

**The Effects of Trained Facilitation of Learning-Oriented Feedback on
Learner Engagement, Performance, Self-Efficacy, and Enjoyment**

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(ABSTRACT)

The level of learner engagement, performance, self-efficacy, and enjoyment on a knot-tying task by college students who received positive verbal and non-verbal learning-oriented feedback by trained facilitators was examined. Secondary learner outcomes were learner perception of engagement and learner perception of facilitator support. Facilitator variables were attitude and competency.

Changes in facilitators' attitudes toward (1) flow theory (Csikszentmihalyi, 1997), (2) systematic feedback (Ilgen, Fisher, & Taylor, 1979; Liden & Mitchell, 1985; Locke & Latham, 1985), and (3) hands-on learning (Joplin, 1995; Kolb, 1984; Pfeiffer & Jones, 1985; Williamson, 1995) were examined. Facilitators' competence in (1) delivering learning-oriented feedback, (2) using verbal learning-oriented feedback to increase learner engagement, and (3) using nonverbal learning-oriented feedback to increase learner engagement was measured.

One hundred twenty-six college students from an introductory human development class were randomly selected and randomly assigned to one of three treatment groups as facilitators, learners, or timekeepers for a knot-tying task. Twelve psychology majors, members of an independent study group in the same class, were trained as observers and randomly assigned to one of the three treatment groups. The treatment was the administration of learning-oriented feedback by trained facilitators during a knot-tying task.

The primary findings were that learning-oriented feedback provided by trained facilitators increased learner engagement, learner self-efficacy, learner task enjoyment, learner perception of facilitator support, and learner perception of personal engagement in the task.

Learner performance was not affected by the administration of learning oriented feedback.

Facilitators showed significant change in their attitude toward flow theory, systematic feedback, and hands-on learning.

It can be concluded that facilitators who received training in learning-oriented feedback had a greater effect on the affective side of learning (engagement, self-efficacy, enjoyment) than those who did not receive training. However, the training of facilitators in the use of learning-oriented feedback had no effect on learner performance. Further, teaching a task using facilitated verbal and nonverbal cues positively affects how facilitators feel about flow theory, hands-on learning, and feedback. Further research to verify effects of learning-oriented feedback on learner engagement using other tasks is suggested. Additional research to examine the attitudes of facilitators is suggested.

Acknowledgments

Dedication

Dedicated to Lilliana Marie Shelton, a most beautiful granddaughter. May the qualities of faith, perseverance, tolerance, hope, creativity, love, and wisdom embrace your life. May you glimpse nobler vision and larger freedom than I can imagine...and I have an extensively creative imagination!

Thanks

“When you bow deeply to the universe, the universe bows back.”

This proverb, origin unknown, has been framed in front of me throughout the final dissertation phase of graduate school. Neither did I realize how deeply I would bow to complete the process nor how generously the universe would bow back through a multitude of people who cared enough to support the effort. I am humbled and richly blessed by those who participated from levels of disinterested tolerance to passionate encouragement – from spurts of creative input to months of enduring perseverance with me in the writing/rewriting process. I am well-bowed and embrace those who bowed well. The dissertation isn't a masterpiece, but the quality of input and caring should make it so. To:

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Chapter 1

Situating the Study in a Personal Context

During my professional career as an educator, I was consistently confronted with the dilemma of how to extend student interest and maintain student engagement in learning beyond the “hook” that initiated a learning experience. Desiring to catch initial learner interest, I developed a substantial storehouse of warm-up activities that were sufficient to pique the interest of even the hardest-to-reach students. I discovered that sustaining student engagement and extending that engagement to self-sustaining motivation for deeper learning, however, required a different set of skills.

Steeped in special education and gifted education practices that met needs of divergent learners, I explored many strategies to stimulate learning, facilitate student acquisition of knowledge, and expand the use of acquired knowledge. Knowing that transition from an initial interest “hook” to content engagement was a critical link in the learning cycle, it became my mission to find successful ways to connect learners to information and experiences, monitor student understanding, provide feedback, and model insight.

Across time, using informal teacher research, I identified variables that connected the learner and the information to be learned: (a) relevance of topic, (b) consistent feedback, (c) challenge, and (d) skills. These variables emerged consistently and seemed to affect the success of learners in the transition from initial interest in topic to extended engagement in content.

If students saw no personal relevance early in the invitation to learn, they would shut down, withdraw, or show signs of distraction. I had to “catch them quick” and keep them interested by uncovering personal connections to the topic. This happened through the use of open-ended questioning, hands-on involvement, individual and group processing, and other

connection-building strategies. I relied on my “teacher-sense” to assess the degree of student interest and involvement. As student responses and personal connections were explored and evaluated, additional feedback was offered.

Feedback appeared to have a spiraling effect on the level of student involvement once the momentum of learning escalated. Feedback produced the most systematic results when it was offered as a response to learner comments that arose from open-ended questioning or personal reflection. Discussion provided a springboard for additional prompting, connection-making, and open-ended questioning. The spiral expanded, and student involvement usually gained momentum as students saw personal relevance in the process.

As personal relevance became increasingly evident, I capitalized on student interest to encourage greater ownership of the learning process. They were invited to articulate and negotiate a problem of interest and suggest problem-solving strategies within the context of the topic. Often, this was explored through action and hands-on discovery. Consistently, they found vehicles through which to construct knowledge and make sense of their contributions. Ongoing training and practice in strategies of cooperation, communication, and decision making immersed them further in the learning process, and the spiral of learner involvement enlarged.

With less enthusiastic learners, I facilitated the discovery of personal relevance or interest on a one-on-one basis or in small groups until they found a place of connection from which they could construct knowledge. This place of connection surfaced in similar ways among learners. Prior knowledge seemed to leap from within the learner and meet new information “face to face.” Body postures straightened, bodies leaned forward, eyebrows raised, and eyes focused on the teacher or teaching object. Hand-waving indicated a desire to share. Positive teacher

feedback at the moment seemed to ground learners in their current awareness of excitement and invite them to move forward into action.

Framed as open-ended questioning, feedback was typically interrogative. It encouraged learners to share and process feelings, share observations, and predict the next action step. Dialogue provided a springboard from which learners began to define personal relevance, construct knowledge, make a plan of action, and produce a product or outcome. Determining an appropriate degree of challenge to the learner, however, was consistently problematic in this process. A core question emerged: How can teachers challenge students enough to keep them interested and involved without overwhelming them?

I noticed that students would shut down, withdraw, or show signs of frustration when assignments were too difficult. If assignments were too easy, distraction or boredom became evident. This was true of cognitive assignments as well as action processes. Knowing that I walked a tightrope of “what is enough without being too much,” I began to explore the concept of challenge. Examining points where students began to falter, I noticed antecedent teacher behaviors, instructions, and curricular parameters that seemed to contribute to the breakdown: unclear directions, unclear expectations, tasks that were not open-ended enough for a variety of skill levels, inconsistent feedback, and seeming lack of teacher interest in the topic.

In reframing my approach to facilitate appropriate student challenge, I turned the deficits I noticed into criteria that became learning outcomes for me as a teacher-learner. The outcomes were to (a) know what is required in the activity; (b) break the activity apart and put it back together, articulating, modeling, and guiding each step as needed; (c) communicate expectations and directions clearly and concisely; (d) meet the learners where they were and invite them to move forward in learning; (e) provide consistent feedback to move the learners toward

engagement; (f) provide opportunities for collaborative and individual connection-making; (g) model an attitude of curiosity and interest in the learning process, in content, and in students; and (h) identify and verbalize to learners what I learned throughout the process.

As I became more practiced in and attentive to these criteria, a need to further examine a fourth variable--learner skill--emerged. Knowing what skills learners had and what skills were missing to complete a task provided critical information for learner performance and extended engagement. When student skills were not sufficient to meet the task at hand, I incorporated into the learning sessions (a) intentional skill building, (b) constructive feedback, and (c) on-going evaluation. When skills were sufficient to meet the challenges at hand, I was alert to changes in behavior and was available to question, model, and coach as learners came to transition points. These transition points included frustration, boredom, glimpses of understanding, and forward leaps. I discovered that--

1. Content could be presented effectively, inductively and deductively.
2. Students could process information, construct knowledge, and provide outcomes when content relevance, necessary skills, appropriate challenge, and feedback were present in the learning environment.
3. Learners' divergent needs could be addressed in a group setting.
4. Information could be shown in whole-part relationships.
5. Choices should be offered for learner exploration.
6. Learners would peak and ebb as they worked at their own pace.
7. Learners would respond to an appropriate degree of healthy tension to improve skills and develop an attitude of inquiry.
8. Learners would respond readily to experiences that integrated hands-on learning.

An exciting learning environment began to emerge in my classes. Students found interest in topics, set personal goals for learning, and developed skills to meet those goals. They processed the actions and thoughts of self and others, accepted feedback, and often became resident experts in their areas of exploration. They, in turn, taught each other and taught me. Most importantly, they expressed enjoyment in the process of learning. This stimulated my desire to learn additional strategies to encourage joy-filled learning and rekindle the spark of discovery and curiosity in every student.

Children build personal confidence as enthusiastic, active learners when they (a) feel supported; (b) are invited to solve challenging and relevant problems; and (c) are given feedback by an adept, well-informed teacher with strong facilitation skills and consistent boundaries. I have found that teachers who demonstrate traditional teacher values such as caring, connectedness, and nurturing (Laird, 1988) and who have a good grasp of content can facilitate students moving into productive action. They recognize unproductive pitfalls, cue students when they begin to fail, and realign failing students. Teachers embody the principles of best practice in teaching and learning and model how to be a decent human being in the process.

