrifice, and sacrifice hurts. Is it necessary to give up everything? No. It is only necessary to give up those things standing in the way of the communication necessary to move from chaos into community.

As the group begins to move into emptiness, a few of its members begin to open up and share their fears, doubts, failures, inadequacies, etc. They stop pretending they have it all together and identify those barriers of which they need to empty themselves. At first, other members may be uncomfortable and try to fix or heal those who have made themselves vulnerable, but as the group continues to move through emptiness, members will realize they need to truly listen to others—to share their pain and sorrow. Some members will be tempted to flee back to pseudocommunity where only good things are shared.

> But here the issue at stake is no longer whether individual differences will be denied. The group has moved too far for that. Instead the struggle is over whether or not the group will choose to embrace not only the light side of life but also life's darkness. True community is joyful, but it is also realistic. Sorrow and joy must be seen in their proper proportions. (Peck, 1987, p. 102)

Groups that make it through this stage of sacrifice, of emptiness, make it into true community.

This final stage is characterized by a soft quietness, a kind of peace. Individual members talk about themselves with openness and honesty as others listen. Successes and failures are shared. There is a great deal of sadness and grief, but there is also much laughter and joy. The group becomes a genuine community. What happens from here depends on the

original purpose of the group. The purpose of a community of learners is to promote the continued growth and development of every individual.

Summary

Developing a community of learners requires providing a safe environment where individuals can learn how to learn, come to better understand themselves, and practice honest interactions with others. It is clear that applications of the salient fundamentals of human learning reviewed here are critical for moving a group of learners into community: prior knowledge, social interaction and learning, metacognition, selected biological underpinnings of learning, fundamentals of memory formation, emotion and learning, transfer of learning, and intentional mental processing. It is also clear that members of the emerging community must practice the skills and attitudes necessary to support and encourage the development of every individual within the community of learners.

It is likely that the results of groups of students learning in community will go beyond the very positive research-identified benefits of learning communities: increased student retention, achievement, and academic growth. Developing communities of learners who take responsibility for their own learning while supporting and encouraging the learning of others will allow faculty in post-secondary institutions to change their emphasis from "know what" and "know why" knowledge to "know how" and "know who." All students will likely then be more prepared to thrive as productive citizens in this age where the economy is driven by knowledge and information.

CHAPTER 3. METHODOLOGY

"Drawing from a long tradition in anthropology, sociology, and clinical psychology, qualitative research has, in the last twenty years, achieved status and visibility in the social sciences and helping professions" (Merriam, 2002, p. 3). Procedures used in qualitative studies differ distinctly from the more traditional methods of quantitative research. "Qualitative inquiry employs different knowledge claims, strategies of inquiry, and methods of data collection and analysis" (Creswell, 2003, p. 179). This chapter describes the methodological framework that guided the study, starting with the theoretical framework.

Theoretical Framework

Epistemology

The constructionist view of the source of knowledge informed this study. "Constructionism is an epistemology embodied in many theoretical perspectives" (Crotty, 2003, p. 3). It rejects the view of objectivism—that truth exists in the world and is just waiting to be discovered. Instead, the constructionist stance is that "truth, or meaning, comes into existence in and out of our engagement with the realities in our world. There is no meaning without a mind. Meaning is not discovered, but constructed" (p. 9). According to this understanding of knowledge, individuals will likely construct meanings differently, even during similar experiences. This epistemology gives rise to a number of theoretical perspectives for conducting qualitative research.

Theoretical perspective

Theoretical perspective refers to the philosophical stance lying behind a methodology (Crotty, 2003). It informs a research study by providing a context for the process involved, as well as a basis for the logic. "Different ways of viewing the world shape different ways of researching the world" (p. 66). It is interpretivism as a way of viewing the world that informed this study. Interpretivism "looks for culturally derived and historically situated interpretations of the social life-world" (p. 67). The purpose of the study was to discover, from the voices of respondents, their culturally derived interpretations of learning in community. An interpretive theoretical perspective informs several methodologies (Crotty, 2003).

Methodology

Phenomenology flows from an interpretivist theoretical perspective. This study was a descriptive phenomenological study. True to phenomenological studies, it allowed the essence of how they experienced the phenomenon to emerge from the participants (Creswell, 2003). As previously described, I experienced the phenomenon of learning in community with the students and witnessed their growth and development as learners and as worthy team members. It was apparent to me that their learning was greater than other groups with which I have worked. Therefore, it was my desire to uncover the factors that contributed to that growth. I have my own biases and beliefs, and it was necessary to bracket those to enable the essence of the experiences of the students to emerge. Qualitative researchers typically engage in reflexivity (Creswell, 2003)—systematically reflecting on who he or she is in the inquiry, acknowledging his or her own personal biography and how it shapes the study. This

introspection and recognition of biases, values, and interests was critical as I conducted this study. As a guide through this reflexivity experience, I followed the phenomenological epoche process as described by Moustakas (1994).

Epoche Process

In phenomenological research, it is imperative for the researcher to bracket or "set aside existential assumptions made in everyday life and in the sciences" (Schwandt, 2001, p. 19), to focus on the intrinsic nature of lived experiences without those assumptions. One way for the researcher to do this is to engage in the epoche process. According to Moustakas (1994), the epoche is:

> ...a preparation for deriving new knowledge but also [as] an experience in itself, a process of setting aside predilections, prejudices, predispositions, and allowing things, events, and people to enter anew into consciousness, and to look and see them again, as if for the first time. (p. 85)

The best way for me to engage in this process was through reflection—identifying, first of all, my own beliefs based on my experiences and then my biases as a result of my interpretation of the students' experiences throughout the learning opportunity in the leadership program. Following these steps prepared me for a new beginning—to look at the data with an open mind.

My own experiences as an instructor, in both secondary and post-secondary classes, have shaped a number of my beliefs and assumptions related to education and learning. Key among these is that I believe the way to help students meet the challenge of becoming good citizens who are capable of solving unique, complex problems in an ever-changing world is through a learning opportunity that focuses on both learning and the development of community. At first glance, it would appear this would describe learning communities being

utilized on numerous college campuses. Thus, I operated on assumptions based on what I read and observed; however, many of these learning communities were defined by their structures, i.e., placing students together in common classes or through living arrangements (Gabelnick et al., 1990; Laufgraben & Shapiro, 2004; Lenning & Ebbers, 1999; Shapiro & Levine, 1999). Seldom, however, in a typical learning community is there a deliberate focus on both learning and community.

In most typical learning communities, groups of individuals spend time working closely together over a period of time. While many positive things happen where individuals work closely together over time, I believe even greater benefits are possible. By a "focus on both learning and community," I mean more than having students meet together to learn how to manage their time, plan their schedules, take notes, schedule a meeting with a professor, take tests, etc.—frequently called study skills. A focus on learning ought to involve purposely applying the knowledge of basic fundamentals of selected theories of human learning: prior knowledge, social interaction and learning, metacognition, selected biological underpinnings of learning, fundamentals of memory formation, the role of emotion in learning, transfer of learning, and intentional mental processing of experiences. Planning for students to apply these theories of human learning would allow them to become responsible for their own learning. A focus on community means more than meeting together, taking common classes, or living in the same building. It involves deliberately moving a group through the stages of community described by Peck (1987): pseudocommunity, chaos, emptiness, and true community.

I believe the most powerful potential of learning communities resides in educators helping students develop into a community of learners. To me, a community of learners is an

interdependent group who works together over time supporting each other, caring about each other, and learning with and from each other. My working meaning of a "community of learners" guides what I believe are the critical practices of those involved in the creation of such communities. They should meet at a regular time—in addition to scheduled class times. Those who facilitate these meetings must engage the students not in the content of courses, but in the knowledge and practice of learning, the development of interdependence, the practical application of effective interpersonal skills, and the practical application of worthy team membership. More detailed discussion of these practices illustrates my additional beliefs and assumptions as they relate to this study.

During the past three years, I had the opportunity to co-facilitate a two-year leadership development program for both undergraduate and graduate students. This experience provided strong evidence of the opportunities for individual growth and development created when a community is focused on learning. I observed juniors, seniors, and graduate students take responsibility for their own learning when learners were deliberately engaged in activities designed to create a community and to help members understand more about: (a) their brains and how learning happens, (b) themselves as learners, (c) the power of metacognition, and (d) the need for continuous intentional mental processing to achieve transfer of learning for future use. Eventually students were able to enhance their learning regardless of the teaching/learning style of the professor. In addition, by focusing on effective interpersonal skills and valuing contributions of diverse individuals each team member was able to work increasingly interdependently while genuinely caring for and supporting others—the very essence of community. My intuition and my past experiences

with learners suggested that the experience need not be limited to this group, but might be possible for all students.

My desire has long been for all students to be involved in a learning opportunity that will empower them to take responsibility for their own learning while they also accept support from and contribute to the successes of their colleagues. My 25 prior years of experience in secondary and post-secondary education provided a strong base for my work with these students, but the past three years still included many challenges as I struggled to develop a community of learners and to help them learn how to learn. Key among these was the deeply ingrained traditional paradigm of learning. Students in the NSF SFS program were majoring in computer science, computer engineering, management information systems, mathematics, or political science. Each had been very successful in the old paradigm of teaching and learning—taking notes during lectures, completing repetitive exercises for homework, and taking tests to assess learning. An entry from the journal of a graduate student provides evidence that the leadership program was something different:

> *The most important part of leadership class for my development was the interactive, participatory nature of the class. In the vast majority of my other classes, I show up for class, jot down a few notes, do the homework, and take the tests. I am not forced to share thoughts of my own or involve myself with others. Indeed, most college classes allow students to work in isolation which is a grievous error.*
>
> *Leadership class is dramatically different. I am required to voice my own values and perform teamwork. I am not allowed to just sit back and listen. I must synthesize my own thoughts and express them to others...*

In spite of the challenges that accompanied this new way of learning, the growth and development had been dramatic. I knew I had to explore the contributing factors.

The opportunity to work with these students to uncover the factors that were important for their growth and development as learners and effective team members provided

a rare opportunity for me to collect data on learning in community. I believed I already knew many factors that were important, but my goal was to study the perspective of the students. In order to allow their experiences to emerge just as perceived and for me to come to know those experiences just as they were, it was necessary for me to bracket my own biases and beliefs. It was only through frequent engagement in this epoche process that I was able to accomplish this.

In summary, engaging in the epoche process revealed to me the strength of my beliefs, biases, and assumptions. It became clear that I must set these aside to experience the phenomenon of learning in community "again, as if for the first time" (Moustakas, 1994, p. 85). For me, it was first necessary to make them explicit by listing them:

- Learning happens in the mind of the individual.
- Each individual is responsible for his/her own learning.
- Much learning occurs through social interaction.
- Each individual has a responsibility to contribute to the learning of others.
- Interdependence is more complex and a higher state of being than independence.
- Intentional mental processing and metacognition are critical for constructing meaning.
- A safe environment enhances learning.
- Interpersonal skills must be deliberately taught and practiced.
- Development of community requires learners to engage in team learning opportunities.

Reviewing this list frequently before engaging in the interviews and while working with the data allowed me to bracket my own prejudices and, thus, focus on the lived experiences of the students.

Research Site

The study was conducted at a land-grant university in the Midwest where I have been a faculty member for seven years. The 2,000-acre, park-like campus includes more than 160

buildings, many of which had much historic significance. Seven colleges offer more than 100 undergraduate degrees and nearly 200 fields of study leading to graduate and professional degrees. Listed in 2005 by *U.S. News & World Report* as one of 21 universities having the best learning community programs for undergraduate students made it an ideal location for a research study of learning in community. Some of the participants in the study had prior involvement in learning communities, and all were in the NSF SFS program.

Participants

Since the "idea behind qualitative research is to *purposefully* select participants . . . that will best help the researcher understand the problem and the research question" (Creswell, 2003, p. 185), the participants for this study were purposefully selected. The NSF SFS program encourages individuals to enter the field of information security and assurance, and gives them an opportunity to put their talents to work at the front lines of government cyber security efforts. Unlike most universities involved with this program, the university where I am a faculty member has a two-year leadership component required for those individuals accepting the scholarship. My involvement as a co-facilitator of the leadership program provided easy access to students involved in learning in community. At the time of the study, the eight students were in the fourth semester of the two-year program. The research was designed to focus on the learning opportunities during the first two semesters of the program.

Data

Collection

The goal in data collection for a phenomenological study is to collect rich, meaningful data that accurately depict the participant's interpretation of the phenomenon. The primary method used to achieve such data is the interview (Merriam, 2002). Phenomenologists usually use in-depth, semi-structured interviews guided by open-ended questions to increase the probability of gathering comparable data across subjects. In addition, this type of interview allows the researcher to gather descriptive data in the subjects' own words to provide insights on the interpretation of the experience (Bogdan & Biklen, 2003).

The first interview was a focus group with all eight students. Open-ended questions were emailed to students one week prior to the interview. Students were encouraged to engage in reflection before the meeting and bring any written thoughts with them. The focus group was scheduled to last approximately 1.5 hours. It was audiotaped and transcribed.

Individual face-to-face interviews were conducted with all eight students. Semi-structured interviews increase the chances of obtaining comparable data across subjects (Bogdan & Biklen, 2003). Even though I was interested in identifying everything related to the learning opportunity that was important to each participant, I chose to use semi-structured interviews because I wanted to be sure to uncover each individual's own personal meaning for "learning in community"—specifically including beliefs about human learning and human interdependence as subsets of beliefs about learning and community. Each interview lasted between 30 and 40 minutes. The interviews were audio taped, transcribed verbatim,

and checked for accuracy. Copies were made of each transcription for use during the analysis and interpretation of the data. All the interviews followed a similar format.

The focus of this study was on the first year in the leadership development program. Since the interviews were conducted during the second semester of the second year, it was necessary to set the context to help students reflect on the experience from the previous year. The questions were designed to help students reflect not only on their own growth and development, but also on the development of community. The following questions guided the interviews, but did not limit them:

- Think back to August of 2003. What comes to mind for you as you look around the room today? How are you different? How is the group different?
- How did those changes come about?
- What was most important to you for your own growth and development?
- If you could make one change, what would it be? Why?
- Is there anything you believe should not be changed? Why?
- What else would you like to tell me that would help me better understand your experience?

Additional sources of data for a phenomenological study include documents "photographs, videos, films, memos, letters, diaries, clinical case records, and memorabilia of all sorts" (Bogdan & Biklen, 2003, p. 57)—that can provide insights about the experiences of the participants. Personal documents are those produced by an individual for private use such as letters, diaries, etc. Personal documents can certainly fit the criteria of providing thick, rich data for the researcher in a phenomenological study, but care must be exercised in how such artifacts are used. The purpose of descriptive phenomenology is to allow the essence of the experience to emerge. Therefore, it is critical for the personal documents to be used in "a manner that is naturalist, inductive, and concerned with the process of meaning construction for those who produced them" (p. 58). Using transcripts from interviews and written

documents provides the phenomenologist with thick, rich data from which the essence of the experience should emerge.

Frequent reflection and periodic written self-assessments were requirements throughout the leadership development program. Reflections were recorded in journals. Student journals were copied and used as sources of data. At the end of each semester, students were required to complete self-assessments describing their growth and development as leaders. Those written self-assessments were also used as data in this study. Personal documents provided thick, rich data as I was careful to bracket my own experiences, biases, and assumptions as I read and interpreted the data with an open mind, experiencing the phenomenon again as if for the first time through the eyes and hearts of the participants. I made every attempt to listen to the data from each participant and allowed the essence of the experience to emerge. The next challenge was to analyze all the data and identify common themes.

Analysis

Data were analyzed and interpreted using the Colaizzi (1978) phenomenological method.

> It must be emphasized that these research procedures [Colaizzi's method] of analysis ... should be viewed only as typical, and are by no means definitive; furthermore, they usually develop with much overlapping among them, so that both the listed procedures and their sequences should be viewed flexibly and freely by each researcher... (p. 59)

These procedural steps include: becoming familiar with all of the data, extracting significant statements, formulating meanings, organizing the aggregate formulated meanings into clusters or themes, creating an exhaustive description of the phenomenon, and reducing the

description to a statement of the fundamental structure of the phenomenon. Following is a more detailed description of each step.

During the first step, the goal of the researcher should be to become familiar with all of the data. Reading through each participant's description of the phenomenon, conventionally referred to as *protocols*, gives the researcher a feeling for them and aids the researcher in beginning to make sense of the data. This would include not only the transcript of each interview, but also all documents gathered as data. This step provides the researcher with an overall sense of the data while preparing for more specific identification of significant statements during the next step.

The second step, known as extracting significant statements, involves a return to each protocol. The researcher identifies phrases or sentences that directly pertain to the phenomenon. Since many protocols will likely contain similar statements, repetitions are eliminated. The result of this step is a list of significant statements. During the next step the researcher begins to interpret meaning from these statements.