It is in the consciousness of the teacher as a best-practice facilitator that I began to explore ways to initiate and maintain learner engagement. Pertinent questions surfaced. Is it possible to train teachers to intentionally facilitate learner engagement? What kind of feedback would be most useful? Can a teacher, through delivery of positive feedback, assist a learner to compensate for skill deficits? Does increased engagement in an activity offer greater enjoyment for learners? Does hands-on learning influence learner engagement or learner enjoyment? Framing a study that would answer these questions was my first challenge as a researcher.

Choosing a theoretical construct that would provide context for the study was a second challenge.

In the remaining sections of this chapter I explore two theoretical constructs for learning --flow theory and experiential learning--that provide background and explanation for the study. I offer (a) a brief introduction to flow theory, (b) background on experiential learning within the context of my current professional position as Virginia 4-H Curriculum and Learning Specialist, and (c) a comparison and contrast of flow theory and experiential learning. In addition, I offer (a) a need for the study, (b) a statement of the problem, (c) research questions, (d) a statement of purpose, (e) assumptions, and (f) limitations.

Flow Theory

Recently, I was introduced to Csikszentmihalyi's (1975) "theory of flow." Flow theory is an explanation of the phenomenon of how a person can become so engaged in a task or activity that time passes unnoticed, distractions have no effect, and the learner adapts to varying degrees of task complexity. Flow has been called a self-system that houses one's needs and aspirations (Marcus & Ruvulo, 1990; Harter, 1980). It assists learners in deciding the degree to which they will engage in a new task.

According to Csikszentmihalyi (1997), when learners are involved in an activity that has a balance of challenge and skill, they are more inclined to take risks and become engaged. The freedom that comes from a balance of challenge and skill is what allows learners to immerse deeply enough into an activity to lose sense of time and space.

Learners (Csikszentmihalyi, 1990) reported personal perceptions of this immersion: "Your concentration is complete. Your mind isn't wandering, you are not thinking of something else; you are totally involved in what you are doing," and "...you don't see yourself as separate

from what you are doing” (p. 53). Factors necessary to flow include: (a) having the skills and tools necessary to achieve meaningful goals, (b) becoming immersed in an activity, (c) paying attention to what is happening and adjusting as needed, (d) enjoying short-term successes, and (e) keeping an eye on the ultimate goal (Marzano, 2003, p. 148).

As I read books and articles on the theory of flow (hereafter referred to as flow), I realized that it is compatible with my own informal research findings. I looked at flow from a whole-part perspective, read what the literature had to say about it, and distilled several questions that became building blocks for my study: How could flow be intentionally facilitated by a teacher using feedback? How could intentional facilitation of feedback increase learner engagement? To what extent would increased engagement create an enjoyable learning environment? What implications would answers to these questions have for student engagement in the field of education?

Experiential Learning

During this same time I accepted a new position as Virginia’s 4-H Curriculum and Learning Specialist at Virginia Tech. In this position, I trained university specialists, field agents, and volunteers in the development and delivery of curriculum and the application of learning processes appropriate for non-formal education.

Hands-on education has been the foundation of the 4-H “learn-by-doing” philosophy for over 100 years. The current relevance of 4-H as a vital, non-formal educational process is evidenced through community clubs, school enrichment settings, camps, and special interest clubs. 4-H programming, with emphasis on teaching life skills through hands-on exploration of specific content, is a formalized structure and process called experiential learning which was popularized through the Outdoor Adventure Education Movement and Kurt Hahn (James, 1990).

Experiential Learning focuses on doing an activity and then processing that activity from both a content and personal perspective. It intentionally has a place for open-ended questioning that takes learners through a reflective process, allowing them to make personal and global connections to the learning. It provides a structured pause, called “generalization,” where new or missing information can be introduced or added. It stretches learners to look at new ways to apply life skills and knowledge.

A Comparison of Flow and Experiential Learning

Common precepts shared by flow and experiential learning theories are synthesized here. They both (a) catch learners’ interests and encourage direct involvement through active learning, (b) encourage awareness of the degree of activity challenge and the developmental skill levels of learners, (c) provide opportunity for support through feedback and processing, and (d) set and reset goals as the learning progresses.

Both flow and experiential learning emphasize the importance of the learning environment and the choice of task. In a learning task, learners (a) become involved in content, (b) find personal relevance, and (c) set and adjust goals to meet a task as the task’s challenge and learner’s skills increase. Experiential learning follows a structured process that includes active doing and public processing of what was done and how the learner feels about what was done. Flow explains learning from an individual’s intrinsic response to a learning situation. Both experiential learning and flow provide environments that absorb the learner in learning for learning’s sake. Experiential learning explains the importance of using tasks that are developmentally appropriate, that are hands-on in nature, and that provide challenge. Similarly, flow theory provides a description of an ideal environment where “opportunities for action are in

balance with the person's ability to act" (Csikszentmihalyi, 1997, p. 57). Choosing a hands-on or active task for this study met important criteria for both experiential learning and flow theories.

Support and feedback have important roles in flow and experiential learning. Support encourages personal risk taking and indicates that people encounter similar problems. The learner is not alone (Joplin, 1995). Feedback offered on the student's work and the learning process promotes interaction with others and the problem and provides needed information and clarification (Firestone & Pinnell, 1993; Joplin, 1995). Ongoing, formative feedback provides a wall from which learners can push and gain thrust across their learning. Formative feedback provides information that creates challenge, requiring greater skill than previously exerted.

As I move my professional focus from formal to non-formal educational settings, I find a critical challenge in the non-formal setting similar to one found in formal education classes: the need to extend engagement in activities beyond an initial interest hook in a topic or project. A non-formal setting provides flexibility and informality that are more restricted in a formal classroom setting: (a) Youth are in charge of their learning while adults facilitate the process; and (b) youth choose their projects, set personal goals, determine how to carry them out, and participate on a voluntary basis. While working to support facilitators in non-formal settings, I continue to search for ways to increase interest, relevance, and personal engagement for youth while meeting the goals of 4-H programming: developing competent, caring, and contributing members of society.

Life skills, personal skills, and societal skills required to become competent, caring, and contributing adults are reflected in cognitive, social, emotional, and physical realms of the 4-H education process. Hendricks, (1998) categorized life skills into the four areas of 4-H

curricular emphasis. These areas correspond to areas of development: (a) cognitive (head), (b) physical (hands), (c) socio-emotional (heart), (d) physical, mental, and emotional well-being (health) (see Appendix A). This model is used to guide programming and select both content and outcomes in each 4-H curricular area. Researching ways to increase learner engagement using hands-on curriculum that emphasizes life-skill development suggests exciting possibilities for 4-H programming.

Need for the Study

This study emerged from a set of practical problems, repeatedly faced by educational practitioners in formal and non-formal learning settings: (a) extending learner engagement, (b) improving learner performance, (c) expanding learner self-efficacy, and (d) increasing learner enjoyment. The study was designed to provide practical information to teachers in formal educational settings and facilitators of non-formal educational processes. It was designed to contribute to a larger body of knowledge related to feedback, learner engagement, and learner self-efficacy.

Researchers have shown the benefits of feedback to learner performance, self-efficacy, and enjoyment (Alexander et al., 1991; Butler & Winne, 1995; Johnson, Perlow, & Pieper, 1993). Understanding what types of feedback to use, what feedback cues are most effective, what kinds of tasks are enjoyable to learners, what part self-efficacy plays in moderating learning, and how learners perceive personal engagement could provide important clues for practitioners when planning instruction.

Research on learner engagement, intrinsic motivation, and self-efficacy, as they relate to flow theory (Chan & Ahern, 1999; Deci & Ryan, 1985; Deci, Koestner & Ryan, 2001; Moneta & Csikszentimihalyi, 1996), supports this study. When the demands of a challenge and the self-

perceived capacity to meet that challenge are in balance, engagement occurs. Learners are driven from within to search for greater complexity in a task or to respond to the greater complexity of a task (Moneta & Csikszentimihalyi, 1996). The search for and response to greater complexity are intrinsically motivating, provide feelings of competency, and encourage engagement. Examining more closely how feedback affects engagement and feelings of competency could provide useful information for educational practitioners as they make strategic pedagogical and curricular choices.

Statement of the Problem

Formal and non-formal educators recognize the need to extend learner engagement beyond an initial interest hook as they embark in a new area of study or hands-on exploration. The problem is to (a) identify an appropriate balance of task challenge and personal skill needed to complete the task, (b) determine if and what kinds of feedback are effective in increasing learner engagement, and (c) choose tasks that are inherently engaging.

Choosing tasks that are inherently engaging provides manageable challenges for learners (Malone, 1981). Covington (1992) explained it further: “Tasks are engaging to the degree they challenge the individual’s present capacity, yet permit some control over the level of challenge faced” (p. 160). Ongoing feedback that provides clarification, information, or direction could maintain healthy tension during an increasingly complex learning task. Feedback coupled with activities that arouse curiosity and encourage joy in learning (Covington, 1992) could extend engagement. Determining what kind of feedback could be used to provide clarity, give information, and offer direction or redirection was the first challenge in this study. Determining what kind of training could enhance the ability of facilitators to provide feedback was a second

concern. Examining the effects of training on the ability of facilitators to deliver feedback was a third challenge.

Purpose of the Study

The purpose of this study was to explore the effects of verbal and nonverbal learning-oriented feedback on learner engagement, performance, self-efficacy, and enjoyment. Secondary considerations were learner perception of engagement and facilitator support, facilitator perception of support and self-efficacy, and the change in knowledge, skills, and abilities of facilitators trained in delivering feedback cues. An experimental model was employed to manipulate the level of verbal and nonverbal feedback training provided to facilitators. This research may add to the understanding of learner engagement and feedback and may have implications for practitioners in formal and non-formal educational settings.