The third step is known as formulating meanings—attempting to spell out the meaning of each significant statement. The researcher now must depend on intuition or creative insight to take what the participant has said and interpret what is meant. This is a dangerous step and the meanings should never "sever all connection with the original protocols; ...formulations must discover and illuminate those meanings hidden in the various contexts and horizons of the investigated phenomenon" (Colaizzi, 1978, p. 59). This step leads to the challenge of organizing the formulated meanings into themes.

During the fourth step, the aggregate formulated meanings are organized into clusters of themes. Once again, the researcher must rely on intuition and creative insight in an attempt

to allow themes to emerge that are common to all of the protocols. The challenge is to take what is suggested in the meanings and identify themes that accurately represent them. These clusters of themes should be compared with the original protocols to validate them. If there appears to be incongruence, the previous steps should be re-examined. If not, the results are integrated into an exhaustive description of the phenomenon which leads to the final step—"an effort to formulate the exhaustive description of the investigated phenomenon in as unequivocal a statement of identification of its fundamental structure as possible" (Colaizzi, 1978, p. 61).

A final step in Colaizzi's model, important for validating many types of qualitative research, is returning to the participants and asking for their feedback about the findings thus far. Also known as member checking (Merriam, 2002), this step allows the participants to validate the researcher's findings. Even though different words have likely been used, the individuals should recognize their experience in the interpretations or they should be able to suggest some fine-tuning that might better capture their perspectives. Important for the validity of the study, any relevant new data that emerges during the member checking must be incorporated into the final product of the research project (Colaizzi, 1978).

Validity

> Validity does not carry the same connotations as it does in quantitative research, nor is it a companion of reliability (examining stability or consistency of responses...) or generalizability (the external validity of applying results to new settings, people, or samples...). (Creswell, 2003, p. 195)

Reliability might be used to check consistent patterns of theme development if multiple researchers gather data. Generalizabilty is applicable from one specific case study to another.

Overall, however, reliability and generalizability are much less important in qualitative research than is validity.

According to Creswell and Miller (2000), validity—determining whether the findings are accurate from the standpoint of the researcher, the participants, or the readers of the study—is a strength of qualitative research. For my study, I defined validity as how accurately the account represents participants' realities of the social phenomenon and is credible to them (Schwandt, 1997). The following strategies described by Creswell (2003) were used to check the accuracy of my findings:

- Triangulating the data – using different data sources and examining them to build a coherent justification for themes;
- Using thick, rich descriptions – transporting the readers to the setting and developing an element of shared experiences within the discussion of the findings;
- Clarifying the bias of the researcher – engaging in the epoche process to bracket my own biases and experiences;
- Using peer debriefing – engaging in conversation with an outside observer to enhance the accuracy of the analysis; and
- Using member-checking – taking the final themes back to the participants for feedback on the accuracy of the interpretations.

Following the above strategies increases the validity of the study, but "to a large extent, the validity and reliability of a study depend upon the ethics of the researcher" (Merriam, 2002, p. 29).

Ethical Considerations

"A 'good' qualitative study is one that has been conducted in an ethical manner" (Merriam, 2002, p. 29). Typical ethical dilemmas in qualitative research are likely to arise out of the collection of the data, within the researcher-participant relationship, and in the dissemination of the findings. This study sought first to respect the rights, needs, values, and desires of the participants. Safeguards suggested by Creswell (2003) were employed to

protect the participants: (a) the research objectives were articulated verbally and in writing so that they were clearly understood by the participants (including a description of how the data were to be used); (b) written permission to proceed with the study as articulated was received from the participants; (c) a research exemption form was filed with the Institutional Review Board; (d) the participants were informed of all data collection devices and activities; (e) verbatim transcriptions and written interpretations and reports were made available to the participants; (f) the participants' rights, interests and wishes were considered first when choices were made regarding reporting the data; and (g) the final decision regarding participant anonymity rested with the participants. A copy of the signed Human Subjects approval is shown in Appendix B.

CHAPTER 4. INTENTIONAL LEARNERS IN AN INTERDISCIPLINARY COMMUNITY: EXPECTATIONS MAKE A DIFFERENCE

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Abstract

In many college courses students succeed by memorizing facts and principles, but solving ill-defined problems of the future requires critical thinking and continuous learning, not solely technical knowledge. This paper examines the findings from a phenomenological study of eight students involved in an interdisciplinary community focused on developing responsible life-long learners. Although students' descriptions of the nature of high expectations that impacted their learning were not surprising, it is significant that every student, independently, identified being held accountable for meeting the high expectations was critical for transformation into intentional learners. Implications for educators are that students must be challenged with ambiguous, complex tasks relevant to them as professionals and must be held accountable for meeting high expectations.

Introduction

Meeting the challenges of tomorrow will increasingly require citizens who effectively interact with others and engage in life-long learning that goes far beyond the technical content of most college courses. Unfortunately, far too many students graduate from colleges and universities but remain undereducated because they have not developed deep understandings of their disciplines or sufficiently refined their critical thinking abilities

(Licklider et al., 2004). A primary goal in higher education should be to help students become productive citizens who use their minds effectively to solve challenging problems and to seek new insights. However, in many, if not most, college courses, students succeed by memorizing facts and basic principles from lectures or texts. The good grades they get from such rote learning have little to do with their abilities to solve the ill-defined, real-world problems they will face the rest of their lives. The development of valuable citizens who meet the challenges of the future requires not only technical knowledge and skills, but also the ability to communicate effectively, think critically, and form meaningful relationships. The challenge, therefore, for post-secondary educators is to move away from more traditional forms of education and provide learning opportunities that will allow students to develop a mix of both cognitive and interpersonal abilities (Ducatel, 1998).

What would happen if we developed learning experiences for all students that focused on both *learning* and *community*? Would it be possible to empower students to take responsibility for their own learning and to learn how to learn for a lifetime while encouraging and supporting the learning of others? If this can be accomplished in higher education institutions, graduates will be more prepared to thrive as productive citizens for a lifetime of facing problems and issues that have not yet been imagined. This study examined the experiences of students in a program that was designed specifically with these ends in mind.

Background of the Study

Recently, we had the opportunity to combine our knowledge of human learning and the principles of learning organizations in a two-year leadership development program for

students at a land-grant university in the Midwest. As part of the National Science Foundation (NSF) Scholarship for Service (SFS) program, students were awarded full scholarships in exchange for two years of work in the federal government following graduation. The NSF SFS program is an interdisciplinary effort involving students and faculty in computer engineering, computer science, mathematics, political science, management information systems, and education. The fellowship recipients were part of an interdisciplinary cohort of students pursuing degrees in their majors with an emphasis in information assurance. These students were required to participate in a two-year leadership development program in addition to the requirements of their majors. The knowledge, skills, and dispositions comprising this program were certainly outside the experiences and comfort zones of these students' previous educational encounters. Learning activities were planned with an emphasis on: (a) learning about learning, (b) learning about self, (c) purposefully developing community, (d) deliberately practicing and refining skills to support and encourage the growth of self and others, (e) practicing metacognition, and (f) engaging in intentional mental processing (careful and deliberate thought resulting in insightful revelations). In addition to affording plenty of individual talk time, the weekly three-hour meetings provided the opportunity for students to participate in frequent team learning. Multiple resources were used to stimulate discussions about learning, self-knowledge, leadership, team interactions, and current issues. Students engaged in a variety of self-assessments to identify personal strengths and areas in need of improvement. Writing in a journal was required to help students develop metacognition and intentional mental processing as habits of mind. By the end of the first year, it was clear these students were not

only taking responsibility for their own learning, but they were also developing into a productive interdisciplinary community of learners.

The growth we witnessed as these students developed into good citizens and intentional learners far surpassed any similar successes with students in all of our years of experience in public education. Even the development of community was stronger than we perceived before the study. Other faculty members involved in the NSF SFS program were amazed as they listened to the cohort interact during a meeting early in the second year of the program. They were intrigued by both the depth of thinking and the amount of support and encouragement within the group. We knew we needed to try to find out what contributed to these developments.

Methodology

Methods

The desire to uncover the essence of the students' experiences—to discover what contributed to their learning and development—made this an ideal phenomenological research study (Colaizzi, 1978; Moustakas, 1994). True to phenomenological research, this study allowed the essence of how students experienced the phenomenon to emerge from the participants (Creswell, 2003). As previously described, we experienced the phenomenon of learning in community with the participants and witnessed their growth and development into avid learners and worthy team members. We realized in conducting this study our own biases and beliefs are the result of many years of experience in education, and they are very strong. Therefore, it was necessary to bracket our own viewpoints in order to uncover the essence of

the students' experiences. We did this by following the phenomenological epoche process (Moustakas, 1994).

Engaging in this process revealed to us the strength of our beliefs, biases, and assumptions. It became clear that we had to set them aside in order to experience the phenomenon of learning in community "again, as if for the first time" (Moustakas, 1994, p. 85). It was first necessary to make explicit our beliefs, biases, and assumptions:

- Learning happens in the mind of the individual.
- Each individual is responsible for his/her own learning.
- Much learning occurs through social interaction.
- Each individual has a responsibility to contribute to the learning of others.
- Interdependence is more complex and a higher state of being than independence.
- Intentional mental processing and metacognition are critical for constructing meaning.
- A safe environment enhances learning.
- Interpersonal skills must be deliberately taught and practiced.
- Development of community requires learners to engage in team learning opportunities.

Reviewing this list frequently before engaging in the interviews and while working with the data allowed us to bracket our own prejudices to focus on the lived experiences of the students.

Data collection

As previously mentioned, the eight participants in the study were part of the NSF SFS program for students focusing on information assurance with majors in computer engineering, mathematics, computer science, and management information systems. All participants had enjoyed high academic grades throughout high school and college. At the time of the study, the students were in the fourth semester of the two-year program. The research was designed to focus on the learning experiences during the first two semesters.

The goal in data collection for a phenomenological study is to collect rich, meaningful data that accurately depict the participant's interpretation of the phenomenon. The primary method used to achieve such data is the interview (Merriam, 2002). The first interview in this study was a focus group comprised of all participants. Open-ended questions designed to allow the participants to say anything they wanted were emailed to them one week prior to the interview. Participants were encouraged to bring written thoughts with them.

After the focus group interview, individual face-to-face interviews were conducted with all eight participants. Semi-structured interviews increase the chances of obtaining comparable data across subjects (Bogdan & Biklen, 2003). Although interested in identifying everything related to the experience that was important to each participant, semi-structured interviews were conducted to be sure to uncover each individual's own personal meaning for his/her experiences. All interviews were audio taped and transcribed verbatim. In addition to these transcriptions, student journals and written self-assessments provided data.

Data analysis and interpretation

Data were analyzed and interpreted following the steps suggested by Colaizzi (1978). Initially, all the transcriptions of the interviews and copies of students' written assessments and reflections were read to obtain the gist of the data and to note recurring topics. The topics were used to develop a coding scheme. Reading the data a second time, significant statements were color-coded according to the identified topics. Meanings were formulated from those significant statements and organized into themes. An integration of the themes produced an exhaustive description (Colaizzi) of these students' experiences of the

phenomenon of learning in an interdisciplinary community. Using that description, a statement of identification of the phenomenon's fundamental structure was formulated. As a final step, the data were validated by returning to the participants and asking for their feedback about the findings. Also known as member checking (Merriam, 2002), this step allowed the participants to confirm the findings. Even though different words had likely been used, the individuals recognized their experiences in the interpretations. No new data emerged from this process.

Findings

In general, the themes that emerged were: self-identified growth and development, continuous reflection, metacognition, high expectations for addressing challenging tasks, interdependence, accountability, and supportive environment. The fundamental structure of learning in community, then, as perceived by these participants, was a self-recognized transformative development resulting from being engaged in intentional mental processing before, during, and after being challenged with and held accountable for addressing complex, meaningful tasks in an interdependent and supportive environment over time. This complex statement obviously gives rise to a multitude of possibilities of exploration with implications for educators and students alike, far too many to explore in one paper. This article addresses the nature and role of high expectations that made a difference in this transformative experience for students.

Initially, it does not seem like a significant finding that high expectations are key for transformative learning. Faculty are fully aware of the importance of setting high expectations for their students (Schilling & Schilling, 1999; Weimer, 2002). Much time is

invested in carefully constructing student learning outcomes for a course, planning the learning opportunities to achieve those outcomes, and developing assessment tools to evaluate student growth and development (Huba & Freed, 2000; Wiggins & McTighe, 1998). Most would certainly agree that students will live up (or down) to expectations.

Professors do want (expect) their students to be diligent, to engage in every learning opportunity planned for them. Unfortunately, educators often send messages that less is expected. For example, class interaction may require students to read and think before coming to class, but how do many instructors typically react when students have not done the preparation? Are students held accountable or does the instructor change the plan for the day to "take care of" those students who didn't prepare for class? Unfortunately, many professors plan class expecting students ***not*** to prepare before class—and many students do eventually meet those expectations. The challenge is for faculty to maintain high expectations by holding students accountable for meeting them. However, the findings from this study indicate that in addition to being held accountable, the high expectations need to be related to challenging tasks that are relevant to the learner as a professional and have enough ambiguity to allow students to guide and direct their own learning, ***not*** mundane activities students can merely check off a list.

The ultimate expectation in the leadership development program is that students take responsibility for their own growth and development—that they do their own thinking and own their choices of actions. This is understood as becoming intentional learners. Every learning opportunity planned has that outcome in mind, and students are reminded continually that the assignments are for them, not the professor. It was no surprise that students realize the importance of high expectations. However, a revelation came as students

identified the differences in our expectation and the kinds of expectations they were accustomed to meeting in order to get a desired grade. An entry from Kim's journal toward the end of the first year exposed a new personal meaning for learning:

> *My beliefs about learning at the start of the semester were the norm for someone institutionalized by the public school system. I believed that the key to success in learning was to do whatever professors asked. Learning in my mind was to show up, do the required assignments, and study for the tests. Granted, I knew on some level that learning in that fashion is superficial learning only. In fact, my learning philosophy back then could even be said to be more of a general belief in doing exactly what I was told rather than a real learning belief system.*

Even early in the semester, students described the difference in expectations between the leadership class and many other classes:

> *...because you have to like the type of learning we were doing. I used to just like memorization, memorizing computer knowledge and spitting it back out on a test or something. I don't think I've had any non-test classes.*
>
> *I went ahead and did the second assignment and created the chart based on the relational leadership model: that took a lot of thought. I don't think it is complete, I'm sure I'll be adding to it every once in a while. By assigning us to go back and look at things we've done or somewhat completed, reflect upon them and then apply new things to them we are learning more and getting more out of topics and materials. We don't just read a chapter and then never go back, we are required to apply those things learned to new assignments later on.*

It became clear that students were accustomed to following strict guidelines and checking items off a list to meet the requirements for many courses. There was much security for students in knowing exactly what they had to do to get the desired grade in many courses. They were more than a little uncomfortable being expected to take responsibility for their own learning. For example, several participants admitted the leadership class was not only different from most other classes, it was even a bit scary:

> *When I first heard we were going to be doing a journal, I was apprehensive and a little disconcerted...I was reluctant to do it fearing I wouldn't be able to put my thoughts on paper.*
>
> *It [journaling] was painful to start out with, but it got less.*
>
> *When you required us to talk, I was scared to say anything. I would always pass; well, not always, but a lot of the times.*

Some cognitive dissonance was expected as students were given more control of their own growth and development, but we didn't realize was how deceptively simple our expectation was. Our desire was (simply) for students to take responsibility for their learning—to do their own thinking and own their choices of actions. Each student was expected to fully engage in every learning opportunity and to develop skills and abilities accordingly. It was a pleasant surprise that students interpreted this as much more of a challenge than they were accustomed to facing:

> *This is, in some ways my most challenging class, because I can always do more. I see people around me doing more than I am, and I think, 'I should be doing what they are doing.' However, I realize that I have not reached that point yet. That is the goal (i.e., to work as hard as I can in order to learn as much as possible).*

As revealed by Kenna's words, students not only recognized a very different kind of expectation, they also began to understand their own role in making choices and setting their own expectations. It was a challenge to plan activities that would move them along on the journey of becoming intentional learners.

As stated previously, every learning opportunity was designed to support and encourage students to take responsibility for their own growth and development. The analysis of the data, in the words of the participants, revealed the following specific expectations and assignments that had the greatest impact on their learning: interacting with others, recording thoughts in a journal, special projects like interviewing leaders or preparing for an academic

controversy, and engaging in self-assessment. The following examples, from the voices of the participants, illustrate each type of assignment or expectation.

Interacting with others

We believe students have an obligation not only to take responsibility for their own learning, but also to contribute to the learning of everyone else in the class. Students are expected to come to class prepared to engage in discussion and interaction. For many students, this is one of the first big challenges to their paradigm of learning as revealed by Sam in a journal entry early in the year:

> *In the vast majority of my other classes, I show up for class, jot down a few notes, do the homework, and take the tests. I am not forced to share thoughts of my own or involve myself with others. Indeed, most college classes allow students to work in isolation which is a grievous error. Leadership class is dramatically different. I am required to voice my own values and perform teamwork. I am not allowed to just sit back and listen. I must synthesize my own thoughts and express them.*

For some students this expectation is a bigger challenge than for others. We work hard to establish a safe environment early in the semester where all will be willing to contribute. To encourage contributions early, every meeting starts and ends with a go 'round. This is one of our favorite interaction strategies. The facilitator poses a question or a notion to elicit a response, and after individual think time, each person is expected to speak. Discussion is discouraged during the actual go 'round, but by speaking early, individuals will more likely engage in interaction later in the meeting when discussion is desired. During the focus group interview participants were reflecting on those first classes and the early go 'rounds. One participant recognized how much his willingness to speak up in other groups had changed. When questioned about the reason, he replied, *"Having go 'rounds every week, you know,*

always having to say something once or twice every class." In addition to expecting students to publicly reveal thinking, all are required to monitor progress in a reflection journal—another big challenge.

Recording thoughts in a journal

Honest reflection from Pat's journal is typical of many students who have not previously engaged in deeper thinking and learning through reflection:

> *Journaling is still not easy for me and still takes a lot of time, but I am working at it. I am glad that I have these thoughts written down for me to go over in the future. I realize now that having these entries will help me recognize where I have grown, where I need to grow and will help me decide some ways to do so. When I was told that journaling was for me at the beginning of the year I laughed to myself; I knew I was not going to like doing it and I thought it was sort of weird. While I still do not take pleasure in writing journal entries, I do enjoy having them. I understand how vital they are for me learning about myself. They serve as great evidence to my development along the way at certain points.*

Most students share similar attitudes when first introduced to the notion of learning more deeply through reflection and after they have struggled through learning to record their thoughts in their journals and publicly reveal their thinking to colleagues. Early on, questions are provided to guide their thinking, but eventually learners are expected to monitor their own thinking and writing with the aid of rubrics. It is often necessary to "persist longer than they resist" (our mantra when students work hard to have us "tell them what to do and how to do it").

Writing in a journal is not easy; nor is thinking on your feet and explaining your thoughts publicly, but both are critical for development as an intentional learner. Many students realize this by the end of the first semester; for others it takes nearly a year. Regardless, their newly developed skills of engaging in critical thinking and meaningful

reflection are usually revealed to students after they have done the hard work necessary to complete an assigned task.

Special projects

One major project during first semester required students to interview three individuals they considered leaders and write a paper describing their insights. Bert's candid reflection revealed the frustration of facing a challenging task, the discipline required to complete it, and the awareness of growth and development as a result.

> *When we were given the assignment I dreaded it. I knew it was going to be hard and that it was not something I could just do and get over with. Choosing three people to interview was difficult, writing three sets of questions was not easy, setting up times to do the interviews was complicated, giving the interviews was a new experience and challenging, and writing the paper that went along with the project was time consuming and again, difficult. I am so glad I did it.*

On this same assignment another participant admitted being frustrated with the ambiguity:

> *I have been having quite a bit of trouble with the interview assignment. I sort of wish there were clearly defined guidelines on what we are supposed to learn, because I'm used to that. This is sort of stepping outside my comfort zone, having to decide what I want to learn and all.*

These words confirm the importance of designing learning activities that are relevant to the students as they prepare to be become professionals in their chosen discipline but with enough ambiguity to allow students to guide and direct their own learning. Another challenging and ambiguous task was an academic controversy designed to challenge the students to do the kind of thinking necessary for those preparing to protect our nation's information infrastructure.

An academic controversy (Johnson, Johnson, & Smith, 1991) is a specific learning strategy used to engage students in critically examining both sides of an issue before making

an important decision. Typically, a controversial matter is described and students research the matter to learn as much about both sides of the topic as possible. Then, with a partner, they are assigned to defend one side (whether they believe in it or not) as forcefully as possible. They must, of course, also listen to an opposing pair defend the contrary viewpoint. Next, both pairs reverse their stance and present their best case for the opposing side. Their final challenge is to engage in a discussion to make the best decision possible. Students were given the task of preparing to engage in an academic controversy about an issue pertinent to them not only as citizens, but also as professionals–The Patriot Act. One participant's reflection about this experience is evidence that students enjoy being challenged with meaningful tasks and recognize the rewards from their investments of time, energy, and engagement:

> *I have even poured my heart into little things. We were asked to read up on the Patriot Act so that we would be able to do a quick debate during one of our class periods. I spent so much time looking up different materials and sources and reading over all of it, probably too much considering how quickly it was over and done with. I worked extremely hard in preparation for that twenty-minute activity and I do not regret it, and that is how I have done almost everything else in this class as well.*

These words confirmed that we were on the right track in planning learning opportunities to challenge students. They recognized growth and development as a process that was not easy; in fact, it was hard work, but it was worth the effort. More students came to this realization as they engaged in the final assignment for first semester.

Engaging in self-assessment

The final project for each semester requires students to summarize their growth and development. Words taken from Kelly's final project revealed an appreciation for the hard work necessary for deep, meaningful learning:

> *Something that I have to bring up in a summary of this semester is the effort I have put into this class and all that has been asked of me. For me, this class is not easy; it is trying and different from all the other classes I have taken in college. The thinking, analyzing and reflecting we do is not common practice here... It is challenging and out of the ordinary for me, and I have put forth a great deal of effort and time to produce my best work. There is a reason I take pride in my journaling as a whole and my interview project, and that is because I gave them all that I could. Through hard work and effort I was/am able to learn more from these activities than if I could do them with ease.*

The learning opportunities developed to help students meet the expectation of taking responsibility for their own learning, thinking, and behaviors had a greater impact than anticipated. Further analysis of the words of the participants, specifically as they identified assignments and activities important to their learning, revealed that learning opportunities most likely to promote student growth and development shared the following characteristics: challenging enough to require thinking and new learning, relevant to the student as a professional, and ambiguous enough to allow students to guide and direct their own thinking and learning. In addition, the students frequently didn't like the task, but they usually liked meeting the challenge.

None of the findings about the nature of expectations that promote student growth and development should be much of a surprise. All are well supported in the literature. Students really do like to learn (Leamnson, 2000; Sprenger, 2005)–learning is innate (Caine & Caine, 1997). In spite of what faculty may think, there is nothing wrong with the way the brains of their students work. For example, students who are fans of professional sports have no trouble remembering specific details and statistics related to their favorite player or team. Because of their emotional involvement in the game, they are capable of "one-trial learning" (Leamnson, 2000, p. 38). "They readily learn what captures their imagination" or that with which they become emotionally involved. Once students understand their brains seek

challenge (Caine & Caine), which results in positive strong emotions, they find their emotional hooks to enhance memory formation. The lesson is that students can become more involved with the content of their courses if they intentionally find emotional hooks.

The emotional hooks for the NSF SFS students emerged as they engaged in activities that allowed them to develop skills required of a professional in their chosen field of information assurance. Their own emotional involvement allowed them to set goals and challenge themselves to take risks inherent in deep and meaningful growth and development—to become intentional learners—as evidenced in the following excerpt from Alex's journal:

> *The thing I want to continue to work on is applying leadership in the real world. Doing so this semester was a real eye opener for me, and a lot of what I've learned about leadership started to make a lot more sense. This shouldn't have come as a huge shock since I learn the most about engineering in the labs, but for some reason it did. Be that as it may, I now know that the more I apply leadership in the real world, the more I will learn and the easier it will become. It still is somewhat difficult to do, so I have to keep in the front of my mind that I can't just give in or give up. I have to keep pushing through because the benefits are certainly worth it.*

Once students accepted the challenge to take more ownership of their own learning, the ambiguity of assigned tasks became even more important. Students began to seek opportunities to do their own thinking and choose their own actions. Again, this is no surprise. Self-directedness is an important aspect of adult learning (Cranton, 1994). Two of the four aspects of self-directedness described by Candy (in Cranton) are particularly salient to our work with the students—self-management and learner control. Self-management is the willingness and capacity to conduct one's own education. Learner control is the learner's decision making about objectives, sequence, strategies, and evaluation in an education

setting. Ambiguous tasks allowed the students to make choices about their own growth and development.

Pat's words from the final assessment reiterate an earlier point—that even though they might not like the task(s), they usually liked meeting the challenge:

> *In reality, the second semester this year was a long, intense, difficult, rewarding and growing trial. However, it felt more like a racing blur, where you cannot separate one lesson learned from the next because there were so many insights and realizations to take in and absorb. I firmly stand by this statement. If there was one thing that could be said about [these courses], it would be that it is the biggest challenge one will face at [Midwestern university]; it is also the most rewarding.*

In addition, throughout the experience we were delighted by the honesty in the student reflections. A section from one journal suggested the possibility of having too much of a good thing:

> *Having the rubric there was the key to accomplishing the object of the assignment (I know we were supposed to use it, but it was an essential tool). It allowed me to look for specific things (objectively) whereas I would've been lost without it. I do agree that you have to be challenged, and put outside of your comfort zone sometimes in order to grow. So these assignments are good for us, but should be used sparingly and in moderation.*

Even though notions about high expectations were not explicit in our original list of beliefs, biases, and assumptions, they certainly were implicit. Missing, however, was another important finding from the study—student recognition of the importance of being held accountable for meeting the high expectations that have been set. In retrospect, years of experience with learners of all ages developed within us an assumption about accountability and learning. Intuitively, we ***know*** accountability is always critical. It was, however, surprising that ***every*** participant, independently, identified that being held accountable for

meeting the high expectations was critical for development. Their words revealed progress along the journey of becoming intentional learners.

The first stage seemed to be one of resistance. The expectations and the type of learning asked of them were unfamiliar. It was not uncommon to read journal entries where they were working through the frustrations:

> *...being pressured to share my own thoughts and ideas in more of a public setting than I am used to. I've always felt the most comfortable speaking about topics of any substance with only one or two people at a time.*
>
> *...at first I did it simply because it was a requirement...*
>
> *It was really hard at first. The standard was to try and do five a week [journal entries] and for me that was impossible. I knew that changing my own standard to four made it a little more accomplishable.*
>
> *I guess if I didn't have to, I probably wouldn't [journal].*

Holding students accountable through this resistant stage was our responsibility. Since it was usually not easy, nor pleasant, we often drew on our mantra—persist longer than they resist.

> *In the case of the leadership journal, at first I did it simply because it was a requirement of being in the class. Over time it developed into a valuable tool for me, but the problem is that I wouldn't have done it in the first place if I wasn't "forced" to.*
>
> *Knowing that it would be more or less a weekly requirement to share my personal feelings with a larger group, I realized that it was not something I just had to get through; it was something I had to become better at.*
>
> *I think the discussion we do in a large group gives everyone the opportunity to place ideas on a stage, including pushing those of use who are less prone to do so on our own...*

Eventually, students recognized the rewards as a result of engaging in the hard work of growth and development, and we met with less resistance.

> *I think one of the biggest areas I have grown in is my willingness to share my ideas without having to be directly asked. I worked on this in class by offering to go first in a go 'round and participating more actively in the group activity discussions. However, this is still an area I need to improve upon a lot.*

Our job became easier once students realized the importance of the accountability and asked for help in developing ways to hold themselves accountable. An extremely shy student found it very difficult to express ideas publicly. Even though he accepted the notion that each had a responsibility to contribute to the learning of others, it was a constant challenge. Together we devised a strategy to allow him to practice:

> *One plan to contribute more visibly is to offer input without being called on, such as raising my hand to start a go 'round. I kind of asked [my instructor] to keep me accountable for visible contributions to the team, and that if she feels I have not shown enough, she should let me know. She would like to see more effort. I think this plan will help others see me as more of a contributor, as well as allowing me to get more out of the course.*

It was the realization that being held accountable was critical to their development as professionals that eventually prodded the students to take the final step of holding themselves accountable for working at learning as revealed by Taylor, *"Knowing I have the inclination to allow myself to become disempowered, I have to force myself out of my comfort zone regularly. When I need to speak up, I will just have to bite the bullet and force myself."* Alex took this responsibility for his own learning to his other classes:

> *I figured out how I was going to try and do it [get more out of lectures]. Instead of just sitting there like some wilting plant trying to just soak up the information like sunlight in the hopes that it would help me, I needed to make myself a lot more active in the class. A lot of professors are very bad at involving the class and making us active participants in our learning, but if they weren't going to do it, I was. So I resolved to take notes in more of my own words, try my own little examples of concepts they were explaining and generally try to become a more active participant in the lecture process.*

Finally, as they resisted returning to old habits, we acknowledged their transformation into the intentional learners they needed to be:

> *...even though it's tempting to just check things off a list and forget about them afterwards. To help with this new way of thinking, I had to become motivated to learn for myself, and not just to please others. For example, I could complete half of the activities or not do much reading if I really wanted to, but since I know it's for my personal development and I would only be disabling myself, it becomes worthwhile to put a true effort into the activities.*
>
> *...I have learned that I need to take leadership by asking questions and taking responsibility for learning the material. On the other hand, I have also thought much about how I can take leadership in my less challenging classes and take it upon myself to go beyond the required class work. In both cases, I have to take leadership to learn.*
>
> *I believed what I was told, "this learning is for you." This has allowed me to have a different kind of expectation (maybe even a higher expectation) than I have for other classes. I do not set out to learn a certain set of material; I set out to learn as much as I can.*

The entire journey of becoming an intentional learner is probably best summarized as one of the participants succinctly said, *"At first we tried to refuse to do what you asked. Then we did it because you made us. And now we do it because it works!"*

Our desire is for all students to successfully complete the journey of becoming good citizens who do their own thinking and own their choices of actions. Indeed, these students moved from wanting to be told what to do to requesting open-ended challenges to control their own learning:

> *I think maybe last year, like when we had our syllabus, we had this set thing, all these things we were going to do, whereas this year, it's like really flexible, we can say, "oh, we actually want to do this instead, this would be a lot better for us. I think us being able to determine more of what we did would have been more helpful last year. [upon further reflection, however] But we really didn't know then, and now we know the things that help us.*
>
> *The ones that impacted me were the ones that were where we got a lot of creative freedom to attack a problem, and just the ability to be given a task and not so much have it defined.*

Implications

Most students (and many faculty) are deeply entrenched in the paradigm of learning where students come to class expecting to be told exactly what to do and how to think, check assignments off a list, take tests that measure how much information has been stored in (short-term?) memory, and then dump the information before moving on to the next class. Faculty have a responsibility to help students break through that paradigm and become intentional learners. Faculty owe it to students to:

- make them do the preparation and thinking required for deeper learning,
- challenge them with addressing complex, meaningful real-world tasks,
- help them develop emotional connections by planning assignments that are relevant to their future professional lives,
- create enough ambiguity to require students to guide and direct their own thinking and learning, and
- hold them accountable for meeting the expectation of becoming intentional learners.

Students may not initially like these new kinds of expectations, but they do know being held accountable for meeting them makes a difference in their learning. And they do come to appreciate the freedom and power associated with becoming intentional learners.

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CHAPTER 5. BECOMING INTENTIONAL LEARNERS: COMMUNITY MATTERS

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Abstract

Many college students succeed by memorizing facts and principles, but thriving in their future interdependent world requires the abilities to learn continuously, communicate effectively, think critically, and form meaningful relationships. Although learning communities have been used successfully to promote both social and academic development, it is likely these outcomes can be enhanced. This paper examines findings from a phenomenological study of an interdisciplinary community of learners who took responsibility for their own learning while supporting the development of their colleagues. These students' experiences of learning in community suggest new directions for those involved with learning communities.

Introduction

A primary goal in higher education should be to help students become productive citizens who solve challenging problems and gain new insights. However, in many college courses, students succeed by memorizing facts and basic principles from lectures or texts. The good grades received from such practices don't always translate into abilities to solve ill-defined, real-world problems students will face the rest of their lives (Huba & Freed, 2000). Meeting the challenges of the future requires not only technical knowledge and skills, but

also the ability to communicate effectively, think critically, and form meaningful relationships based on mutual trust and respect. The challenge, therefore, for educators is to structure learning opportunities that will allow students to develop both cognitive and interpersonal abilities with a goal of developing citizens and professionals who take responsibility for their own learning and accept the obligation to help others grow and develop. Learning communities clearly help move post-secondary education in this important direction.