Research Questions

Answers to the following questions were sought in this study:

Major Questions

1. How does learning-oriented feedback (hereafter referred to as feedback) affect learner engagement in a given task?
2. How does feedback affect learner performance in a given task?
3. How does feedback affect learner self-efficacy?
4. How does feedback affect learner enjoyment?

Secondary Questions

5. How do learners differ in their perceptions of personal engagement across treatments?
6. How do learners differ in their perceptions of facilitator support across treatments?
7. How do TG1 facilitators' attitudes toward the importance of flow theory, feedback,

and hands-on learning change from pre-treatment to post-treatment measures?

8. How does facilitators' perception of competence in using feedback to improve learner skills change from pre-test to post-test?
9. How does facilitators' perception of competence in using verbal feedback to increase learner engagement change from pre-test to post-test?
10. How does facilitators' perception of competence in using nonverbal feedback to increase learner engagement change from pre-test to post-test?

Assumptions

This study was undertaken based on the following assumptions:

1. Participants understood and followed through with assigned roles in the study.
2. Appropriate practice time was provided to develop an adequate level of competence for facilitators, observers, and timekeepers.
3. Knot-tying was relevant to learners.

Limitations

The study was subjected to the following limitations that could narrow its internal validity and generalizability:

1. The number of participants was small: TG1 (N=12), TG2 (N=10), TG3 (N=9).
Therefore, the findings may not be broadly generalizable to other groups.
2. The methodology, especially facilitator training, was complex. Therefore, replicating the study could be cumbersome.
3. Time constraints were present. The facilitator training sessions were completed in long one-session tracks rather than offered as short, more frequent tracks across

time. Facilitator learning might have been enhanced through several short-term training sessions with content review and repeated application.

4. The target population was comprised of college-aged students. It is not possible to generalize findings beyond that population.

Summary

A personal context for the study, brief descriptions of flow theory and experiential learning, research questions, and the need, problem, purpose, assumptions, and limitations of the study were presented in this chapter. Chapter two is a review of the literature grounded in flow theory, experiential learning, and feedback. Learner self-efficacy is introduced. Chapter three is a description of the methodology of the study. Chapter four is a report on the findings of the study. Chapter five is a summary and contains the conclusions.

Chapter 2

Situating the Study in the Literature

A review of the literature helped me to clarify how (a) experience is a context for experiential learning and flow theories; (b) flow theory is an explanation for how people experience learning; (c) experiential learning is a non-formal method for teaching and learning; and (d) feedback is critical to learner performance, learner engagement, and learner self-efficacy. This chapter begins with a discussion of experience, flow, and experiential learning. Then, literature related to feedback with particular emphasis on performance-oriented and learning-oriented feedback is reviewed. Learner engagement and self-regulation are framed within the context of feedback from the literature. A review of verbal and nonverbal feedback cues is offered to provide background for feedback cues chosen in this study. Finally, self-efficacy in relation to feedback is discussed. A summary is provided.

Experience as Context for Flow and Experiential Learning

For the purpose of this study, experience is knowledge, skill, or practice derived from participation or engagement in an activity. Experience is the basis for all learning. It provides an opportunity for knowing and doing to be pursued together (Hutchings & Wutzdorff, 1988). John Dewey (1916) recognized that activity alone does not constitute experience, but when coupled with reflection and observation, it provides the interaction necessary for learning. According to Dewey, “To learn from experience is to make a backward and forward connection between what we do to things and what we enjoy or suffer trying, an experiment with the world to find out what it is like” (p. 140).

Experience can be best understood in holistic terms, not in fragments or unprocessed, isolated segments. It should not be broken down into categories or domains for better

understanding (Steinaker & Bell, 1979). Rather, it should be viewed as a holistic “living through an event or events” (*Webster’s New World Dictionary of the American Language, 2nd College Ed*). This “living through,” as interpreted by Pfeiffer and Jones (1980), is “an inductive process, proceeding from observation rather than from *a priori* truth” (p. 2). He stated that a “structured experience provides a framework in which the inductive process can be facilitated” (p. 3).

Experience, the basis of living and learning, is a foundation for both flow theory and experiential learning. In flow theory, experience reflects (a) the degree of risk a learner is willing to take, and (b) the depth in which a learner is immersed in a task. The depth of learner immersion is directly related to the learner’s perceived match between personal skill and level of task challenge.

In experiential learning, experience is the personal interaction that takes place between (a) learner and task, and (b) learner and supportive facilitator. It is often structured as a “do, reflect, and apply” process where action, reflective connections, and extended application make up the process.

Flow as a Learning Experience

Csikszentmihalyi (1982) contended that the most important aspect of human life is quality of experience, which he defined as “focusing attention to the interplay of data in the consciousness” (p. 15). He goes on to say that relating information from outside sources to consciousness must be an “ordered process,” and that the “relevant source of energy that keeps consciousness in an ordered state is information” (p. 15). Consciousness, according to Csikszentmihalyi, becomes disorganized when the information offered for input is either too simple or too complex. This disorganization causes attention to become fragmented, and when attention is fragmented, it cannot effectively be used to process experience.

In what he (Csikszentmihalyi, 1982) called an ordered state of consciousness, there is a balance between what there is to do (challenges) and what one is capable of doing (skills). Clarity of information and a degree of personal control over the environment and one's actions facilitate this balance. When consciousness is ordered and balance is perceived, a learner's focus moves from a limited focus toward total immersion in an activity. Total immersion, where the learner becomes focused intensely on a task and loses a sense of time and space, is what Csikszentmihalyi (1997a) called "flow state" or "flow." He stated that the clearest sign of flow is the merging of action and awareness. A person in flow is "aware of actions, but not of the awareness itself" (p. 38).

Adapted from Csikszentmihalyi (1975), Figure 1 shows the effect of the relationship between skills and challenge on states of anxiety and boredom. Simply speaking, when the skill required to complete an action or task is lower than the challenging action, learners become anxious or frustrated. When learner skill is higher than the challenging action, learners become bored.

According to Csikszentmihalyi (1997a), learners rely on their capacity to respond to a task and use appropriate skills to cope with demands for action. A learner's perception of the discrepancy between the degree of challenge and the level of personal skill required to meet the challenge determines the degree of risk a learner perceives. The degree of risk becomes a deciding factor in the level of personal involvement a learner invests in a given activity or task. Information that is adequate and clear provides a better opportunity for learner investment. Clarity of expectations influences the perceived degree of risk by the learner. Figure 2 shows how the learning components of flow influence learner engagement.

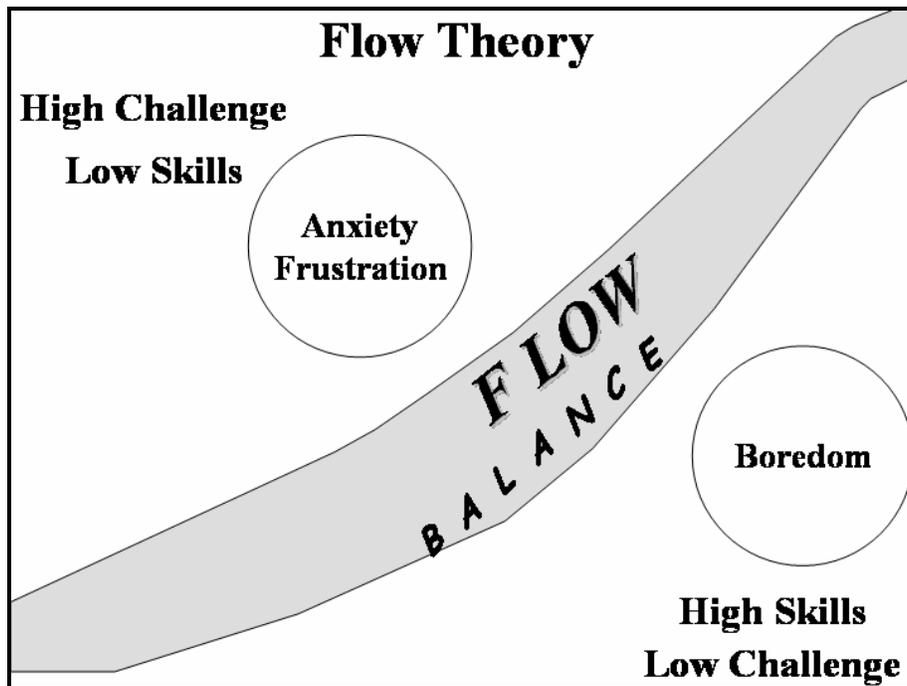


Figure 1. Flow theory depicts the relationship between skills and challenge and the resultant states of anxiety or boredom. From *Beyond Boredom and Anxiety: The Experiences of Play in Work and Games* (p. 49), by M. Csikszentmihalyi, 1975, San Francisco, CA: Jossey-Bass. Adapted with permission.