Learning communities, with a long history in higher education, were developed with the intent of increasing student success—both academically and socially. Most learning communities today resemble one of the four typical structures: (a) paired or clustered courses, (b) cohorts in large courses or freshman interest groups, (c) team-taught programs, or (d) residence-based learning communities. Examples of rewards in academic achievement and intellectual development for students involved in learning communities are numerous (as cited in Lenning & Ebbers, 1990). These results include increased GPAs, higher-quality learning, more complex thinking, increased quality and quantity of learning, improved connectedness within social and academic realms, greater engagement in learning, increased opportunities to write and speak, a more complex world view, and a greater openness to ideas different from one's own. Two possible reasons for higher retention rates in learning communities are commitment to peers and total absorption with the program content. This supports a claim made by Tinto (1987) about the importance for students to make a successful transition into both the social and academic communities of college. Clearly, learning communities produce multiple benefits. However, it is likely there is a challenge that has not yet been addressed.

What would happen if learning experiences were developed for all students that focused on both *learning* and *community*—empowering students to take responsibility for their own learning while supporting the learning of others? If this can be accomplished in higher education institutions, graduates will be more prepared to thrive as productive citizens for a lifetime of facing problems and issues that have not yet been imagined. This study examined the experiences of students in a program that was designed specifically with these ends in mind.

Background of the Study

Recently, we had the opportunity to combine our knowledge of human learning and the principles of learning organizations in a program for students at a land-grant university in the Midwest. As part of the National Science Foundation (NSF) Scholarship for Service (SFS) program, students are awarded full scholarships in exchange for two years of federal government work following graduation. The NSF SFS program is an interdisciplinary effort involving students and faculty in computer engineering, computer science, mathematics, political science, management information systems, and education. Fellowship recipients participate in a two-year leadership development program in addition to the requirements of their majors. The program is designed with an emphasis on: (a) learning about learning, (b) learning about self, (c) purposefully developing community, (d) deliberately practicing and refining skills to support and encourage the growth of self and others, (e) practicing metacognition, and (f) engaging in intentional mental processing. In addition to affording plenty of individual talk time, weekly three-hour meetings provide opportunities for students to participate in frequent team learning. According to the students, the knowledge, skills, and

dispositions desired as outcomes of this program are certainly outside the experiences and comfort zones of their previous educational encounters. By the end of the first year, it was clear students not only were taking responsibility for their own learning, but they also were developing into a productive community of learners. We needed to find out what contributed to these developments.

Methodology

Methods

The desire to understand, from the words of the participants, key factors that contributed to their learning and development made this an ideal phenomenological research study (Colaizzi, 1978; Moustakas, 1994). We experienced the phenomenon of learning in community with the participants and witnessed their growth and development into avid learners and worthy team members. Therefore, we engaged in the phenomenological epoch process (Moustakas) to identify our own beliefs, biases, and assumptions and set them aside to focus on the lived experiences of the participants.

Data collection and analysis

Although the eight participants in the study were in the fourth semester of the NSF SFS program, the research was designed to focus on the learning experiences during the first two semesters. Consistent with the goal of phenomenological research to collect rich, meaningful information that accurately depict the participants' interpretations of the phenomenon (Merriam, 2002), data sources included a focus group interview consisting of all eight participants, individual interviews, journals, and written self-assessments. All interviews were audio taped and transcribed verbatim. Data were analyzed and interpreted

following the steps suggested by Colaizzi (1978): read all data, extract significant statements, formulate meanings, organize into clusters of themes, integrate into an exhaustive description, and formulate the exhaustive description in as unequivocal a statement of identification of the phenomenon's fundamental structure as possible. Data were validated by returning the findings to the participants and asking for feedback. Also known as member checking (Merriam, 2002), this step provided no new data.

Findings

As referenced earlier, the last stage in the analysis of the data is to organize the themes into an exhaustive description of the phenomenon and formulate the exhaustive description in as unequivocal a statement of identification of its fundamental structure as possible (Colaizzi, 1978). In general, the themes that emerged were: self-identified growth and development, continuous reflection, metacognition, high expectations for addressing challenging tasks, interdependence, accountability, and supportive environment. Therefore, the fundamental structure of learning in community, as perceived by these participants, is a self-recognized transformative development resulting from being engaged in intentional mental processing before, during, and after being challenged with and held accountable for addressing complex, meaningful tasks in an interdependent and supportive environment over time. This complex statement gives rise to a multitude of possibilities of exploration with implications for educators and students. This article addresses the impacts of learning and community in this transformative experience.

Learning in community made a difference as students moved toward becoming intentional learners—learners with a purpose. In addition to becoming intentional learners,

they developed into intentional members of a community. Through their words, collectively, participants identified two critical concepts related to experiencing a community of learners: (1) a developmental process sprouting in resistance, growing through a reluctance to step outside their comfort zones, flourishing in reliance on others within the community, and eventually taking root in a responsibility not only for self, but also for others in the community; and (2) key factors that contributed to movement through the process. The words of the participants illustrate each stage and describe supporting factors critical for movement through the stages as they developed into intentional learners and interdependent community members.

Resistance

The leadership program is developmental in nature. The learning experiences created were the result of many years of experience in helping others grow and develop. It was surprising how much our expectations of interaction and participation conflicted with those of the students. Although not always overt, the data reveal an internal resistance with which many students struggled and the critical components of the learning experiences necessary for their growth—being held to expectations of participation and interaction.

All students in the NSF SFS program had enjoyed high academic grades throughout high school and college. They were comfortable and secure working alone to complete requirements for classes:

> *I have largely been working on my own for most of my life. In elementary school, junior high, high school, and the first few years of my undergrad, I did very little group work. My preference is definitely to be safe and secure in my room working alone.*

They expected the leadership program to be more of the same:

> *I came into leadership training thinking that the class would be similar to other college courses. I anticipated that I would be able to perform my work largely in isolation. I never expected to become part of a tight-knit group. I had no desire to do so. I preferred to work alone—or at least I thought I did.*

Both the expectation of and preference for working alone were common and in direct conflict with the highly interactive nature of the leadership class. Starting with the first minutes of class, students were expected to interact with others, and this was a source of frustration as revealed during the focus group interview:

> *Leadership class was definitely a struggle for me in the early goings. I was not used to working with people on such a close and continuing basis. I felt very scared to have to rely on others for academic support and just support in general.*

Not only had they been successful working alone, but many also had previous negative experiences with group work that caused them to consider such interactions burdensome:

> *In the past, the bulk of my work inside and outside of class was done alone. I was concerned with my own performance primarily. I generally did not value or want group work because I viewed group work as an impediment—extra work that I would end up doing alone.*

As students confronted their beliefs and understandings about learning and teamwork, it became a challenge to expose them to new experiences that conflicted with what they thought they knew—to help them begin to realize that becoming an intentional learner requires hard work. The ultimate goal was to develop interdependence within the community so they would experience the power of learning with others, but the first step was to set the expectation for participation within and responsibility to the community:

> *The most important part of leadership class for my development was the interactive, participatory nature of the class. In the vast majority of my other classes, I show up for class, jot down a few notes, do the homework and take the tests. I am not forced to share thoughts of my own or involve myself with others. Indeed, most college classes allow students to work in isolation, which is a grievous error.*

> *[In many groups] the people in the group do not feel like it is their position to contribute to the group. This is something that I have realized more and more as I have been a part of the leadership class. It is a stark contrast to most of my experiences with groups. The class is designed so that each member knows that it is their responsibility to participate.*

Since each student is expected to contribute, it is necessary to establish a safe environment early in the semester where all will be willing to speak. To encourage participation, every meeting begins and ends with a go 'round—one of our favorite interaction strategies. The facilitator poses a question or a notion to elicit a response, and after individual think time, each person is expected to speak. During the focus group interview, participants were reflecting on those first classes and the early go 'rounds. One participant recognized the extent to which his willingness to speak up had been influenced by the go 'rounds: *"I think the go-rounds actually had a pretty good effect. ... We were all given equal expectations of participation and forced participation."* Once students understood the expectations of interaction and knew they had a safe place to practice, they became more willing to participate, even if a bit reluctantly.

Reluctance

All learning takes time, especially when that learning conflicts with previous experiences. During this stage, as students continued to confront their beliefs about teamwork, it was necessary to plan activities that would allow them to experience the value of learning in community. The critical components during this period of reluctance seemed to be working together over time, cooperative interactions, and communication.

> *One of them [factors contributing to growth] was just coming into the [NSF SFS] group and just the culture of it. The culture was to speak up, it was to communicate, it was to work together, and I guess I felt that desire to conform. Not just to say that it was peer pressure but just because I could see*

> *the value in doing so and so I guess I made a conscious choice that I was going to try and towards the beginning of the first semester it was quite difficult. I did struggle to speak up...*

In addition to being reluctant to speak up, an entry from a journal mid-semester illustrates the cognitive dissonance experienced and the struggle for resolution:

> *I am largely accustomed to only being responsible for myself. I see my own performance as distinct from that of other people who work with me. While I would not hesitate to help a group member out, I still do not see our performances as one. I therefore need to adjust my thinking somewhat to better reflect the true nature of group work. If I only appraise my own part, I will get a skewed image of the group's success or lack thereof.*

Causing learners to confront their own beliefs is only the first step in helping them learn. As they begin to think and believe differently, it is necessary to provide them with experiences that conflict with past experiences. This happened as individuals participated in team activities meant for interaction, fun, and getting to know others.

> *Ever since Wednesday, I've been thinking about the group activity we did with the poker chips, surviving the cave. I enjoy those activities especially because not only are they fun, but I think I get to know my classmates better. I believe it creates greater group cohesion and it builds the community aspect.*

As students did get to know one another and began to feel more comfortable, the focus of the interaction shifted to interdependence.

> *Our cooperative group mentally developed due to the fact that we were not made to compete against each other in leadership class. In fact, our performances as a group were appraised quite regularly and our individual performances quite rarely. We were taught that we all needed to do well or none of us did well. Consequently, our group started working with each other instead of competing against each other.*

Our desire was for students to realize the power possible from being a part of a community. These thoughts during the focus group interview summarize the critical components participants valued during their growth through the reluctant stage on the journey of becoming intentional learners and community members:

> *For sure, the way the three hour class periods are spent, because they're spent interactively talking most of the time, performing activities that are fun and then after you're done with the activity, talking about everything that happened in the activity, that was something that I never would have done before and that was probably the most valuable key as a group, was definitely the most valuable thing that we did. Just having to talk about everything, analyze what other people did, analyze what you did, try to do that, and being held accountable for what you say. Like you might offend somebody in the group and then you had to deal with that, having other people do that too.*

The students had experienced teamwork as opposed to group work. They had come to value the interactions during class, and were beginning to understand the importance of cooperation. As with all deep learning, the next challenge was to transfer that new understanding into situations outside class. During the focus group interview, as participants were reflecting on their growth, Joni's words illustrate the transfer:

> *I think the turning point, I may have written about this, but if I didn't, it was early on in the semester and I realized ... people in [the NSF SFS program] sat together and helped each other and in that way our group wasn't just confined to the leadership class but rather exceeded that class, went beyond it, transcended that, and I guess at that point I felt like I was part of the group and felt like there was a group, it wasn't just something that was imposed on us.*

It appeared the students were beginning to rely on the community they were developing.

Reliance

The transformation from reluctant participators to dedicated members of the community of learners happened at differing times and in response to a variety of activities or circumstances. For some it was a gradual realization of the collective power:

> *I've realized (slowly) that you can't do everything yourself. Teams can accomplish way more than individuals and followers can lead just as well as leaders (and can be just as essential).*
>
> *Eventually I came to struggle less. I began to see the benefit of being a part of a group. I could turn to other people if I had troubles and vice-versa. I quickly came to see that I would have eventually faced group work anyway.*

> *No job—or at least no rewarding job—allows a person to work in total isolation. Sooner or later I would have had to become part of a team.*

For Cal, it was possible to recall the specific day he internalized the value of working with others:

> *I always considered myself a pretty independent person. I usually keep to myself. But one thing I've noticed today is that I am energized after meeting with familiar faces. I think there is a bit of an adrenaline rush during and after any conversation I have with them. This was really a revelation to me today because I have always preferred to be a pretty independent person, not needing or asking for much from anyone.*

As students confronted their own beliefs about learning, it was necessary for us to do the same. In spite of their initial struggles, we held on to our belief in the power of learning in community. We were determined to provide them with experiences that would overcome past frustrations:

> *I became a better team player through much experience to group work. All of the leadership class activities—of which there were several per class—involved a great deal of group work. I was given more time to develop cooperative skills, whereas other classes would perhaps have just one group activity for an entire semester. I see now the reason my previous group experiences were not positive—I lacked the practice that leadership class has given me.*
>
> *Leadership class has afforded me more opportunities to work in the company of others. I applied myself during those opportunities toward becoming more outspoken. My work paid off, and I have gained interpersonal skills. I now know that if there are characteristics that challenge my leadership development, I can work to improve those proclivities.*

In retrospect, during the focus group interview, as participants reflected on experiences different from previous group work, they were able to identify that it was more than just time spent in interaction that was critical for their development. It was time spent in meaningful interaction, learning together:

> *More than just spending time together. I think it was the fact that we were actually studying material and being taught material, how interactions*

> *are supposed to happen. I'm sure some of it was just the fact that we grew accustomed to each other, but I think for the dynamic to truly work, we had to be aware of what the proper way for a group to function is.*

It was a pleasant surprise that participants recognized the importance of learning "how interactions are supposed to happen." Much time was invested in helping students learn effective interactive skills—active listening, providing support and encouragement, asking good questions, offering justification, etc.—and expecting them to practice those skills. In addition to learning about effective teams, participants also distinguished the importance of engaging in meaningful, challenging activities together:

> *Probably also as a group, when you have to get through a lot of things together, we're doing the semester projects, interview projects, papers. We're doing all this similar work, it's all hard, so we had gone through all these things together so we automatically had all these bonds between each other. Even if they weren't the heaviest memories we still did them, got through them, as a group.*

For us, the most important evidence of deep learning is the ability of learners to transfer their learning into new situations. Once again, the words of one participant provided the evidence of such learning:

> *I had much trouble and my level of participation was low the first few sessions, but I wanted to do better because I saw my classmates, I saw that they were doing better and I think they encouraged me to do better and so I wanted to do better, I wanted to speak up and eventually I kept doing so until I got in the habit and it came easier and of course that filtered into my character, or personality, so I was able to use those skills in avenues, such as job interviews and meeting new people. And I guess that increased level of social activity is to explain the skills I have picked up.*

It was clear that students had become intentional learners. They understood the importance of diligent practice and deliberate transfer required before new skills could benefit them as professionals. They had taken responsibility for their own growth and development. They

were ready to move into the next stage in their development as interdependent members of a community.

Responsibility

By the end of the second semester previous attitudes and values toward group work had been replaced with a truer sense of community, as revealed by Jodi, *"I realize I feel pretty strongly about the power of group cohesion. Committed individuals can and will put group needs first."* Individuals had learned to value not only the result of working with others, but also the process:

> *No longer do I look at group activities as a burden, I look at them as a challenge because not only can I make a difference, when what I do works out, but the group works so well that the accomplishment isn't so much in the final product as in how we created it.*

It was during the focus group interview that participants realized just how much their beliefs, values, and skills related to learning in community had developed. The words of the participants provided evidence that they had taken responsibility not only for their own growth and development but also for those in the community:

> *I guess the biggest example that just came to my mind is how we're approaching the job searching stuff. That is difficult, there are consequences of the whole process. ... I haven't really seen competitiveness. I've seen people helping each other out and I don't feel the need to be competitive with them at all here. I was the first person, I was first through the NSA screening, and people are kind of following me through that process and I don't feel like, I shouldn't give them hints or whatever, I feel like I should help them so they can find success in that area, too.*

Once again, they were able to transfer their new understanding of community beyond the classroom:

> *It has been absolutely imperative that I have friends I can count on this year for a variety of reasons. I imagine having people I can depend upon*

> *will be even more important in the working world. I want to have as strong a support network in the field as I do here.*

Having experienced learning in community, the participants understood the power and were anxious to seek out similar conditions for their future.

Our goal had been to develop a community of learners with a focus on both *learning* and *community*—with a focus on individual development as interdependent community members. These words provide evidence of the power possible through learning in community:

> *I always knew that I liked being part of a team, especially in sports, but never really knew why. I guess now that I look back on it, I liked the feelings of comradery. I liked being part of a team where I could depend on others and they could depend on me to make that catch or tackle. What I now realize is that I really enjoyed the interdependence that leadership created. We all empowered each other with words of encouragement to perform better. I could empathize with the person next to me. We were honest with each other and showed each other respect. All of these were merely components of an empowering leadership relationship. This course has allowed me to identify one of the main reasons why I enjoy being part of a team. This goes to show that empowering others is vital.*

In addition, students not only were beginning to internalize the importance of true community, they also were transferring their understandings to their futures as articulated by Cody:

> *I think a sense of community in the work environment is essential. This sense of community can only come from people actively working to show that they care about the people around them, and that they are people who can be trusted. These things take time.*

Indeed, these students were beginning to identify notions of true community, which have some differences with a more typical meaning of "community."

In our culture, the word community has been applied to almost any group of individuals—a town, neighborhood, church, professional organization, social group, dorm, or

residential building—regardless of how well or poorly those individuals communicate and interact with each other. Peck (1987) would argue this is a false use of the word:

> If we are going to use the word meaningfully we must restrict it to a group of individuals who have learned how to communicate honestly with each other, whose relationships go deeper than their masks of composure, and who have developed some significant commitment to "rejoice together, mourn together," and to "delight in each other, make others' conditions our own. (p. 59)

Traditional learning communities likely fall along a continuum defined by Peck's notion of the false use of community on one end and his meaning of true community on the other. The data from this study indicate that the ultimate goal for a community of learners ought to be to reach true community. The participants could readily identify and articulate how their experiences of learning in community had transformed them as learners and contributors to the learning of others. They could identify stages in their own transformation and recognize the critical factors. This has important implications for post-secondary education.

Discussion

Just as we would not expect a handful of acorns to become a grove of oak trees in one season, neither can we expect naïve students to mature into intentional learners within an interdependent community during a single semester. Growth and development take time! We did, however, during one year, observe a small group of students sprout in *resistance* to participation and interaction, grow through a *reluctance* to step outside their comfort zones, flourish in *reliance* on others within the community, and eventually establish roots in *responsibility* not only for self, but also for others in the community. As depicted in Figure 1, students appear to make steady progress toward becoming intentional learners, but the stages are not discrete. As learners continue forward progress, they may occasionally backslide.

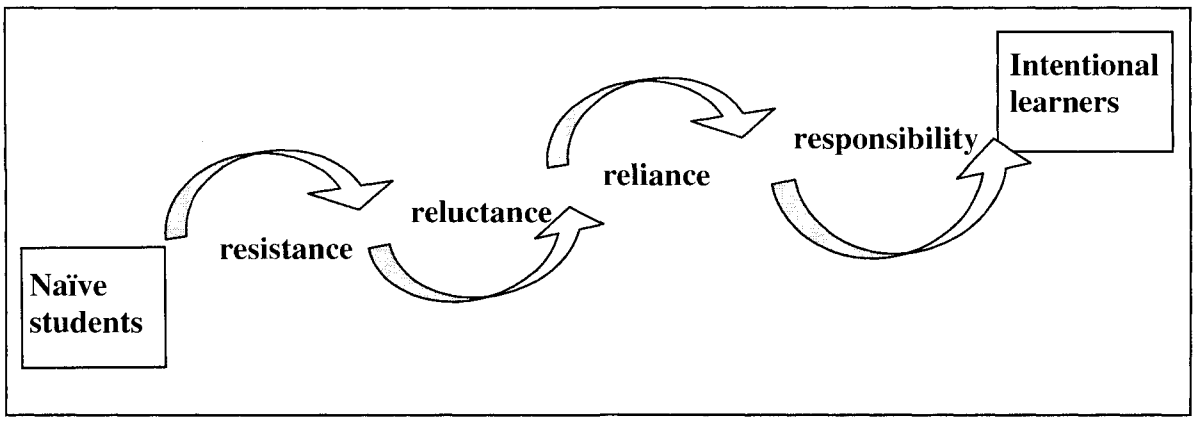

Figure 1. Developmental stages as naïve students become intentional learners

Awareness of these developmental stages will help those who are in charge of learning communities, or have the opportunity to work with a group of students, structure experiences that will move students through the process of becoming intentional learners who support and encourage the development of others.

Students enter post-secondary education with a myriad of experiences. Some of them have been successful working in isolation, others have excelled competitively, and many have experienced working with others. Whether good or bad, those experiences form the foundation for each individual's beliefs about learning. It may be necessary to help students confront such beliefs to change their paradigms of thinking and learning. Students need to understand that although "learning is indeed a private, internal process that takes place in the head of the learner" (Leamnson, 2000, p. 37), much learning does occur through social interaction (Brandt, 1992; Caine & Caine, 2001). This means more than just having students practice and recite terminology together (Brandt; Caine, & Caine; Wiggins & McTighe, 1998). It means providing them opportunities to make their implicit knowledge explicit—giving them the chance to explain their thinking to each other, listen to each other, and help

each other explain. This kind of learning does not occur automatically when students are put together—it must be nurtured.

Just as a seed is vulnerable when it begins to sprout, so, too, is a learner very fragile when being introduced to a new way of learning. To reduce resistance during this initial stage, not only is it important for educators to set expectations of participation and interaction and to hold students accountable for meeting them, but it is also critical for them to provide a supportive environment to nurture the growth. Short, non-threatening activities—icebreakers, go 'rounds, warm-ups, mixers, etc.,—provide opportunities for interaction while students learn more about themselves and others. Especially during these early interactions, those in charge must foster an atmosphere of trust and mutual respect by modeling appropriate behaviors and insisting students engage in supportive actions. As students perceive a safe environment and know they will be held accountable for participation and interaction, their resistance will give way to a reluctant engagement.

During this reluctance stage it is critical for educators to provide numerous opportunities for learners to work together over time. Each activity must be planned purposefully to allow the learners to experience the value of social interaction, but the experience alone will not result in learning. "Learning, as David Perkins points out, is a consequence of *thinking*—it's less the doing than the thinking, the reflecting on that doing, that counts" (Leamnson, 2000, p. 37). As the reluctant learners confront their own beliefs about working with others, reflection becomes critical to cultivate growth. They need to engage not only in personal reflection, but also reflection about team functioning. It is important to allow time for communication—to discuss what happened, why it happened, and how to be more productive in the future. As students engage in meaningful reflection,

they will begin to identify differences in teamwork and typical group experiences from their past. Coming to value these interactions will reveal to them a deeper meaning of the importance of cooperation and will move them into the stage where they begin to rely on one another—an important step toward true community.

During the next two stages where students begin to rely on one another and then take responsibility for each other, the focus of all interactions should be on learning, practicing, and reflecting—learning about learning, learning about self, learning about and practicing effective interactions, learning and practicing the skills and knowledge critical for professionals and citizens, and, of course, continuously reflecting about the meaning and implications of all experiences. As post-secondary educators, it is easy to accept the responsibility for helping students learn about a specific discipline, but rarely is time taken to help students understand learning at a deeper level. Even more challenging is the notion that students must be taught how to interact effectively and be given opportunities to practice and develop such skills. Without these skills students will take little more from, nor give to, the community of learners than the oak tree, without a well-developed root system, can take from or give to its environment. Not until learners struggle together will they begin to experience true community.

Conclusion

Supporting students in becoming intentional learners while experiencing true community may well be the next important challenge for those in charge of learning communities in higher education. Providing students with experiences to develop and practice skills in learning and reflecting will provide nourishment for them to flourish as

productive professionals and contributing citizens in the interdependent world of today.

Community does, indeed, matter!

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CHAPTER 6. DEVELOPING RESPONSIBLE LEARNERS: THE POWER OF INTENTIONAL MENTAL PROCESSING

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Abstract

The individual who thinks intentionally and deeply about all learning experiences to take the learning beyond the acquisition of knowledge is an anomaly among college students today. This article examines the findings from a phenomenological study of eight students involved in a community of learners focused on developing responsible, life-long learners. Participants identified both the myriad ways the learning opportunities had been structured to engage them in thinking and the impacts of the resultant mind work about their learning. The data reveal as a result of educators doing more asking than telling, that students learned to ask and answer challenging questions on their own, thus developing intentional mental processing as a habit of mind.

Introduction

Among most college students today, the individual who thinks intentionally and deeply about all learning experiences and opportunities is an anomaly. Typically, students are entrenched in the paradigm of learning where they come to class expecting to be told exactly what to do and how to think. They check assignments off a list to meet the minimum requirements for the grade they desire. Meeting the challenges of tomorrow, however, will

require life-long learners who intentionally and routinely do the deep thinking necessary to solve problems yet to be defined.

If learning is "biological brain change as well as brain use" (Leamnson, 2000, p. 37), it is the individual who must do the mental work to cause learning to happen. This private process that takes place in the mind of the individual learner has been referred to in numerous ways including: processing (Johnson, Johnson, & Smith, 1991), active processing (Caine & Caine, 1994), reflection (Erlauer, 2003; Wanket, 2005; Wiggins & McTighe, 1998), higher-level thinking (Chuska, 1995), critical reflection (Brookfield, 1995; Mezirow, 1991), and metacognition (Huitt, 1997; National Research Council, 2000). This article explores a notion that incorporates the gist of these and adds a critical concept for supporting deep learning: ***intentionality***. This new way of describing the mental work required for learning became clear to us in our study of the experiences of students in a program designed to develop responsible learners. We realized that by taking charge of their own learning students had developed ***intentional mental processing*** as a habit of mind.

Background of the Study

Recently, we had the opportunity to combine our knowledge of human learning and the principles of learning organizations into a program for students at a land-grant university in the Midwest. As part of the National Science Foundation (NSF) Scholarship for Service (SFS) program, students are awarded full scholarships in exchange for two years of federal government work following graduation. The NSF SFS program is an interdisciplinary effort involving students and faculty in computer engineering, computer science, mathematics, political science, management information systems, and education. Fellowship recipients

participate in a two-year leadership development program in addition to the requirements of their majors. The program is designed with an emphasis on: (a) learning about learning, (b) learning about self, (c) purposefully developing community, (d) deliberately practicing and refining skills to support and encourage the growth of self and others, (e) practicing metacognition, and (f) engaging in intentional mental processing. According to the students, the knowledge, skills, and dispositions desired as outcomes of this program are certainly outside the experiences and comfort zones of their previous educational encounters. By the end of the first year, it was clear students not only were taking responsibility for their own learning, but they were also developing into a productive community of learners. Our passion for helping others learn sparked the need to discover specific factors contributing to this occurrence.

Methodology

Methods

This was an ideal phenomenological research study because of our desire to understand, from the words of the participants, key factors that contributed to their learning and development (Colaizzi, 1978; Moustakas, 1994). We experienced the phenomenon of learning in community with the participants, and witnessed their growth and development into avid learners and worthy team members. Therefore, it was imperative that we acknowledge our own beliefs, biases, and assumptions to permit the voices of the participants to be heard. Engaging in the phenomenological epoch process (Moustakas) allowed us to identify our specific notions about learning and community, and set them aside to focus on the lived experiences of the participants.

Data collection and analysis

Although the eight participants in the study were in the fourth semester of the NSF SFS program, the research was designed to focus on their learning experiences during the first two semesters. Consistent with the goal of phenomenological research to collect rich, meaningful information that accurately depict the participants' interpretations of the phenomenon (Merriam, 2002), data sources included a focus group interview midway through the second year comprised of all eight participants, individual interviews, journals, and written self-assessments. All interviews were audio taped and transcribed verbatim. Data were analyzed and interpreted following the steps suggested by Colaizzi (1978): read all data, extract significant statements, formulate meanings, organize into clusters of themes, integrate into an exhaustive description, and formulate the exhaustive description in as unequivocal a statement of identification of the phenomenon's fundamental structure as possible. Data were validated by returning the findings to the participants and asking for feedback. Also known as member checking (Merriam, 2002), this step provided no new data.

Findings

True to phenomenological studies, the purpose of this study was to allow the essence of how the participants experienced the phenomenon of learning in community to emerge from the words of the participants (Creswell, 2003). The last stage in the analysis of the data is to organize the themes into an exhaustive description of the phenomenon and formulate the exhaustive description in as unequivocal a statement of identification of its fundamental structure as possible (Colaizzi, 1978). The research themes that emerged were: self-identified growth and development, continuous reflection, metacognition, high expectations for

addressing challenging tasks, interdependence, accountability, and supportive environment. The fundamental structure of the phenomenon of learning in community, as perceived by these participants, was a self-recognized transformative development resulting from being engaged in intentional mental processing before, during, and after being challenged with and held accountable for addressing complex, meaningful tasks in an interdependent and supportive environment over time. This complex statement gives rise to a multitude of possibilities of exploration with implications for educators and students. This article explores the impacts of intentional mental processing in this transformative experience.

While it is not surprising that students would identify intentional mental processing as being key to their learning, it was unexpected that they identified the number of ways we had structured experiences and expectations so they had to think. Leamnson (2000) has identified learning as a very private matter that happens only in the mind of the individual. This means external agents cannot actually cause learning, but can only influence the likelihood of it. Therefore, faculty do have a responsibility to guide and direct the thinking and actions of students, but it is the individual learner who "must think deeply and repeatedly about something" (p. 37) and in multiple ways before learning occurs. In this article we uncover, through the words of the participants, the kinds of expectations and experiences that contributed to the development of intentional mental processing as a habit of mind. In addition, we provide insights that can be used by other faculty who seek to have their students become independent, intentional learners. We do this by first explaining the general expectations that made a difference for engaging students in thinking: changing habits, thinking, coming to know self, and engaging in metacognition. Next, we describe specific

experiences and expectations related to intentional mental processing, thereby providing insights for those in charge of developing responsible learners.

Expectations

We view the leadership program in this project as developmental in nature. According to Douglas Robertson (2001), development is a process of adding something, such as thoughts, feelings, or behaviors, to what was there already and, as that something is integrated, having the whole that it is joining, such as a perspective or frame of reference, be transformed. Students enter the NSF SFS program with different sets of thoughts, feelings, and behaviors based on unique experiences. We do not expect that they will all progress in the same way or at the same rate. We do, however, expect all students to take responsibility for their own growth and development—that they do their own thinking and own their choices of actions. We understand this as becoming intentional learners. Every learning opportunity is planned with that outcome in mind, and students are reminded continually that the assignments are for them, not the professor. The words of the participants reveal differences in our expectation and the kinds of expectations they were accustomed to meeting in order to get a desired grade:

> *In the vast majority of my other classes, I show up for class, jot down a few notes, do the homework, and take the tests. I am not forced to share thoughts of my own or involve myself with others. Indeed, most college classes allow students to work in isolation which is a grievous error. Leadership class is dramatically different. I am required to voice my own values and perform teamwork. I am not allowed to just sit back and listen. I must synthesize my own thoughts and express them.*
>
> *When we were given the assignment I dreaded it. I knew it was going to be hard and that it was not something I could just do and get over with.*

Without a doubt, meaningful learning is hard work, and we do expect students to fully engage in the hard work required for deeper learning. Our overall expectation that students take responsibility for their own growth and development is more fully clarified via the specific expectations of changing habits, thinking, coming to know self, and engaging in metacognition.

Changing habits

Most students (and many faculty) are deeply entrenched in the paradigm of learning where students come to class expecting to be told exactly what to do and how to think, check assignments off a list, take tests that measure how much information has been stored in (short-term?) memory, and then dump the information before moving on to the next class. The good grades received from such practices do not always translate into abilities to solve ill-defined, real-world problems students will face the rest of their lives (Huba & Freed, 2000). Faculty have a responsibility to help students break through that paradigm and to learn to do the thinking required to become intentional learners, but breaking old habits of being told exactly what to do and then checking things off a list to meet requirements for earning a grade does not come easily:

> *I have been having quite a bit of trouble with the interview assignment. I sort of wish there were clearly defined guidelines on what we are supposed to learn, because I'm used to that. This is sort of stepping outside my comfort zone, having to decide what I want to learn and all.*
>
> *I feel much more comfortable now in these settings than I did in the past, and the reason is because I have had numerous opportunities to practice them. I think an important distinction is that I was not forced to do so once or twice because of assignments, after which I could breathe a sigh of relief and never worry about doing so again. Knowing that it would be more or less a weekly requirement to share my personal feelings with a larger group, I realized that it was not something I just had to get through, it was something I had to become better at.*

To be sure, breaking old habits is not easy and it does take time. The time invested, however, reaps rewards as students begin to realize that learning is, in fact, a developmental process:

> *Over time, I'll think of things that I couldn't today, or later we'll learn stuff that I can apply that I didn't know to think about today. I think that is one thing about our class that is really important, and pivotal to our continual growth and learning. By assigning us to go back and look at things we've done or somewhat completed, reflect upon them and then apply new things to them we are learning more and getting more out of topics and materials. We don't just read a chapter and then never go back, we are required to apply those things learned to new assignments later on. It's a great way to commit those ideas, principles* and facts to memory...

Those words written in a journal entry during the last week of September reveal that Kim was beginning to internalize two important concepts about deep learning—it is never finished (developmental) and thinking is critical.