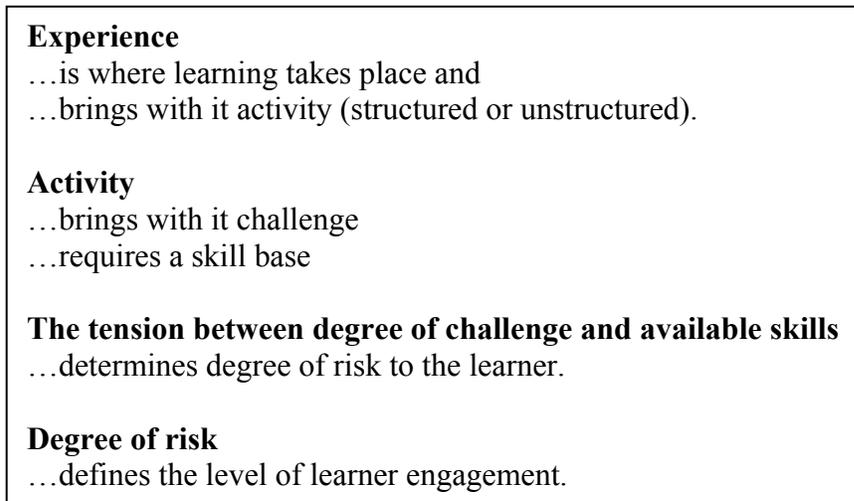


Figure 2. Learning components of flow related to learner engagement.

Figure 3 depicts a more focused view of risk, the component that strongly influences a learner's ability to be engaged in task. It shows that the perceived learner discrepancy between skill and challenge is proportional to the degree of risk taken in a learning situation. A balance between skills and challenge provides an environment for increased engagement.

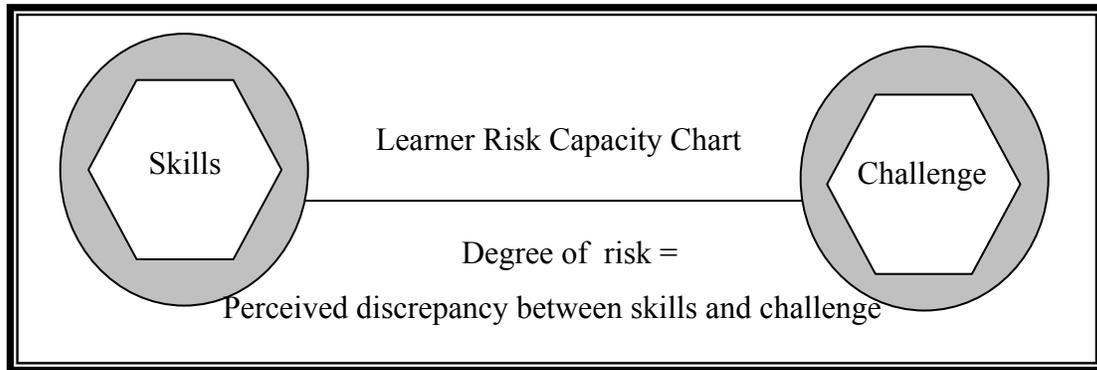


Figure 3. Learner risk related to perceived discrepancy between learner skills and task challenge.

Important questions regarding learner engagement emerge. How can teachers reduce risk in a given task? How can teachers assist in matching skill and challenge levels of learners? What kind and how much coaching is necessary to assist learners in matching skill and challenge? Providing clear expectations and setting realistic, relevant goals have been offered as answers. How an experience is structured might provide another.

Experiential Learning as a Model for Teaching and Learning

A body of literature emphasizing learning as a structured experiential process has emerged over the last three decades. Defining the conditions that distinguish “experiential learning” from other forms of learning became a focus of researchers. An earlier theorist, John Dewey (1938), provided a foundation of definition for the experiential learning models used today. He suggested the importance of making connections between new material and

previous experience and provided scaffolding for current educational philosophies based on experience and reflection. According to Dewey, learners observe their surroundings, gather information, obtain knowledge by reflecting on past experiences, and offer judgment based on the combination of knowledge and observation (p. 69).

Pfieffer and Jones (1980) developed a group process model that supports Dewey's findings. Developed originally for group facilitators, their model has relevance for education. Five steps in the model are: (a) "experiencing," the individual has an experience; (b) "publishing," the individual shares reactions and observations; (c) "processing," the individual discusses patterns and dynamics; (d) "generalizing," the individual forms broad connections and infers principles about the real world that challenge or confirm previously held beliefs; and (e) "applying," the individual uses information to make decisions about future experiences. These steps, according to the authors, are cycles that form patterns for learning (p. 7).

David Kolb (1984) extended the research of Dewey and others by theorizing that learning takes place through a four-stage, continuous cycle. This cycle includes (a) concrete experience flowing into (b) reflective observation which stimulates (c) abstract conceptualization that provides ideas for (d) active experimentation. It is the interaction among the parts of this cycle that stimulates learning and defines the process as holistic and integrative. Kolb suggested that these stages can be seen as an ongoing cycle of learning, integrating, knowing, and doing (p. 21). Figure 4 reflects this researcher's interpretation of that cycle.

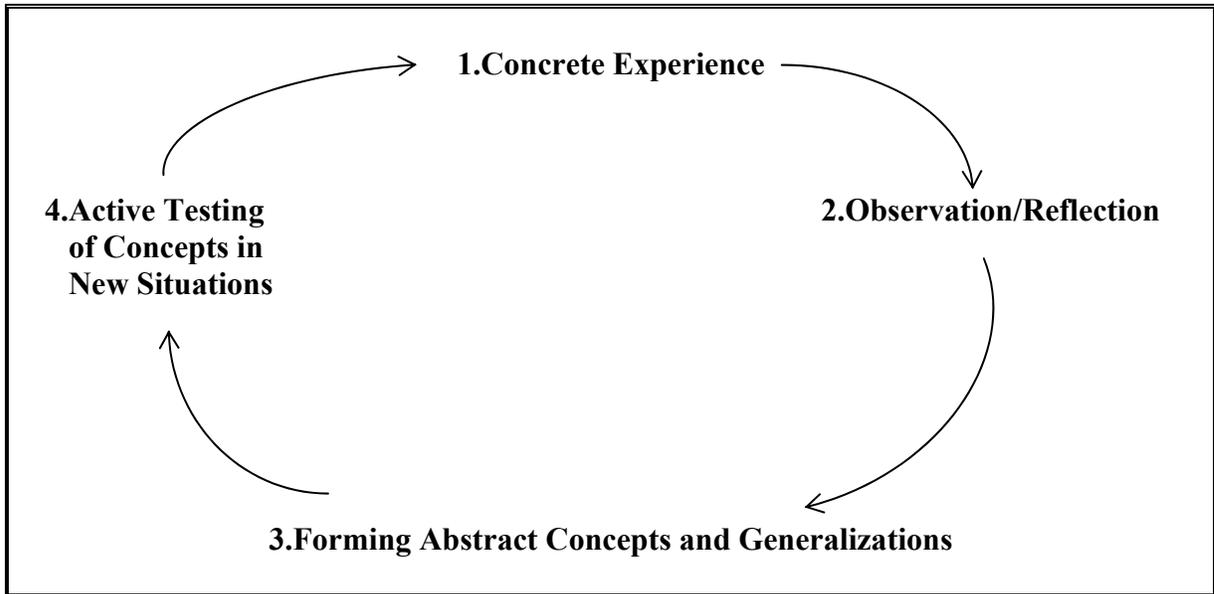


Figure 4. Model of learning movement. From *Experiential Learning: Experience as the Source of Learning and Development* (p. 21), by D. A. Kolb, 1984, Englewood Cliffs, NJ: Prentice Hall. Reprinted with permission.

Williamson (1995) provided a similar set of interactive stages related to experiential learning. Like Kolb, Williamson believed that learning begins with experience, emphasizing that learners should be taken from their immediate environment to a more distant one and that the subject content should move the learner from the concrete to the abstract. Williamson's next three stages: reflection, generalization, and application are similar to Kolb's stages (see Figure 4).

Joplin's (1995) model shows an ongoing connection among (a) the focus of the learner and the learning, (b) the challenging action involved in the task, and (c) the debriefing of the learner that comes after task involvement. The "challenging action" stage, which is the most intensely active part of the cycle, is centered between the focus and the debriefing stages. These three stages, when found in an environment of support and feedback, is important to learner success. Joplin (1995) emphasized that (a) support encourages personal risk taking and

reinforces that problems are common among people; and (b) ensures that the learner is not alone. Feedback provides reinforcement, clarification, redirection, and additional needed information (see Figure 5).

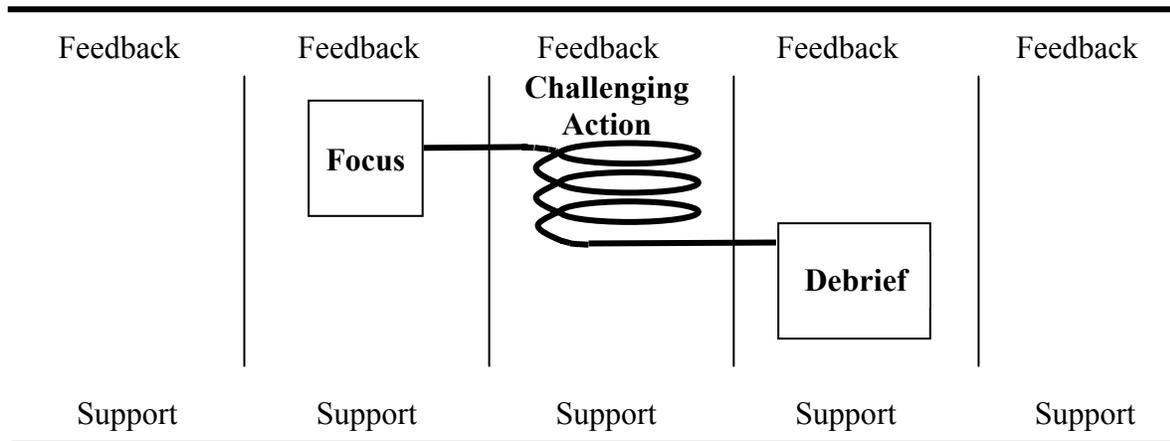


Figure 5. Cycle of learning model. From *The Theory of Experiential Education*, in K. Warren, M. Sakofs & J. Kielsmeier (Eds.) (p. 25), L. Joplin, 1995, Dubuque, IA: Kendall Hunt. Adapted with permission.