Thinking

As referenced previously, it is not the doing that causes the learning. It is the thinking about the doing that causes learning (Leamnson, 2000). The challenge, then, for faculty is to help students develop a habit of thinking about all learning opportunities. The words of the participants reveal their understandings that we do expect them to engage in thinking before, during, and after class:

> *Coupled with the knowledge I have gained about how I am best able to prepare for such things [interactions during class] (journaling, jotting notes, some kind of critical thinking beforehand), I now feel much more at ease sharing things in this particular group.*
>
> *In this activity, we were required to discuss something at length about ourselves that we wanted to change. Because I tend to speak in a very concise manner, I struggled with words a bit at the end. However, I learned more about myself by actually having to articulate my thoughts to other group members.*
>
> *Ever since Wednesday, I've been thinking about the group activity we did with the poker chips, surviving the cave...*

As students do begin to change their old habits and being thinking before, during, and after classes, as they begin to develop reflection as a habit of mind, our next challenge is to get them to engage in deeper reflection—to move them toward intentional mental processing.

The goal of intentional mental processing must always be for deeper thinking and ultimately deeper learning. It is not just the final stage in a lesson or a time of reflection following an experience (Caine & Caine, 1997). It includes thinking critically, asking and answering probing questions, exploring alternative perspectives, solving real-world problems, and searching for big ideas and broad applications of new concepts. Intentional mental processing leads to deeper understanding, relevant insights, and mastery of the discipline. The following excerpts from students' journals reveal that they were beginning to do the type of thinking required for intentional learners:

> *I recognize the worth and impact this project had on me and that is the start to further growth and understanding. I learned that there is so much out there to be learned and I understand that in the grand scheme of things there is so much I do not yet understand.*
>
> *Expressing beliefs and values is more challenging than just thinking them. It takes more time and effort. You are discussing/reflecting on an event in the past and must then make future decisions based upon your new decisions (or affirmed beliefs). You can't be stagnant, you have to try and learn from the past and all the thinking that you did afterwards. The potential for growth and gaining a better understanding of yourself is huge; you just need to make sure you take advantage of that.*

As Marti's words suggest, intentional mental processing leads to insights not only about experiences, but also about self.

Coming to know self

Once students become accustomed to a deeper kind of reflection, we try to "help them take advantage" of this opportunity to learn more about themselves by moving them

deeper into intentional mental processing—investment of resources in personal analysis, critical thinking, and application of new knowledge to daily living. The next step is introspection, a detailed mental self-examination of feelings, thoughts, and motives:

> *Fortunately, reflecting regularly has put me better in touch with how I am feeling. I realize I have an innate inclination to withdraw. Ergo, I should be able to fight the urge and keep making forward progress.*
>
> *I did not have a great sense of what my own values were in the early stages of my leadership training. I rarely ever stopped to reflect upon my learning experiences. I just moved on from one experience to the next without a second thought. As a result, my personal growth was very slow if not nonexistent.*

As students come to understand more about themselves, they seem to like the control they have over their own growth and development. They become more willing to manage their learning and to own their choices and behaviors—to become the intentional learners they need to be:

> *My writings allowed me to get a handle on why I think and feel the way that I do. Plus, journals were an outlet for me to scrutinize my strengths, my weaknesses, my success, and my failures. Once I had that information, I could begin to work on bettering myself.*

Eventually they begin to think more about their own thinking:

> *Interestingly enough... I have discovered something about myself. I have always thought of myself as a traditionalist in many ways. I never pictured myself as one of those new age thinkers... Not that I find anything wrong with the new way of thinking about things, but it is really not the way I thought I thought about things.*

According to Huitt (1997), metacognition, thinking about one's own thinking, is an essential skill for learning how to learn. That supports our notion that intentional learners *must* practice metacognition as a habit of mind.

Engaging in metacognition

Apparently, students recognized our expectation that they practice metacognition:

> *Actually this, if I recall correctly, is a big objective of the whole leadership class idea. Most people (myself included) don't really think enough about their thinking. This can, and does, result in people doing a lot of things for reasons they're not really sure of themselves... I really think I have a much better understanding of why it is important to think about your thinking than I did before.*

Metacognition means more than just thinking about our own thinking. It requires the wisdom to know one's ignorance and how one's patterns of thought and action inform as well as prejudice understanding (Wiggins & McTighe, 1998). These words of a student from a self-assessment provide evidence of this kind of thinking:

> *I think this process [metacognition] represented a gradual growth in my awareness of my unawareness. What I mean is that I think I began to realize that I didn't think enough about my thinking about the world around me... Near the end of the semester, I no longer seemed to be thinking as much about what we were doing as about what I was thinking. Not to say that I didn't have thoughts about what we were doing, but often I'd stop and think about where that thought was coming from.*

Indeed, the analysis of the data confirmed our observations that by the end of the first semester students were beginning to question their old paradigms of learning and to embrace a different understanding of what it means to learn. They were well on their way to taking responsibility for their own growth and development. Going back to the data revealed numerous specific experiences that contributed to this phenomenon:

> *We have used reflection in a number of ways. The most prominent way is our journal, but we have done other reflection in class, such as jotting down thoughts after an activity or coming up with praise and suggestions for the second year students' security sessions. Throughout all of these activities, I have realized how much my understanding of the topic at hand improves after I have completed some reflection. Often the reflection brings up new questions*

or ideas that I had not originally considered, and these lead to the possibility of even deeper understanding.

As stated previously, similar statements from the participants revealed just how much our own habits of mind related to thinking causing learning had influenced almost all of our actions and behaviors related to students and their learning. All our expectations did, in fact, require thinking. Our ultimate goal was for that thinking to evolve into intentional mental processing as a habit of mind. All learning opportunities were planned with that end in mind. The analysis of our data, in the words of the participants, revealed the following kinds of experiences that seemed to have the greatest impact on moving the students toward our goal: go 'rounds, team activities, dialogues, application of skills, self-assessments, and journals.

Experiences

For each kind of experience, first, we provide a brief explanation of the learning opportunity. Next, we offer illustrations, from the voices of the participants, to give insight about the impact for helping students develop intentional mental processing as a habit of mind. Finally, we offer suggestions for post-secondary educators in charge of student learning.

Go 'rounds

To encourage both thinking and contributions early, we start and end every meeting with a go 'round. This is one of our favorite interaction strategies. The facilitator poses a question or a notion to elicit a response, and after individual think time, each person is expected to speak. A volunteer is selected to start the go 'round and to determine the direction around the circle following the first response. If an individual is not ready to speak

when it is his/her turn, that person may pass until everyone else has spoken. Discussion is discouraged during the actual go 'round to provide all individuals the opportunity to reveal their thinking publicly without fear of being ridiculed or judged.

During the focus group interview participants were reflecting on those first classes and the early go 'rounds. One participant recalled how difficult is was to meet the expectation of speaking, *"When you required us to talk, I was scared to say anything. I would always pass; well, not always, but a lot of the times."* Another one recognized how much his willingness to speak up in other groups had changed. When questioned about the reason, he replied, *"Having go 'rounds every week, you know, always having to say something once or twice every class."* Kelly valued those go 'rounds that gave him the opportunity to hear what others were thinking because it often gave him more to consider:

> *... if we have an idea we've been talking about all class, I might reflect on it at a certain angle and that's another reason I like the go-rounds. Hearing what other people [are thinking], I always like those go-rounds that say 'what are you going to think about more as a result of this class, this particular session', and just hearing what other people got out of it. Sometimes it's completely different than what I did, and it gives me something else to think about that I wouldn't have started thinking about otherwise.*

As students practiced the thinking required to express thoughts openly, they learned to think more deeply, to challenge the notions they were studying:

> *I have since become convinced that I am better off to form my own leadership philosophy rather than wholly adopt someone else's. That realization has caused me to think more critically about what I am learning. For example, in the last opening go-round I questioned whether a person actually moves through stages of tolerance towards enlightenment as Exploring Leadership suggests. Seemingly, intolerance is a learned behavior. In the beginning of the semester, I did not think nearly so critically. I accepted what I read and heard at face value.*

Helping students move from being afraid to voice their opinions to the group to being willing to critically challenge concepts they have studied takes time. Be patient. Set ground rules for go 'rounds and hold everyone to them. Ground rules we have found most useful include:

- Each person has the opportunity to talk without anyone responding.
- Honor each person's thinking.
- An individual has the right to pass. If one chooses to pass, go back to that person after the go 'round has completed the circle.
- No interruptions.
- No sidebar conversations.

Students will watch the facilitator closely; therefore, it is important to model expected behaviors. It is especially difficult, as the facilitator, not to respond to contributions, thereby breaking the first ground rule. Instead of commenting as each person finishes, address them by name and thank them. This honors the response and indicates that the go 'round is moving on. Only when necessary or helpful, ask probing questions for clarification or to redirect.

The question or the notion posed to elicit a response will determine the type of thinking for the student. It is important here to be purposeful. During the first go 'rounds our purpose is simply to get students to speak. It is important to keep the contributions as non-threatening as possible—so everyone will have a response and no one else can suggest it is wrong. Our first one is usually, "Tell us your name, where you are from, and something you are pretty good at doing." This allows everyone in the group to start gathering information about their peers and it allows us to guide the next activity toward what they know about learning—"How did you learn or get good at what you shared?" From this point on, all the

go 'rounds should serve a purpose and engage students in the type of thinking you desire of them.

Team activities

For years the study of learning was dominated by a psychological view that focused only on the individual and his/her thinking alone (Brandt, 1992), but current cognitive scientists consider learning to be largely a social process (Caine & Caine, 2001). Undeniably, much learning occurs through social interaction. This notion of learning through social interaction means more than just having students practice and recite terminology together (Caine & Caine, 2001; Leinhardt as highlighted in Brandt, 1992; Wiggins & McTighe, 1998). It means providing them the opportunity to make their implicit knowledge explicit—giving them the chance to explain their thinking to each other, listen to each other, and help each other explain. The words of the participants confirm the notion that it is not the activity itself (the doing) that causes the learning as much as it is the reflection (thinking) following the activity that causes the learning:

> *At the beginning of the semester I was pretty skeptical of the idea of doing icebreaker games for leadership training. I had never had an experience where I left an icebreaker game feeling like I had gained anything (maybe with the exception of the names of the people in the group) from the experience. For the first time in my life, I feel like I have learned from this type of small group activity... Each of these activities was designed to teach the members something about leadership, and each of these points has stayed with me. I believe this is true because I reflected on the activities.*
>
> *After reflecting on the exercise, I have learned a bit more about myself as it pertains to my contributions in a group setting.*

As team activities became more complex, students realized the value of discussion for promoting deeper thinking:

> *I also need to work in a group to be at my best. Of course, group work needs to come after I have had some alone time so that I feel adequately prepared. Once I am prepared, though being in a group allows me to bounce ideas off of others. In a group setting, my train of thought gets revised. I incorporate other people's thinking into my own thought process and a synergy takes place. I get a much broader and clearer picture when I am put in a team.*

Eventually they came to appreciate the importance of interaction not only during the activity, but also as they discussed interactions during the activity and set goals for the future. Kim's words reveal movement from simple reflection toward intentional mental processing with a focus on analysis:

> *For sure the way the three hour class periods are spent, because they're spent interactively talking most of the time, performing activities that are fun and then after you're done with the activity, talking about everything that happened in the activity, that was something that I never would have done before and that was probably the most valuable key as a group, was definitely the most valuable thing that we did. Just having to talk about everything, analyze what other people did, analyze what you did...*

Putting students into teams and telling them to work together does not mean that they know how to interact or that they will do so even if they do know how (Johnson, Johnson, & Smith, 1991). We have found three critical components for increasing the chances that having students work in teams will promote learning: (1) students must have a reason to interact, (2) they need to learn skills that will allow them to interact effectively, and (3) they must process the interaction. Therefore, it is important to be purposeful in planning interaction, to deliberately teach specific interactive skills, and to develop specific questions to guide processing.

As with go 'rounds, we like to start simple and plan for success. Our favorite strategy is the turn to your partner (TTYP), which we have adapted from the work of Johnson et al.

(1991). The purpose of a TTYP is to engage the brain of the learner. General steps for using this strategy include:

- Purposefully plan a question to cause the type of thinking desired.
- Allow time for students to formulate responses individually.
- Ask students to share their responses with their partner and listen to the response of their partner.
- Encourage students to reach toward a deeper understanding through discussion.
- Hold students accountable for their discussions by calling on them at random.

An appropriate interactive skill for students to practice as they engage in the TTYP is active listening. Since we expect students to practice effective interactive skills, we do take time to teach the skills—to help them understand our meanings and the steps involved for each skill. We also expect students to practice using the skills during class interactions and outside of class.

As students become comfortable working with a partner, we increase the number of individuals on the teams and the complexity of the activities. Regardless of the size of the team or the purpose of the interaction, it is critical to be always mindful that it is the thinking that causes the learning. Students must engage in thinking about the team activity and must learn how to engage in discussion about the interaction. Faculty must continue asking the questions that will cause the students to engage in the kind of thinking and discussion desired until the students learn to ask and answer their own questions. This does take time, but the time invested reaps rewards as students learn to engage in deeper discussions with less structure.

Meaningful discussion

According to Bandura (1977), environments that support and promote interpersonal interaction are more likely to result in greater reflection. The social interaction may increase motivation, prolong on-task engagement, produce more information, and stimulate additional ideas—all contributing to deeper thinking about the experience. Our challenge is to facilitate a discussion following the social interaction that encourages students to reveal their thinking to others. During the focus group interview participants revealed that they had come to value such discussions:

> *One thing that I would like to see not change is just how much group discussion there is on everything, whether it be the readings or creative writings or the go-rounds. I like the amount we just talk together.*
>
> *I kind of enjoyed the current events, talking about things, especially if you have something like an election going on, I think to hit that and really discuss what really is going on, takes yourself out of the classroom aspect and more into the world aspect, and anytime you do that I think it's effective...*

Not only did participants seem to value the discussion, they also came to understand that experiencing "interesting, intellectual discussions" may lead to an increase in confidence, resulting in a willingness to take more risks:

> *I feel like I've developed more confidence through the course of the program. It is the first real opportunity I've had, or at least taken advantage of, to be involved in interesting, intellectual discussions... Doing some of these activities from week to week has built up a confidence in me such that I know I am capable of doing these things, even if I do not always feel up to it. Getting past the fear of putting myself out in front of everyone, and of being responsible for other people's learning, has been a big hurdle for me to overcome. I feel that in the future I will be more willing to take risks in these areas...*

As students embraced the notion "of being responsible for other people's learning," our jobs became easier. Students learned to challenge one another to think more deeply:

> *In addition to their good advice, my classmates completed their job of making me reflect deeper. I believe Adam asked me why I was bothered. After all, someone else acting out has no bearing on me. I had to think hard about that one, but I think I have an answer.*
>
> *On top of improving my own thinking, I have helped my classmates think more deeply. In talking about my own struggles as a leader earnestly, I gave my classmates problems to which they could relate. They were then able to think about my dilemmas and determine what they might do in my situation. By causing my cohorts to think more deeply, I received excellent advice from them. I have come a long way from the first few Leadership sessions in respect to challenging other peoples' thinking. I only posited my own ideas rather than eliciting higher thinking from others in the beginning.*

Without a doubt, students were beginning to move toward the kind of interactions Senge (1990) believes important for leaders in education, business, and industry who seek ways to turn their institutions into learning organizations, "where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning to see the whole together" (p. 3).

Helping student learn how to engage in such meaningful discussions takes time. As with the go 'round and team activities, start simple and plan for success. Structure opportunities where students will experience a supportive environment as they risk making their thinking public. Engage them in discussions about reading assignments where they have had time to prepare responses prior to class. Ask the type of question that will elicit the type of thinking desired. Challenge their thinking by asking them to support their claims. Continue asking questions until they learn to challenge themselves and others. The key, then, to helping students move toward intentional mental processing by engaging in meaningful discussion is the same as learning any skill—having the opportunity to use the skill.

Application of skills

A major aim for undergraduate education is for students to become life-long learners who use all they learn in their post-secondary education to solve the problems they will face in the future. This transfer of learning—using concepts in a situation different from where they were learned—is one of the most powerful principles of learning (Sousa, 2001). However, it is critical to understand that while the brain does many things automatically, transfer is not one of them (National Research Council, 2000). Using learning in a situation different from that in which it was learned requires intentional mental action on the part of the learner. Faculty must help students learn how to do the kind of thinking required for transfer of learning.

As students worked to change their old paradigms of learning, they seemed to understand the impact of deliberate practice of new skills on their own growth and development:

> *One of the most important aspects of all the development I have experienced is that I was given the opportunity to practice different skills many times. Rather than just reading or talking about a conflict resolution skill, or how to improve group interactions, we actually had quite a few chances where we either explicitly focused on practicing, a skill, such as some of the in-class activities, or we were given other tasks to do, like security education sessions, service learning projects, and while working on those tasks we were able to put the things we learned about into effect.*

A practice strategy we like to use to promote transfer of learning is our adaptation of role-playing. We refer to it as "working a role." We ask students to work a role as honestly and sincerely as possible to help all of us learn as much as we can. Students come to know the value of such practice:

> *I can see the value in role-playing certain controversial situations in order to learn more about myself. I hadn't previously realized that fairness was such a strong value to how I view things.*

To encourage students to practice new skills outside of class, we set the expectation that they will practice, and we hold them accountable for doing so. Asking students to commit to their own growth and development during a final go 'round is a simple way to set the expectation, "Tell us one thing you will do during this next week to enhance your own learning." The opening go 'round during the following week can be used for accountability, "Tell us what you did and how it went." A typical response might be:

> *I sometimes have trouble remembering things, especially where school is concerned, so after last week's class I was ready to try activating my semantic memory lane and really focusing on remembering more things I learned in class. Surprisingly, it seemed to work fairly well.*

Another favorite strategy we use to encourage students to transfer their learning is a "practices inventory." Learners record insights about learning, identify habits or behaviors that are congruent with the insight, identify habits or behaviors that are incongruent with the insight, and develop plans to use the insight to enhance their own growth and development:

> *I did an okay job on the practices inventory. I filled in as much as was required of me, but I did not go any further beyond that. I did spend a lot of time thinking and writing about the insights that I had. Consequently, I filled the practices inventory up with a brutally honest look at my behaviors. The amount of thinking I did behind the writing was probably the most beneficial to me.*

Michael's last statement reveals the key, *"The amount of thinking I did behind the writing was probably the most beneficial to me."* Critical for helping students learn to use skills in new situations—to transfer their learning—is to engage them in intentional mental processing. Faculty owe it to students to help them learn to ask and answer the following questions:

- How is this similar to something I already know? How is it different?
- How have I used this kind of information in the past?
- In what other situations might this be useful?
- What implications are there for me as a professional?
- How might this knowledge or skill impact my professional development?
- What impact does knowing this have on my future?

As students learn to transfer their skills into real-world situations, they begin to think of themselves as professionals—to identify strengths and to set goals for improvement:

> *Admittedly, I have spent time in introspection and outlining goals for myself but have a tendency only to see what's in front of me. I do, however, see the value of looking at how far one has come. Positive reflection on past successes gives one a sense of confidence, making future goals seem less intimidating and more surmountable.*

This willingness to engage in self-examination sets the stage for students to learn to critically assess their own growth and development.

Self-assessments

An emphasis on self-assessment is consistent with our goal for students to take responsibility for their own growth and development. Not only do students need to learn to do the thinking that will empower them to manage their own learning, they need the ability to critically assess themselves as professionals when they enter the work force. Therefore, we require students to formally assess their own learning and progress at the end of each semester. An excerpt taken from one student's self-assessment written at the end of the year reveals the ability to think critically about self growth and development:

> *The final major area of development worth noting is my journaling. After reading through last semester's journal entries and comparing them to*

> *this semester's, I noticed quite a difference. The first is my topic of writing—last semester it seemed pretty sporadic, and now the focus has improved quite a bit, as noted in my analysis. I also do not recall ever writing about current leadership issues in last semester's journal, and I have learned it can be useful to keep up to date with both good and bad leadership examples, and be able to recognize the differences between them through journaling and critical thinking. Other improvements include thinking through decisions and rationalizing their outcomes, and increasing my depth of reflection overall.*

Once again, the words of the participants reveal the key to self-assessment—intentional mental processing. Students need to engage in deliberate thought about what they are learning and how they are learning it (National Capital Language Resource Center, 2004). This kind of reflection allows them to step back from the learning process and think about their own learning strategies and their own progress—an important step in becoming independent learners. Self-assessment at the end of each semester is a critical strategy for moving students in this direction.

When completing the semester self-assessment, students typically find that their journals provide solid evidence of their development as learners:

> *One of the best places to look for evidence of learning and growth is my reflection journal. At the beginning of the semester, many of my entries did not contain much depth. I would simply write down an idea and not think fully about all the possible viewpoints. However, as time progressed and I reviewed the rubrics, I slowly began to use a more in-depth process in my decision-making and justification of ideas.*

"We know the power of self-reflection to deepen learning for adults... One of the strongest motivators is the opportunity to look back and see progress" (Chappuis, p. 42, 2005). Chappuis' words support our findings that being required to record thoughts regularly in a journal is one of the most powerful experiences for helping students develop intentional mental processing as a habit of mind.

Journals

Faculty typically ask students to do mental processing in different ways, such as responding to teacher-directed questions, discussing with team members following activities, or sharing their thinking during large group discussions, but it has more meaning for students if they actually record their thinking on paper:

> Journal writing connects students with their emotional selves and core values. Through writing, students become aware of the relevance of their belief systems. Through writing, they begin a healthy habit of reflecting on moral values as they consider problems and issues that come up in their studies and in their daily lives. I have found that students *want* to discuss topics that touch on important moral questions. (Wanket, 2005, p. 74)

This is the purpose of the reflection journal as students take responsibility for their own learning and development within the community of learners. Students often engage in deeper thinking while recording thoughts in their journals. In addition to framing and guiding their thinking throughout the course, the journals provide evidence of growth and development along the journey.

For many students in the NSF SFS program keeping a journal was a new experience. It was necessary for us to persist longer than they resisted before they would realize the benefits of doing the thinking and investing the time required to record their thoughts:

> *When I first heard we were going to be doing a journal I was apprehensive and a little disconcerted. I have never done any journaling before, and I was a little reluctant to do it fearing I wouldn't be able to put my thoughts to paper. However, as it turned out, it is a great learning tool for me, more so than I would have thought initially. I figured at first that it would be something I'd slog through and do as well as I could, but I didn't really expect great returns on the time I invested.*
>
> *In the case of the leadership journal, at first I did it simply because it was a requirement of being in the class. Over time it developed into a valuable tool for me, but the problem is that I wouldn't have done it in the first place if I wasn't "forced" to.*

Eventually, students were able to identify specific examples of how writing in their journals contributed to their growth and development as intentional learners:

> *Additionally, the encouragement of reflecting on different things happening inside and outside of class helped me to solidify my thinking more, and think more critically about the things that happened. I think the hardest part of reflection is making yourself do it, but making it an integral part of the leadership development courses has helped motivate me to put my thoughts on paper.*
>
> *... by forcing myself to sit down and come up with nearly a page or more of writing about a semi-focused topic, I definitely develop that idea more than I would with only mental thoughts; I think it is easier to push oneself to find more insight in this manner.*
>
> *Now that I have spent a semester keeping a regular journal about various issues relating to our coursework... I have developed a great appreciation for the value of putting thoughts down on paper and giving more critical consideration to them. There were many journal entries that I started writing with one idea in mind, and by the time I finished I had come to a completely new, unexpected realization.*

Students will bring a myriad of experiences with keeping journals and a variety of attitudes. Some students will welcome the challenge, but others will likely resist. Most important in overcoming the resistance is setting the expectation that students will keep a journal and holding them accountable for doing so.

Once students understand that they will be held accountable for recording their thoughts in journals they will likely need direction to develop skills leading toward intentional mental processing. Two simple suggestions offered by Wanket (2005), a high school English teacher, are applicable for learners of all ages: date every entry, and write without ceasing. The journals will become logs of their thinking. Students will learn to read through their journals and track their own growth. There will be times that dates of an entry are important to them. In addition, early on, students will likely need to force themselves to make entries. Specific dates will be reminders of minimum expectations set either by self or

by instructor. "Write without ceasing" helps remove the burden of perfect writing. Some students are likely to be inhibited by their perceived skills as writers. Encouraging them to go wherever their minds wander usually will lead to more original insights and creative thinking.

Once the students get used to the idea of recording their thoughts in journals, they will be more receptive to additional guidance. Our experience has been that one of the most important notions to help students internalize is the idea that they are keeping the journal for themselves—not for us. Students have become so accustomed to having instructors tell them how they did and how to improve that they often hesitate to think for themselves. It is not until the student truly embraces that idea of ownership that he/she is ready to explore and expand her/his own thinking. At this point, providing prompts to inspire deeper thinking is important:

- How can I use this?
- Why did I react that way?
- How is this similar to something else I understand? How is it different?
- What other applications might there be? What are the implications thereof?
- What does this mean for me as a professional?

Discussion

The literature is replete with support for the importance of deeper thinking to enhance learning. According to Caine and Caine (1997), learning from experience is powerful for most individuals, but rarely will they "extract all the potential meaning that is implicit or move beyond their current meanings without being challenged" (p. 121). One key to helping

students use their experiences to engage in deeper learning is active processing, which, according to Caine and Caine (1994), is:

> the consolidation and internalization of information, by the learner, in a way that is personally meaningful and conceptually coherent. It is the path to understanding, rather than simply to memory... The pervasive objective is to focus on the process of our learning and extract and articulate what has been explored and what it means. In effect, the learner asks in as many ways as possible "What did I do?" "Why did I do it?" and "What did I learn?" (p. 156-157)

The more questions the individual asks and answers, the deeper the learning is likely to be as a result of the experience. According to David Perkins (as cited in Leamnson, 2000), "Learning is a consequence of *thinking*—it's less the doing than the thinking, the reflecting on that doing that counts" (p. 37).

In their book, *Connecting leadership to the brain*, Dickman and Stanford-Blair (2002) refer to a similar kind of thinking within a discussion about reflective intelligence:

> If information patterns are the currency of intelligence, reflection is the compounding of returns on the original investments in their construction. That is, reflection is the ultimate stringing together of patterns of information through serious consideration—a conscious bending back—of constructed knowledge to proactively explore further configurations, implications, and applications thereof. In effect, the reflective qualities of your brain engage in examination of how that which is mentally constructed might best be invested—exploited might be a better word—to the advantage of survival interests. (p. 95)

The basic notion of engaging students in meaningful reflection compliments the active processing suggested by Caine and Caine (1994). The findings from our research take these notions of meaningful reflection and active processing to the next level—what we identify as intentional mental processing. Intentional mental processing is deliberate and habitual; intentionality is key. Such thinking goes beyond the active processing suggested by Caine and Caine: "What did I do?" "Why did I do it?" and "What did I learn?" Intentional, responsible

learners will further develop their reflective intelligence by automatically asking and answering questions such as: How did I do it? What if…? What was/am I thinking? Why was/am I thinking that? How is this similar to…? How is this different…? What did you do? Why did you do it? What do you conclude about...? What is your evidence? Why does it matter? How does this connect/relate to…? What have you learned about…? What is your evidence that you have learned it? What are the implications of …? What difference will this make in the/your future? The challenge for educators is to help students learn to ask and answer these kinds of questions consistently for themselves for most experiences until intentional mental processing becomes a habit of mind.

Conclusions

Indeed, the students recognized that they were developing intentional mental processing as habit of mind:

> *Everything we do from our journaling to class participation to our interview projects has involved diligent reflection. And because of this I have been able to weigh and consider all of my actions, thoughts, beliefs and the information gathered from outside sources to enhance my learning and growing experience…*
>
> *This understanding about the importance of reflection is something I can use in almost any situation in the future, especially in difficult times, to explore my thoughts and understandings further.*

Faculty have the responsibility to help their students develop abilities to solve ill-defined, real-world problems they will face the rest of their lives. This requires the ability to learn continuously and to think critically. Moving students from simple reflection to intentional mental processing as a habit of mind will equip them to do the necessary thinking and learning to have the most positive impact on the world possible.

In doing our own intentional mental processing about the findings we realized the key to helping students become independent, intentional learners is through questioning. Even if faculty feel ill-equipped to engage students in some of the learning experiences we have described, educators can work on purposefully planning and asking the questions to promote deeper thinking in their students. Eventually, students will learn to ask and answer the challenging questions on their own—they will develop intentional mental processing as a habit of mind.

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CHAPTER 7. GENERAL CONCLUSIONS, LIMITATIONS, IMPLICATIONS, AND RECOMMENDATIONS

"We come to college not alone to prepare to earn a living, but to learn how to live a life." M. J. Riggs, 1883

I had the opportunity to work with a small group of college students who exemplified this quote by Riggs. Within the first year of a two-year program, I witnessed the transformation of these individuals from naïve students into responsible learners and productive citizens. The purpose of this phenomenological study was to explore perceptions of students who experienced learning in community, to determine key components that most affected their transformations as learners. The guiding question for this study was: How do these students perceive and describe their experiences of learning in community?

The constructionist view of the source of knowledge informed this study, and phenomenological research served as the methodology thus allowing the essence of how they experienced the phenomenon to emerge from the words of the participants. I experienced the phenomenon of learning in community with the participants and witnessed their growth and development into avid learners and worthy team members. Therefore, it was essential that I first identify my own beliefs, biases, and assumptions and set them aside to focus on the lived experiences of the participants.

Although the eight participants in the study were in the fourth semester of the leadership development component of the NSF SFS program (described in Appendix A), the research was designed to focus on the learning experiences during the first two semesters. Consistent with the goal of phenomenological research to collect rich, meaningful data accurately depicting the participants' interpretations of the phenomenon, data sources

included a focus group interview comprised of all eight participants, individual interviews with each of the participants, journals, and written self-assessments. This chapter describes general conclusions, limitations of the study, implications for practice, and recommendations for future research.

General Conclusions

Data were analyzed and interpreted following steps suggested by Colaizzi (1978): read all data, extract significant statements, formulate meanings, organize into clusters of themes, integrate into an exhaustive description, and formulate the exhaustive description in as unequivocal a statement of identification of the phenomenon's fundamental structure as possible. I started the analysis by reading through all the data to become familiar with them and to begin listening to the words of the participants as they described their experiences of learning in community. As I read through the data a second time, I began coding by using various colors to highlight significant statements. Rereading and sorting those coded statements allowed me to begin formulating meanings from the significant statements, and themes began to emerge: self-identified growth and development, continuous reflection, metacognition, high expectations for addressing challenging tasks, interdependence, accountability, and supportive environment. I validated the findings by: (a) taking these themes back to the participants and asking for feedback, and (b) by using peer-debriefing, engaging in conversation with an outside observer (Creswell, 2003).

Since this member-checking and peer-debriefing provided no new data, I proceeded to the final step in the analysis—to formulate the exhaustive description in as unequivocal a statement of identification of the phenomenon's fundamental structure as possible. Therefore,

the fundamental structure of learning in community, as perceived by these participants, is described as:

> ... a self-recognized transformative development resulting from being engaged in intentional mental processing before, during, and after being challenged with and held accountable for addressing complex, meaningful tasks in an interdependent and supportive environment over time.

Although limited to this specific group of students, this complex statement gives rise to a multitude of possibilities of exploration with implications for both educators and students. Notions related to this transformative experience for students previously addressed in Chapters 4, 5, and 6 include: the nature and role of high expectations and the importance of accountability, the impacts of learning and community, and the critical role of moving learners from simple reflection to intentional mental processing as a habit of mind.

Further examination of the statement identifying the fundamental structure of learning in community gives rise to additional possibilities for exploration with additional implications for faculty and students. For example, "self-recognized transformative development" confirms that the students knew they were different after their work within the community of learners. Additionally, "supportive environment over time" has at least two more critical notions—the attributes and development of a supportive environment for learning and the idea that development takes time.

Limitations

Limitations are inherent in the nature and purpose of this study. The role of the researcher must be a consideration in every scholarly inquiry, but certainly impacts a descriptive qualitative study in specific ways. Not only was I the researcher, but I also experienced the phenomenon of learning in community with the participants. It was my

experience that provided the passion to conduct the study, but that passion also had the potential to bias the results. Therefore, I took numerous precautions to increase the validity of the findings. Chief among these, prior to collecting the data, was to engage in the phenomenological epoche process to bracket my own biases and experiences and set them aside. I returned to the list often throughout the study—during data collection, analysis, interpretation, and reporting the findings—which kept me always mindful of my own biases.

To further address potential concerns about validity of the findings, additional strategies commonly followed by qualitative researchers were employed. Multiple data sources—focus group interview, individual interviews, journals, and self-assessments—provided a plethora of information. This triangulation of the data allowed me to build a coherent justification for the themes that emerged. Returning those final themes to the participants for feedback provided a check on the accuracy of the interpretation of the data. Since no new data emerged during this member-checking, I continued with the analysis by using peer debriefing—engaging in conversation with an outside observer to enhance the accuracy of the analysis. This step not only confirmed my findings, but also led to the development of the complex statement of the phenomenon. One final step is necessary to ensure the validity of a qualitative study—to convince the reader of the accuracy of the findings.

My goal in reporting the findings was to use thick, rich descriptions to transport the readers to the setting and to allow them to share the experiences of the participants within the discussion of the findings. The most difficult part of the writing was to narrow the selection of the quotes—all had special meaning for me since they came from my students, but the challenge was to select the appropriate ones to convey the essence of the experiences without

boring the reader. I am confident with the content of the three articles, and I believe my claims are well supported by the data. Even though I followed several steps to minimize the limitations inherent in my role as researcher, each reader of the study will be the judge as to the validity of the findings.