The “focus” stage in Joplin’s (1995) model has a two-fold purpose. It “defines the subject of study and prepares the student for encountering the ‘challenging action’ that is to follow” (p. 17). At this stage the learner determines what is important. The focus can be direct involvement in an activity, discussions in pairs or in a group, or responses to a smorgasbord of items related to the upcoming action spread out as a hook to catch interest.

Joplin’s (1995) “action” stage places the learner in a situation where he or she is unable to avoid the presented problem. This creates a healthy tension as the learner is often in an unfamiliar environment requiring new skills and the use of new knowledge. The focus is primarily on the learner, requiring the use of cognitive skills such as choice, creating order, and making decisions. The brain is required to be “on,” and Csikszentmihalyi’s (1997a) match of challenge and skill could be an important consideration at this stage.

Joplin's (1995) "debrief" stage offers an opportunity for processing both individually and within a group. This is a public process where ideas can be heard and response can be given by others. It serves as the mirroring part of the experience as well as a point of learner integration of content and understanding of self in relation to the learning.

Although not designed to define learning, the model illustrates the repetitive nature of the cycle of learning and provides a simple plan of facilitation. Joplin (1995) refers to its scope as "mini to maxi," inferring that this same model could be used across a variety of situations: large group, small group, one-unit activities, one project, a conversation, or a flash of insight.

Generally, experiential learning models have similar chronological cycles or stages to engage learners physically, cognitively, emotionally, and socially (Joplin, 1995; Kolb, 1984; Pfeiffer & Jones, 1980; Steinaker & Bell, 1979; Thiagarajan, 1980). The cycles include: (a) "doing" or learner participation, (b) individual and group sharing about the experience, (c) individual and group processing the experience, (d) making personal generalizations and connections to one's life and the broader world, and (e) applying what is learned to new situations.

Researchers verify that youth, actively engaged in relevant questioning or problem-solving, change behavior when they are given opportunities to process "hands-on" or action information (Hutchings & Wutzdorff, 1988; Pfeiffer & Jones, 1985; Prochazka, 1995). Jernstedt (1980) stressed that "learners remember not what they encounter while learning, so much as what they do while learning" (p. 12).

Personal reflection assists learners in extracting meaning from given information. Boud, Keogh, and Walker (1985) viewed reflection as a place where people "recapture their experience, think it over, mull it over, and evaluate it" (p. 16). De la Harpe and Radloff (1997)

viewed reflection as a process that “includes the ability to be self-aware, to analyze experiences, to evaluate their meaning and to plan further action based on the analysis and reflection” (p. 1). Joplin (1995) concurred that experiential learning is equally about the action or experience and the reflection on the experience. Experiential learning settings provide rich venues for the examination of learning. A common experiential learning model used in 4-H programming is shown in Figure 6.

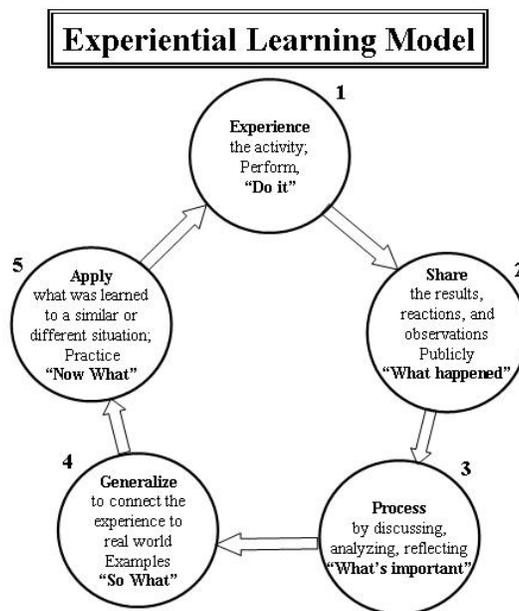


Figure 6. From *Moving Ahead: Preparing the Youth Development Professional*, by United States Army Community and Family Support Center, United States Department of Agriculture, Cooperative State Research, Education and Extension Service, 1999, Manhattan, KS: Author.

Experiential Learning as Non-formal Education

Experiential learning as non-formal education is distinguished from both formal and informal educational experiences by structure and the presence of a facilitator who has an intentional role in the learning process (Horton et al., 1999). In formal education a teacher is responsible for the entire educational process. Although hands-on learning, open-ended

questioning, and facilitated processing can be used by teachers as integral parts of their instructional methodology, they are not required parts of a learning structure. Informal education has no set structure and no intentional processing. Individuals learn alone, from each other, from the environment, with or without adult supervision, and across a variety of settings.

Non-formal education is more open than formal education and more directed than informal education. Experiential learning is a natural fit for a non-formal educational setting. A facilitator is available to provide assistance, leading youth through an intentional hands-on learning process. The learning is youth centered. The facilitator’s role is clearly defined and purposeful. See Figure 7 for a comparison of formal and non-formal educational settings.

| Formal education | Non-formal education |
|---|--|
| Educational setting (e.g., a classroom) | Anywhere |
| Mandated attendance | Voluntary attendance |
| Mandated hours | Hours to fit learner |
| State-set curriculum | Youth-set curriculum |
| Teacher as licensed expert | Adult volunteer as facilitator |
| Learner earns grades or diploma | Learner moves through program goals and earns tangible rewards |

Figure 7. Comparison of formal and non-formal educational settings. From *Youthworks Self Study Guides: Creating Environments That Meet Needs*, by A. Huebner & M. McFarland, 2000, Manhattan, KS: Kansas State University. Adapted with permission.

In non-formal education a facilitator is intentionally responsive to the learner and to moving the learner and learning through an inquiry-based process that includes open-ended questioning, individual and group processing, guided exploration of relevant generalization,

provision of new information or clarification, and a discussion of future application. According to Williamson (1995), the processing of information is one way for youth to gain power over their lives. Wurdinger (1995) concurred, stating that when a problem is relevant, students “become emotionally engaged in the learning process” (p. 45). Feedback that provides information, support, clarification, and redirection is provided throughout the processing stages.

Feedback

The benefits of feedback in learning have been well documented. Studies across the past twenty years have brought to light three important findings. Individuals prefer specific, timely feedback (Ilgen, Fisher, & Taylor, 1979; Liden & Mitchell, 1985). Timely and specific feedback enhances performance (Locke & Latham, 1990). Specific feedback that is provided throughout the learning task affects learner self-efficacy (Earley, 1986). Defined by Bandura, (1986) self-efficacy is a judgment of a person’s capability to perform a task.

Performance-oriented Feedback

Performance-oriented feedback is designed to evaluate competence (Johnson, Perlow, & Pieper, 1993). When specific and timely feedback is provided, the increase in knowledge about performance is greater than if vague or no feedback is provided. Feedback cues can provide instruction about what is to be learned and directions on what steps the student can take to enhance performance when goals for a learning situation or task are pre-determined for a learner (Lysakowski & Walberg, 1982). If no goals are set for the learner, specific feedback can act as a cuing device that supports individuals in setting goals or developing strategies to perform a task (Ilgen et al., 1979; Sansone, Sachau, & Weir, 1989). Cognitive feedback (Balzer et al., 1989) can be used as learning-oriented feedback and performance-oriented feedback.

Learning-oriented Feedback

Learning-oriented feedback is focused on improving competence rather than evaluating competence. When specific and timely feedback is provided across a learning situation, it is called learning-oriented feedback. Cognitive feedback provides learners with information that links cues and performance (Balzer et al., 1989). When a teacher or facilitator offers content-specific information through verbal directions and redirections to a learner, the learner can use this information to better complete the task and improve performance.

Feedback cues for redirection are effective to increase effort, develop task strategies, or increase competence after failure (Diener & Dweck, 1978). Providing verbal feedback that redirects learners during a task can lead a learner in a different or new direction, providing an impetus to try again.

Learning-oriented feedback might be more beneficial than performance feedback, especially with more complex tasks (Johnson, Perlow, & Pieper, 1993). Learning-oriented feedback is instructive feedback that is focused on improving competence, whereas performance feedback is designed to evaluate competence (Johnson, Perlow, & Pieper). Johnson, et al. (1993) contended that because individuals are more likely to experience failure as they learn to perform new, complex tasks, feedback that provides high information cues assists them to increase competence and could be beneficial. They found that learning-oriented feedback enhanced learner performance more than performance-oriented feedback on the dimension of performance addressed in the feedback. In addition, the effect of feedback on performance dimensions addressed in the feedback is moderated by self-efficacy. Langer and Wurf (1999) emphasized, “Clear consistent feedback should be expected to elicit judgments based on the feedback, while

ambiguous, inconsistent feedback should be expected to elicit judgments based on self perceptions” (p. 47).

The clarity with which feedback is given is important to self-perception which includes self-identity (“I looking at me”) and metaperspective (“I looking at others looking at me”) (Langer & Wurf, 1999). According to a strict interactionist theory (Cooley, 1902; Mead, 1934), one is given feedback from others, forms a metaperception of that feedback, and then embraces the metaperception as self-perception (Langer & Wurf, 1999). Researchers have shown that feedback given by coaches to athletes and feedback given to children by teachers and parents supports that individuals change self-perception according to the kind of feedback given, positive or negative (Jacobs & Eccles, 1992; Parsons, Adler, & Kaczala, 1982; Parsons, Kaczala, & Meece, 1982; Sinclair & Vealey, 1989).

Feedback: Learner Engagement and Self-regulated Learning

Learner engagement influences student interest and motivation, leading to increased performance and higher school achievement (Goodenow, 1992). Huang and Waxman (1996) added that achievement motivation is “the extent to which students feel the intrinsic desire to succeed...” (p. 211). Students who are engaged in learning because they like it and not because they want to get good grades tend to stay with challenging tasks for longer periods of time and use more complex learning strategies than those who learn primarily to get good grades. Such intrinsically motivated, self-regulated students wind up earning higher grades than those who are extrinsically motivated by grades (Nolen & Haladyna, 1990; Wentzel, 1993). Feedback is an inherent catalyst for performance for all self-regulated activities in which learners are able to measure unfolding cognitive processing against standards or goals of the task at hand (Butler & Winne, 1995).

Traditional studies of feedback have focused on information provided to students by teachers or other external sources after a task has been completed or test has been administered (Janelle et al., 1995, p. 246). This over-emphasis on the role of the teacher and lack of emphasis on the role of the learner has been a weakness in research (Janelle et al.). An ideal learning situation, according to Chen and Singer (1992), is when “individuals are able to implement strategies under their own control as appropriate for the performance context and situational demands” (p. 284). The use of self-regulating strategies brings forth a more active, independent learner who is more deeply embedded in the learning process and who experiences a deeper level of information processing (Zimmerman, 1989).

The teaching of self-regulation strategies through learning-oriented feedback--feedback that focuses on moving the learning along as the learner gains competence--offers promise for active, independent learners. Although learning-oriented feedback depends on external sources, such as a teacher or facilitator, as does performance-oriented feedback, it tends to focus on increasing competence rather than evaluating competence (Johnson, Perlow, & Pieper, 1993). Feedback given at the completion of a task has value, but does not function effectively during the time learners are making decisions about the direction of their learning and developing their attitudes about learning.

Receiving feedback during the learning process gives the learner information regarding the correctness of action, thoughts, or movement. It offers a standard against which the learner can measure progress and provides cues to move the learner along in the learning process. As learners make connections to the feedback being offered, they can begin to self-regulate their choices and actions. Called process feedback by Earley et al. (1990), learning-oriented feedback provides information about the process of performing a task, giving learners information for

improving task strategies, understanding the process of performing a task, and improving performance.

Verbal and Nonverbal Feedback

Feedback occurs in two dimensions: verbal and non-verbal. Verbal feedback can provide content information, directions, increments of knowledge, and redirection as well as offer approval and ask questions (Costanzo, 1991; Landin, 1994). Verbal feedback has a unique set of challenges related to semantic and syntactic structures and comprehension. Often the person sending the message and the one receiving the message do not share the same meaning for words used in conversation (Miller, 1988). Understanding the context, interpretation, and structure of the language affects how well information is given and received (Bedwell et al., 1991).

Non-verbal communication, often transacted through non-verbal symbols (Craib, 1979), can include any communication without spoken words (Miller, 1988). Signals about our attitudes and feelings are given through non-verbal communication, allowing interpretation by others. Others can then monitor behavior accordingly or ask for additional information as needed.

Knapp and Hall (1992) estimated that about 65% of meaning is created by non-verbal messages. Non-verbal behaviors can be used as feedback mechanisms by facilitators and teachers. Studies have shown that students who are given specific verbal and non-verbal learning-feedback cues show greater success at completing tasks efficiently and effectively. Moreover, they have been observed to have greater feelings of self-efficacy and share feelings of motivation toward learning (Chan & Ahern, 1999; Csikszentimihalyi et al., 2001; Deci, Koestner, & Ryan, 2001; Hock, Deshler, & Schumaker, 1999; James, 1993; Johnson, Perlow, & Pieper, 1993).

Non-verbal behaviors can be categorized into seven behaviors that are relevant to communication: body movement (kinesics), spatial orientation (proxemics), touch (haptics), eye movement (oculesics), voice intonation (vocalics), environmental factors, and facial expressions (Bedwell, Hunt, Touzel, & Wiseman, 1991; Hickson & Stacks, 1993; Knapp & Hall, 1992; McCroskey, 1972). The most effective positive non-verbal feedback cues used to increase learner performance revealed through the literature were: proximity, body movements, facial expressions, touching, and voice inflection (Bedwell, Hunt, Touzel, & Wiseman, 1991; Crable, 1979; Hickson & Stacks, 1993; Knapp & Hall, 1992; McCroskey & McCain, 1972; Mehrabian, 1969; Miller, 1988).

Verbal and nonverbal feedback cues can provide instruction about what is to be learned as well as directions on what the learner is to do (Lysakowski & Walberg, 1982). The more constructive the feedback, the more specifically goals and strategies can be developed (Earley, 1986, 1988; Ilgen et al., 1979). Feedback provided in knowledge increments that gives content information about a task or steps needed to complete the task enhances learner performance (Ilgen, et al., 1979; Jacoby et al., 1984). A teacher or facilitator who has analyzed a task and understands what knowledge is necessary to complete it can clearly direct appropriate feedback (Landin, 1994).

The three verbal feedback cues used in this study have been shown to assist learners in understanding what is needed for task performance: directions, redirections, and content information (Earley, 1988; lgen et al., 1979; Jacoby et al., 1984; Lasakowsky & Walberg, 1982). Positive verbal affirmation and nonverbal affirmation cues that included head nodding, gesturing, and smiles were used (Mehrabian, 1969; Miller, 1988). Voice inflection changes (Crable, 1979) and physical demonstrations (Mehrabian, 1969) were used, too.

Self-Efficacy

Self-efficacy has been related to learner satisfaction and motivation (Chan & Ahern, 1999; Deci, Koestner, & Ryan, 1985; James, 1993; Johnson, Perlow, & Pieper, 1993; Moneta, Schneider, & Csikszentmihalyi, 2001). Self-efficacy has been used as a motivational factor in the self-regulation of learners (Bandura, 1986; Zimmerman, 1989). Personal self-efficacy, the learner's belief that the completion of a task is possible, is a guiding factor in performance (Johnson, Perlow, & Pieper, 1993). Learning-oriented feedback using instructional cues and positive verbal cues could improve learner self-efficacy and skills, moving the learner toward a more engaged level of participation in an activity.

Researchers (Chan & Ahern, 1999; Csikszentmihalyi, 1997) have shown that (1) intrinsic motivation toward learning increases in learners who are involved in a task that is relevant and that matches learner skills, and (2) with increased feelings of competency learners are willing to take on more challenging or complex tasks. Self-efficacy could influence learner engagement in tasks that require focused and extended involvement.

Summary

A review of literature relevant to this study was presented in this chapter. Experience, flow theory, experiential learning, feedback, self-regulated learning, and self-efficacy were addressed.

The literature revealed that positive verbal and non-verbal feedback increases learner performance. The most effective types of verbal feedback for increasing performance, especially with complex tasks, are direction, redirection, and content understanding (Balzer et al., 1989; Diener & Dweck, 1978; Ilgen et al., 1979; Johnson et al., 1993; Landin, 1994).

The literature revealed that learning-oriented feedback--characterized by clarity, specificity, and timeliness--improves learner competence. Performance-oriented feedback, on the other hand, measures current learner competence (Johnson, Perlow, & Pieper, 1993; Langer & Wurf, 1999).

Flow theory has been studied with regard to learner interest, involvement, and enjoyment using self-rating scales. Facilitating a learner's movement toward flow using a teacher-chosen topic has not been addressed. Experiential learning provides an intentional method for structuring hands-on learning and could have implications for learner engagement.

The research design used in this study was influenced by the literature on flow theory, experiential learning theory, feedback, and self-efficacy. As a result of the review of the literature, the effects of positive verbal and nonverbal learning-oriented feedback on learner engagement, learner performance, learner self-efficacy, and learner enjoyment became the primary interests in this study. As in previous studies self-rating scales were used. In addition, third party observation was incorporated into the design to provide objectivity. Facilitators and learners were given the opportunity to rate the experience. The learning task required hands-on involvement and was experiential. The processing stage of the experiential learning cycle was not used in this study.

Chapter 3

Methodology

The research design, the subjects, the method of selecting subjects, an overview of the treatment, and the process of developing the instrument are in this chapter.

Research Design

This was a three-group experiment (see Table 1 for details). The groups were experimental (TG1), comparison (TG2), and control (TG3). Subjects were students from an undergraduate human development class. One hundred twenty-six students were randomly selected and randomly assigned to the three groups. The dependent variables were learner engagement, performance, self-efficacy, and enjoyment. Learner perception of personal engagement and learner perception of support from the facilitator were assessed across treatments. Pre-post treatment evaluations were given to TG1 facilitators on the importance of flow theory, hands-on learning, and feedback to learner success. Feelings of facilitator competence in delivering verbal feedback, non-verbal feedback, and feedback in general were measured for TG1 facilitators before and after treatment.

The independent variable was facilitator training. TG1 facilitators received training in (1) knot tying, (2) delivery of verbal and nonverbal learning-oriented feedback skills, (3) facilitation strategies, (4) flow theory, and experiential learning. TG2 facilitators received training in knot tying and in the meaning of facilitation. They were given verbal instructions that they were to “facilitate the learner’s tying of knots.” TG3 facilitators received only training in knot tying.

There were six types of participants: (1) facilitators, (2) learners, (3) observers, (4) timekeepers, (5) room monitors (Appendix O), and (6) training assistants.