The other limitation of the study is inherent in the methodology. Because it was a phenomenological study to uncover the essence of the participants' experiences of learning in community, the findings are limited to a specific small group of students, in a Midwestern university, during the first year of a two-year program. The purpose was to identify key components that contributed to the growth and development of individuals. No attempt has been made to generalize the results to other populations; however, implications for practice have been offered in the articles and are summarized here for those who are interested in making an even greater difference in student learning.

Implications for Practice

Students enter post-secondary education with a myriad of experiences. Some of them have been successful working in isolation, others have excelled competitively, and many have experienced working in groups. Regardless, most students (and many faculty) are deeply entrenched in the paradigm of learning where students come to class expecting to be told exactly what to do and how to think, check assignments off a list, take tests that measure how much information has been stored in short-term memory, and then delete the information before moving on to the next class. Most students receive grades from faculty that indicate reasonable success in these endeavors. Unfortunately, however, their lives beyond college will require that they learn continuously, think critically, and frequently work

in productive teams to address ill-defined problems and issues. There are practices post-secondary educators can employ to better prepare students to meet the challenges they will face as professionals and citizens.

Deceptively simple among these practices is to hold students accountable for meeting the expectations set for them. Professors do want (expect) their students to be diligent, and to engage in every learning opportunity planned for them. Unfortunately, educators often send messages that less is expected. For example, class interaction may require students to read and think before coming to class, but how do many instructors typically react when students have not done the preparation? Are students held accountable or does the instructor change the plan for the day to "take care of" those students who did not prepare for class? Findings in this study confirm the notion that students *know* they must be held accountable for doing the hard work required for learning. They may not like it. In fact, faculty will likely need to persist longer than students resist. Eventually, students can learn to hold, not only themselves but also other members of the community of learners, accountable for learning. They will even come to appreciate being held accountable if the tasks they are asked to do have meaning.

Most students really do like learning. They enjoy being challenged, but the challenges must allow them to address complex, meaningful real-world tasks. Too many students have experienced an education system where much of what they are asked to do and to learn has little meaning in their lives. They have, therefore, developed habits of going through the motions of meeting minimum requirements to receive the grades they want and then moving on to the next class in pursuit of a degree. Faculty have a responsibility to help students break those old habits and become intentional learners. They owe it to students to make them do

the preparation and thinking required for deeper learning by challenging them with addressing complex, meaningful real-world tasks. This includes helping students develop emotional connections by planning assignments that are relevant to their future professional lives with enough ambiguity to require students to guide and direct their own thinking and learning. Students may not initially like these new kinds of expectations, but they will come to appreciate the freedom and power when they are allowed to think deeply and to take responsibility for their own learning.

Since learning only happens in the minds of the individuals, students must *think* to learn. Rarely, however, will students think deeply enough to extract all they can from experiences or to move beyond their current understandings without being challenged. Therefore, faculty must do whatever it takes to get students to think before, during, and after every learning opportunity. In other words, educators must help students develop intentional mental processing as a habit of mind via the expectations they have for students and the learning experiences in which they engage them.

Educators' expectations impact students' thinking. Key among the expectations is that students must take responsibility for their own growth and development. Learning is a developmental process—this means students enter a course or program at different stages and progress at their own rates. Although most faculty intuitively understand this, many often try to make students learn the same things in the same ways resulting in students responding by doing just enough to get the grade they want. When students become intentional learners they take responsibility for their own growth and development. Therefore, every learning opportunity ought to be planned with that outcome in mind, and students must be reminded continually that the assignments are for them, not the professor. Implicit in the expectation

that students take responsibility for their own learning are additional expectations of changing habits, thinking continuously and deeply, coming to know self, and engaging in metacognition.

Learning opportunities must be planned specifically to provide students with experiences that will challenge their old ways of thinking and learning, giving them a reason to develop new habits. The most efficient way for educators to do this is to *tell less* and *ask more*. That means the foundation for every learning opportunity must be asking questions and expecting students to develop answers. Even if faculty feel ill-equipped to engage students in some of the more complex learning experiences, they can work on purposefully planning and asking the questions to promote deeper thinking in students. Key questions include: What do you think about…? Why do you think that? How is this similar to…? How is this different from…? What did you do? Why did you do it? What do you conclude about...? What is your evidence? Why does it matter? How does this connect to…? What have you learned about…? What is your evidence that you have learned it? What are the implications of …? What difference will this make in the/your future? Eventually, students will learn to ask and answer challenging questions on their own.

Regardless of the educational structure, accountability, high expectations, and intentional mental processing are key for learning. Educators who work with student learning communities can further enhance student learning by focusing on the notions of learning *and* community. Both educators and students need to understand that although learning only happens in the mind of an individual, much learning does, indeed, occur through social interaction. This means students need opportunities to make their implicit knowledge explicit—to explain their thinking to each other, listen to each other, and help each other

explain. This kind of learning does not occur automatically when students are placed together—it must be nurtured.

Since students enter post-secondary education with myriad experiences of group work, faculty must plan for successful *team*work. This means always having a purpose for asking students to work together thus providing them with opportunities to experience the benefits of being part of a team and expecting them to engage in the interactions. Short, non-threatening activities—icebreakers, go 'rounds, warm-ups, mixers, etc.— provide opportunities for interaction while students learn more about themselves and others. Especially during these early interactions, those in charge must foster an atmosphere of trust and mutual respect by modeling appropriate behaviors and insisting students engage in supportive actions. As students perceive a safe environment and know they will be held accountable for participation and interaction, they become willing to engage in more meaningful teamwork over longer periods of time.

Just as development for individuals takes time, so does development of teams, and reflection becomes critical to cultivate growth. Students must engage not only in personal reflection, but also in reflection about team functioning. It is important for educators to allow time for communication—to discuss what happened, why it happened, and how to be more productive in the future. As students engage in meaningful reflection, they will begin to identify differences in teamwork and typical group experiences from their past. Coming to value these interactions will reveal to them a deeper meaning of the importance of cooperation and will move them into the stage where they begin to rely on one another—an important step toward developing a community of learners. It is within a true community of

learners where individuals can learn how to learn, come to better understand themselves, and practice honest interactions with others.

Equally important as the key components previously discussed, the transformation of post-secondary students into intentional learners who take responsibility for their own growth and development while encouraging and supporting the learning of colleagues requires the opportunity to interact in a supportive environment over time. Future exploration of the notions of transformation, supportive environment, and time will likely give rise to additional implications for faculty and students. The findings from this phenomenological study also generate a plethora of opportunities for additional research.

Recommendations for Future Research

Although limited to one specific phenomenon of learning in community, key findings from this study include: accountability, high expectations, productive team membership/community, understanding and applying theories about learning, intentional mental processing, transformative learning, supportive environment, and time. Exploring any of these singly or in combination would add to the knowledge base of helping others become continuous learners and productive citizens.

One of the first recommendations would be replicating this study with a group of students who have also experienced learning in community. However, comparing students' experiences in numerous ways will likely add significantly to the knowledge base.

Many post-secondary institutions offer new students opportunities to get involved in programs with the intent of promoting success both academically and socially, such as freshman orientations, first-year experiences, and learning communities. Comparison studies

could be conducted to examine the various structures and their impacts on student growth and development. Another interesting comparative inquiry would be with a group of students involved in a leadership development program. Perhaps even more revealing would be a comparative study of a randomly selected group of students who are experiencing post-secondary education in more traditional ways. These studies could be planned to gather data from semester programs, year programs, or longer.

Since a general goal of most faculty is to prepare students for the next challenges in their lives, longitudinal studies with this group of students and with any other group of the comparison groups could be used to measure success in achieving this goal. Short-term studies could monitor a group of students throughout their post-secondary educations and longer-term studies could follow them into the work place. The ultimate purpose would be to explore lasting effects of their learning.

Embedded within this study is a whole new area for possible research: studies of the development, implementation, and results of ways to prepare post-secondary educators to be even more effective at helping students develop into intentional learners and productive citizens. "Post-secondary educators" include faculty, lecturers, instructors, clinicians, and staff members responsible for orientation courses, those charged with managing learning communities, and student affairs professionals. First steps likely include developing a group of individual educators into a community of learners where they explore theories of learning and the development of community, plan to apply those theories with their own students, and support and encourage their colleagues within the community. Such a program would give rise to many additional research possibilities.

In summary, the knowledge base of (a) learning and (b) the development of community is extensive. Although the findings from this study of a program that deliberately combined both were limited to a single case, they are significant. Future research on student growth and development that includes replication studies, comparative studies, and longitudinal studies of a variety of groups of students, and similar kinds of studies related to preparing educators to guide student growth and development will add to the research base. Results of such studies will likely have multiple implications for both educators and faculty.

Final Thoughts

The journey of becoming an intentional learner is probably best summarized by one of the participants, *"At first we tried to refuse to do what you asked. Then we did it because you made us. And now we do it because it works!"* This is a path most students likely take as they maneuver through their educational experiences before they realize learning is for them, not their instructors.

The message is clear. Educators *can* make an even bigger difference in preparing today's students for tomorrow's world. Those charged with helping students learn must deliberately plan and deliver their instruction so students have to think. They must hold fast to high expectations as they engage students in complex, challenging tasks relevant to them as professionals, and they must hold students accountable for meeting the expectations. Students know these factors make a difference in their leaning. When educators persist, so will the students, and as they become intentional learners, they will become the citizens and professionals the world needs.

APPENDIX A. SCHOLARSHIP FOR SERVICE PROGRAM

Taken from the Office of Personnel Management home page
http://www.opm.gov/hr/employ/products/recruitment/Scholarship/scholarshipmain.asp

Scholarship For Service (SFS) is a unique program designed to increase and strengthen the cadre of Federal information assurance professionals that protect the government's critical information infrastructure. This program provides scholarships that fully fund the typical costs that students pay for books, tuition, and room and board while attending an approved institution of higher learning. Additionally, participants receive stipends of up to $8,000 for undergraduate and $12,000 for graduate students. While still in school, students funded for more than a year will also serve a paid summer internship at a Federal agency. The agency may offer students other paid employment while they are on scholarship provided it does not interfere with their studies. In exchange for the scholarship (including the stipend), students agree to work for the Federal Government for a period equivalent to the length of the scholarship or one year, whichever is longer. The generous nature of the SFS program makes the Federal Government the employer of choice for students planning to pursue a career in the field of information assurance.

The scholarships are funded through grants awarded by the National Science Foundation. Institutions of higher learning certified as Centers of Academic Excellence for Information Assurance Education (CAE/IAE) and institutions with information assurance programs deemed "equivalent" to those of CAE/IAE-certified schools vie for funds through a grant solicitation/award process. Each year, only a handful of institutions (generally, institutions whose proposals attest to the superior nature of their information assurance programs) are provided grants.

The Scholarship for Service Program is based on merit and, in order to be selected, students must attend a participating institution. Students in the program take classes that provide intensive training in the information assurance field and are then able to apply what they learn to real world work experiences.

At Iowa State University, the NSF SFS program is an interdisciplinary effort involving students and faculty in computer engineering, computer science, mathematics, political science, management information systems, and education. A critical feature of this program to prepare information assurance professionals is leadership development. The faculty team involved with the NSF program realized the need not only for computer experts, but also the need for those experts to be effective team members and competent leaders. The fellowship recipients become part of an interdisciplinary cohort of students pursuing degrees in their majors with an emphasis in information assurance. In addition to the requirements of their majors, these students are required to participate in a two-year leadership development program.

APPENDIX B. HUMAN SUBJECTS APPROVAL

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Institutional Review Board
Office of Research Compliance
Vice Provost for Research and
Advanced Studies
2810 Beardshear Hall
Ames, Iowa 50011-2036
515-294-4566
FAX 515-294-7388

TO: Barbara Licklider

FROM: Human Subjects Research Office

PROJECT TITLE: "Examination of a Leadership Development Program as Part of the Information Assurance Cybercorps"

RE: IRB ID No.: 02-230

APPROVAL DATE: November 23, 2003 **REVIEW DATE: November 23, 2003**

LENGTH OF APPROVAL: 1 Year **CONTINUING REVIEW DATE: December 19, 2004**

TYPE OF APPLICATION: ☐ **New Project** ☒ **Continuing Review**

The Human Subjects Review Study has been approved. Please make sure that y ou obtain the consent of the parents and participants before you conduct the study.

Your human subjects research project application, as indicated above, has been approved by the Iowa State University IRB #1 for recruitment of subjects not to exceed the number indicated on the application form. All research for this study must be conducted according to the proposal that was approved by the IRB. If written informed consent is required, the IRB-stamped and dated Informed Consent Document(s), approved by the IRB for this project only, are attached. Please make copies from the attached "masters" for subjects to sign upon agreeing to participate. The original signed Informed Consent Document should be placed in your study files. A copy of the Informed Consent Document should be given to the subject.

If this study is sponsored by an external funding source, the original Assurance Certification/Identification form has been forwarded to the Office of Sponsored Programs Administration.

The IRB must conduct **continuing review** of research at intervals appropriate to the degree of risk, but not less than once per year. Renewal is the PI's responsibility, but as a reminder, you will receive notices at least 60 days and 30 days prior to the next review. **Please note the continuing review date for your study.**

Any **modification** of this research project must be submitted to the IRB for review and approval, prior to implementation. Modifications include but are not limited to: changing the protocol or study procedures, changing investigators or sponsors (funding sources), including additional key personnel, changing the Informed Consent Document, an increase in the total number of subjects anticipated, or adding new materials (e.g., letters, advertisements, questionnaires). Any future correspondence should include the IRB identification number provided and the study title.

For IRB Use Only	Modification Approval Date _____ Continuing Review Approval Date _____ Approval Expiration Date: _____

ISU HUMAN SUBJECTS CONTINUING REVIEW AND/OR MODIFICATION FORM

TYPE OF SUBMISSION: ☐ Continuing Review ☐ Modification ☐ Continuing Review and Modification

Principal Investigator: Dr. Barbara Licklider	Phone:294-1276
Degree: PHD	Correspondence Address:N002 Lagomarcino
Department: ELPS	E-mail Address:blicklid@iastate.edu
Project Title: Examination of a Leadership Development Program as Part of the Information Assurance Cybercorps	
IRB ID:02-230	Date of Last Continuing Review:12/20/2002
IF STUDENT PROJECT	
Name of Major Professor:	Phone:
Department:	Campus Address:
	E-mail Address:

FUNDING INFORMATION:

☑ External Grant/Contract ☐ Internal Support (no specific funding source) or Internal Grant (indicate name below)	
Name of Funding Source: NSF Grant	OSPA Record ID on Gold Sheet:
☐ Part of Training, Center, Program Project Grant – Director:	Overall IRB ID No:

CONFLICT OF INTEREST

The proposed project or relationship with the sponsor require the disclosure of significant financial interests that present an actual or potential conflict of interest for investigators involved with this project. By signing this form, all investigators certify that they have read and understand ISU's Conflict of Interest policy as addressed by the ISU Faculty Handbook and made all disclosures required by it. (http://www.provost.iastate.edu/faculty.)

Do you or any member of your research team have a conflict of interest? ☐ Yes ☑ No
If yes, has the appropriate disclosure form been completed? ☐ Yes ☐ No

ASSURANCE

I certify that the information provided in this application is complete and accurate and consistent with proposal(s) submitted to external funding agencies. I agree to provide proper surveillance of this project to insure that the rights and welfare of the human subjects are protected. I will report any adverse reactions to the IRB for review. I agree that modifications to the originally approved project will not take place without prior review and approval by the Institutional Review Board, and that all activities will be performed in accordance with state and federal regulations and the Iowa State University Federal Wide Assurance.

Barbara L Licklider 11/12/03
Signature of Principal Investigator Date

Student Projects: Faculty signature indicates that this application has been reviewed and is recommended for IRB review.

Daniel L. Robertson 11/13/03
Signature of Supervising Faculty Date

IRB Approval Signature Date

For IRB Use Only	EXPEDITED per 45 CFR 46.110(b) _____, Category _____, Letter _____ STUDY REMAINS EXEMPT per 45 CFR 46.101(b) _____ WAIVER of SIGNED CONSENT per 45 CFR 46.117(c) _____ WAIVER of ELEMENTS of Consent per 45 CFR 46.116 _____ VULNERABLE POPULATION per 45 CFR 46 _____

APPENDIX C. INTERVIEW QUESTIONS

The following questions guided the interviews, but did not limit them:

- Think back to August of 2003. What comes to mind for you as you look around the room today? How are you different? How is the group different?
- How did those changes come about?
- What was most important to you for your own growth and development?
- If you could make one change, what would it be? Why?
- Is there anything you believe should not be changed? Why?
- What else would you like to tell me that would help me better understand your experience?

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