Table 1. Research Design

| Type of training and measurement | TG1 experimental facilitators | TG2 comparison facilitators | TG3 control facilitators | Observers | Timekeepers | Learners |
|----------------------------------|---|--|--|--|---|----------|
| Pre-treatment measures | Importance of flow theory Importance of feedback to learner success Importance of hands-on learning Competence in using feedback Competence in using verbal feedback Competence in using nonverbal feedback (Appendix B) | | | | | |
| Training | Knot-tying directions (Appendix E) | Knot-tying directions (Appendix E) | Knot-tying directions (Appendix E) | Instrument: Learner Engagement Rubric (Appendix M) | Stopwatch: interval timing (Appendix N) | |
| Training | Knot-tying schematics (Appendix H) | Knot-tying schematics (Appendix H) | Knot-tying schematics (Appendix H) | Verbal and Nonverbal Observation Form (Appendix L) | Performance: charting number of knots tied (Appendix N) | |
| Training | Task card: overall instructions (Appendix F) | Task card: overall instructions (Appendix F) | Task card: overall instructions (Appendix F) | Domains and descriptions of verbal and nonverbal feedback (Appendix K) | | |
| Training | Facilitator directions: task analysis (Appendix G) | Facilitator directions: task analysis (Appendix G) | Facilitator directions: task analysis (Appendix G) | | | |
| Training | Facilitation of verbal and nonverbal feedback (Appendixes L & M) | Definition of facilitation (Appendix I) | | | | |
| Training | Flow theory (Appendix J) | | | | | |
| Training | Experiential learning (Appendix J) | | | | | |

(table continues)

Table 1. Research Design (continued)

| Type of training and measurement | TG1 experimental facilitators | TG2 comparison facilitators | TG3 control facilitators | Observers | Timekeepers | Learners |
|----------------------------------|---|-----------------------------|--------------------------|-----------|-------------|--|
| Post-treatment measures | Importance of flow theory Importance of feedback to learner success Importance of hands-on learning Competence in using feedback Competence in using verbal feedback Competence in using nonverbal feedback (Appendix C) | | | | | Learner engagement Learner performance Learner self-efficacy Learner enjoyment Perception of personal engagement Perception of facilitator support (Appendix D) |

TG1 facilitators completed a pre-treatment and a post-treatment questionnaire and received training on knot-tying and on delivering feedback. TG2 and TG3 facilitators completed a post-treatment questionnaire. TG2 facilitators received training on knot-tying and definition of feedback. TG3 facilitators received no additional training beyond knot-tying.

The observers received training on domains and descriptions of verbal and nonverbal feedback and practiced using two instruments: the Verbal and Nonverbal Feedback Observation Form and the Learner Engagement Rubric. They practiced in pairs until they agreed on 90% of their observations.

The timekeepers received training in the use of a stopwatch to track one-minute intervals across ten-minute timed sessions. They received training and practice in charting the number of knots correctly tied by learners and were given the responsibility to move learner-facilitator pairs in and out of the training area.

The learners received no training, they completed a post-treatment questionnaire.

The design proved appropriate for testing the hypotheses and provided adequate control through randomization.

Population

The population consisted of college males and females ranging from freshman to senior. One hundred seventy-seven undergraduate students enrolled in an introductory human development class were invited to participate in the study. One hundred sixty-five volunteered to participate and sixty facilitators, sixty learners, and six timekeepers (total of 126) were randomly selected from this group and randomly assigned to one of three treatment groups. These members were offered credit for the project and told that they must agree to be contacted through email to participate. All agreed to participate if selected.

An additional twelve members of the class were psychology majors who comprised an independent study group within the class structure. They met in a seminar room during class time to work on independent projects. These students were invited to participate in the role of observers. They unanimously agreed and were randomly assigned in equal numbers to each of the three treatment groups.

All students were told that participation was voluntary and that they could withdraw at any time. The number of facilitators, timekeepers, and observers assigned to each group compared to those who were assigned to be trained, those who were trained, and those who did not show for training is in Table 2. The number who participated on the day of the experiment compared to the number assigned is also in Table 2.

Table 2. Training Demographics by Group and Role

| Group and role | Assigned | To be trained | Trained | | No shows at training | | Participated | |
|--|----------|---------------|----------|----------|----------------------|----------|--------------|----------|
| | <u>N</u> | <u>N</u> | <u>N</u> | <u>%</u> | <u>N</u> | <u>%</u> | <u>N</u> | <u>%</u> |
| TG1 Facilitators (Experimental) | 20 | 20 | 16 | 80 | 4 | 20 | 12 | 60 |
| TG2 Facilitators (Comparison) | 20 | 20 | 14 | 70 | 6 | 30 | 10 | 50 |
| TG3 Facilitators (Control) | 20 | 20 | 10 | 50 | 10 | 50 | 9 | 45 |
| Total Facilitators | 60 | 60 | 40 | 67 | 20 | 33 | 31 | 52 |
| Timekeepers | 6 | 6 | 6 | 100 | 0 | 0 | 6 | 100 |
| Observers | 12 | 12 | 12 | 100 | 0 | 0 | 6 | 50 |
| TG1 Learners (Experimental) | 20 | 0* | 0* | 0* | 0* | 0* | 12 | 60 |
| TG2 Learners (Comparison) | 20 | 0* | 0* | 0* | 0* | 0* | 10 | 50 |
| TG3 Learners (Control) | 20 | 0* | 0* | 0* | 0* | 0* | 9 | 45 |
| Total Learners | 60 | 0* | 0* | 0* | 0* | 0* | 31 | 52 |
| Total facilitators, timekeepers, observers, and learners | 138 | 78 | 58 | 74 | 20 | 26 | 74 | 54 |

*No training required.

Facilitator demographics. Sixty participants were randomly selected and randomly assigned to the three treatment groups. Forty facilitators--16 from TG1, 14 from TG2, and 10 from TG3--were trained, and thirty-one showed for the experiment (see Table 2). The demographics of the thirty-one facilitators are in Table 3.

Table 3. Facilitator Demographics by Treatment Group, Year, and Gender

| Year | Gender | TG1 N | TG2 N | TG3 N | Total N |
|-----------|--------|----------|----------|----------|------------|
| Freshman | Female | 3 | 1 | 2 | 6 |
| | Male | 0 | 0 | 1 | 1 |
| | Total | 3 | 1 | 3 | 7 |
| Sophomore | Female | 2 | 2 | 1 | 5 |
| | Male | 2 | 0 | 1 | 3 |
| | Total | 4 | 2 | 2 | 8 |
| Junior | Female | 1 | 4 | 1 | 6 |
| | Male | 2 | 1 | 0 | 3 |
| | Total | 3 | 5 | 1 | 9 |
| Senior | Female | 0 | 0 | 1 | 1 |
| | Male | 2 | 2 | 2 | 6 |
| | Total | 2 | 2 | 3 | 7 |
| Total | Female | 6 | 7 | 5 | 18 |
| | Male | 6 | 3 | 4 | 13 |
| | Total | 12 | 10 | 9 | 31 |

Learner demographics. Sixty participants were randomly selected and randomly assigned as learners. Forty-eight learners showed and 31 were used in the experiment. Learners and facilitators were placed in pairs by the room monitor in the order of their arrival, with thirty one pairs total. Learners who were not paired signed the opscan sheet for class participation credit and were sent home. The group, year, and gender of the thirty one learners who participated in the experiment are in Table 4.

Table 4. Learner Demographics by Treatment Group, Year, and Gender

| Year and % | Gender | TG1 <u>N</u> | TG2 <u>N</u> | TG3 <u>N</u> | Total <u>N</u> |
|--------------------|--------|-----------------|-----------------|-----------------|-------------------|
| Freshman 25.8% | Female | 3 | 2 | 2 | 7 |
| | Male | 0 | 0 | 1 | 1 |
| | Total | 3 | 2 | 3 | 8 |
| Sophomore 25.8% | Female | 2 | 2 | 1 | 5 |
| | Male | 1 | 0 | 2 | 3 |
| | Total | 3 | 2 | 3 | 8 |
| Junior 32.3% | Female | 3 | 4 | 1 | 8 |
| | Male | 1 | 1 | 0 | 2 |
| | Total | 4 | 5 | 1 | 10 |
| Senior 16.1% | Female | 0 | 0 | 1 | 1 |
| | Male | 2 | 1 | 1 | 4 |
| | Total | 2 | 1 | 2 | 5 |
| Total 100% | Female | 8 | 8 | 5 | 21 |
| | Male | 4 | 2 | 4 | 10 |
| | Total | 12 | 10 | 9 | 31 |

Timekeeper characteristics. Six of the original one-hundred sixty five members of the population (see Table 2), two males and four females, were randomly selected and randomly assigned to treatment groups to serve as timekeepers.

Observer characteristics. Twelve undergraduate, senior psychology majors, two males and 10 females, from the outside seminar group served as observers for the study. They were randomly assigned to treatment groups and agreed to train and observe in exchange for the experience. Twelve were trained. Six showed and participated in the experiment (see Table 2).

Hypotheses

There were three treatment groups. All facilitators received the same training on knot tying and all received specific instruction on their roles. Facilitators in the experimental group or treatment group one (hereafter referred to as TG1) received additional extensive training, compared to facilitators in TG2 and TG3, on the identification and facilitation of learning-oriented feedback, flow theory, and experiential learning. Facilitators in the comparison group

or treatment group 2 (hereafter referred to as TG2) received training on the meaning (a definition) of facilitation. Facilitators in the control group or treatment Group 3 (hereafter referred to as TG3) received no additional training.

Primary Hypotheses

1. TG1 will show higher levels of learner engagement than TG2 or TG3.
2. TG2 will show higher levels of learner engagement than TG3.
3. TG1 will show higher levels of learner performance than TG2 or TG3.
4. TG2 will show higher levels of learner performance than TG3.
5. TG1 will show higher levels of learner self-efficacy than TG2 or TG3.
6. TG2 will show higher levels of learner self-efficacy than TG3.
7. TG1 will show higher levels of learner enjoyment than TG2 or TG3.
8. TG2 will show higher levels of learner enjoyment than TG3.

Secondary Hypotheses

9. Learner perception of personal engagement will be higher in TG1 than TG2 and TG3.
10. Learner perception of facilitator support will be higher in TG1 than TG2 and TG3.
11. The attitude of TG1 facilitators will be more favorable toward the importance of flow theory following treatment than before treatment.
12. The attitude of TG1 facilitators will be more favorable toward the importance of feedback to learner success following treatment than before treatment.
13. The attitude of TG1 facilitators toward hands-on education will be more favorable following treatment than before treatment.
14. TG1 facilitators will report they are more competent in delivering feedback to improve learner skills following training than before training.

15. TG1 facilitators will report they are more competent in using verbal feedback to increase learner engagement following training than before training.
16. TG1 facilitators will report they are more competent in using nonverbal feedback to increase learner engagement following training than before training.

Pilot Testing of the Knot-tying Task

Prior to the training, the directions for knot-tying and for using the knot-tying schematics were refined by two groups of outside people. One group was four novice knot tyers who were engineering students at Virginia Tech. The other group was six young adults from the local community.

The groups met on different occasions in an office suite at Virginia Tech. Schematics of the knots and verbal directions on knot-tying were provided as the training. After each knot was taught and practiced, suggestions for improvement in the wording of instructions were solicited. Two suggestions, offered consistently from both groups, were incorporated into the final treatment directions. The first was to write task directions for facilitators to follow so that each person heard them in the same way. The second was to place knot-tying directions directly on the knot schematics to provide a visual reference for facilitators.

Construction of the Instruments

The instruments were pre and post-treatment facilitator questionnaires, a learner questionnaire, an observer observation form, an observer learner-engagement rubric, and a timekeeper record sheet.

Facilitator Questionnaires

The Facilitator Pre-Treatment Questionnaire measured current knowledge (10 items), current skills (8 items), and current attitude (6 items). It was developed by the researcher (see

Appendix B). The items on the Facilitator Pre-Treatment Questionnaire were included in the Facilitator Post-Treatment Questionnaire (see Appendix C) to compare knowledge, skills, and attitudes of TG1 facilitators before and after treatment.

Questions were developed in each section of both instruments to measure the knowledge, skills, and attitudes of facilitators before and after the experiment. Knowledge of and skill (competence) in applying flow theory, experiential learning, and verbal and nonverbal learning-oriented feedback were measured. Attitude (competence of) toward flow theory, experiential learning and feedback to student learning was assessed (see Appendices B and C). Personal history information was gathered on level of experience in knot-tying. Content validity and reliability are addressed below.

Learner Questionnaire

The Learner Post-Treatment Questionnaire (19 items) was administered to all learners (see Appendix D). The Learner Post-Treatment Questionnaire was used to gather data on learner perceptions of personal engagement and facilitator supporter, learner feelings of self-efficacy, and learner enjoyment of the activity.

Observer Instruments

The observer's Verbal and Nonverbal Feedback Observation Form was constructed to chart facilitator use of verbal and nonverbal feedback at one-minute intervals across the ten-minute treatment period (see Appendix L). The most functional verbal and nonverbal communication cues are: (1) verbal (directions, increments of knowledge, redirection, approval, and questioning) and (2) nonverbal (kinesics, proxemics, haptics, oculosics, vocalics, and facial expressions) (Bedwell, Hunt, Touzel, & Wiseman, 1991; Costanzo, 1991; Knapp & Hall, 1992;

Landin, 1994; Hickson & Stacks, 1993; McCroskey, 1972). Items related to these communication cues were included on the Verbal and Nonverbal Feedback Observation Form.

The Learner Engagement Rubric was developed for observers to chart levels of learner engagement (see Appendix M). Four areas of engagement were charted: (1) perseverance, defined by consistent tries (Moneta & Csikszentmihalyi, 1996), (2) focus (Glass et al., 1975; Norman, 1996), (3) self-initiation (Chen & Ahern, 1999), and (4) body language (Bedwell et al., 1991; Knapp & Hall, 1992).

Content Validity of Facilitator and Learner Questionnaires

Content validity is concerned with whether an instrument is measuring the content of interest. Sax (1974) indicated that the content validity of items on a Likert-type scale is easily determined by having a panel of raters review the items. In this study, the content validity of the questionnaires was determined by a panel of three experts who were knowledgeable with instrument development. Two were statisticians in the Department of Agriculture and Life Sciences at Virginia Tech and one was a youth development specialist at Virginia Tech. They were asked to review the questions and rate them for clarity using the terms “clear” or “not clear/restate.” They were asked to provide comments and to move items among domains as needed. The panel reviewed the instruments and provided both oral and written evaluations of the content. As a result of their comments, clarification of wording was made on three items and the domain placement of two items in the Post-Treatment Facilitator Questionnaire was changed.

Reliability

Cronbach’s Alpha was used to assess the internal consistency of the scales. The reliability coefficients were adequate (see Table 5).

Table 5. Cronbach's Alpha Reliability Coefficients for Facilitator and Learner Questionnaires

| Scales | Attitude | | Knowledge | | Skills | |
|--|-------------|-------|-------------|-------|-------------|-------|
| | Coefficient | Items | Coefficient | Items | Coefficient | Items |
| Facilitator Pre-Treatment Questionnaire | .82 | 10 | .97 | 8 | .96 | 6 |
| Facilitator Post-Treatment Questionnaire | .82 | 19 | | | | |
| Learner Post-Treatment Questionnaire | .85 | 19 | | | | |

The Knot-Tying Task

Eleven knot-tying tasks, varying in degree of difficulty from simple to complex, as described in the *Handbook of Knots* (Pawson, 1998) and *Identifying I Knots* (Owen, 1996) were used in this study. The seven knots were chosen by consensus of two experts with thirty years experience in knot tying, one a Virginia 4-H agent and the other a professor of marine biology. Both experts were associates of the researcher through 4-H activities and had worked together on a number of 4-H projects. The chosen knots from basic to more complex follow:

1. Overhand
2. Hitch
3. Square knot
4. Clove hitch
5. Bowline
6. Highwayman's hitch
7. Sheepshank
8. Two hitches
9. Two square knots
10. One hitch and one square
11. One clove hitch and one square

Knot-tying was chosen as the hands-on task due to its clarity of correctness: Knots are tied correctly or incorrectly. In addition, it is a task represented across several 4-H curricular

areas, including sport fishing, repelling, climbing, and marine science. Knot-tying has increasing degrees of challenge with clear outcomes and has opportunities to match skills and degrees of challenge required for learner engagement as it relates to flow theory. The learner can understand what is needed for task performance when the components of the task are broken down into knowledge increments (Ilgen et al., 1979; Jacoby et al., 1984). Two important criteria for feedback—providing directions on what the learner is to do and specific information on what is to be learned (Lysakowski & Walberg, 1982)—may be provided in knot-tying tasks.

The number of knots chosen was based on an average number completed by this researcher, as a novice tyer, in three practice sessions with the two experts. At their suggestion, one extra knot and four variations were added in the knot-tying cycle to provide extended content for more divergent learners and more experienced knot-tyers. Seven knot patterns and four variations were chosen for the 1½ hours allotted for the treatment session. The patterns and variations were sequentially ordered to include a total of eleven knots (see Appendix E).

Training Procedures for Data Collection

Knot-Tying Training: Facilitators in Groups TG1, TG2, TG3

The sixty facilitators were informed of their group number and given a date, time, location, and directions to a large-group training through email. Forty of sixty facilitators (67%) arrived for training. Upon arrival, they were given a card with overall task directions (see Appendix F), a facilitator directions sheet (see Appendix G), schematics of the knots with written directions (see Appendix H), and a length of rope with which to practice the knots. Seated with their group (TG1, TG2, or TG3) in one of three sections of the auditorium, they were told they were going to learn to tie eleven knots that they would later teach to someone else. Sixteen TG1, fourteen TG2, and ten TG3 facilitators were trained.

Using an overhead projector that provided a clear, large-screen visual, this researcher modeled how to tie each knot, provided the name of the knot, stated the parts of the rope and how they are used, and provided verbal as well as visual instructions on each step of the knot-tying task. After each knot was modeled, the facilitators practiced in pairs or groups of three, taking turns being facilitators and learners, to become proficient in tying the knots. In the role of facilitators they provided assistance to learners by tying each knot, reading the verbal directions aloud, and “showing” how to tie. They repeated this process until each person had successfully tied all eleven knots. Three training assistants skilled in knot tying moved through the auditorium offering assistance as needed, using the directions as scripts and the visual models as references.

Attention was then drawn to the sequence of knots and the repetitions. Additional time was offered for practice in small groups with support from the researcher and the three trained knot-tiers. The facilitators were given the ropes to take with them and asked to practice their newly learned skills. They were told that they would receive an email with directions for training the learners.

Facilitator Training: Comparison Group (TG2)

TG1 and TG3 facilitators were released. Fourteen TG2 comparison group facilitators were asked to remain. They were given minimal additional training at this time that incorporated a definition of facilitation and assistance strategies for facilitation, including watching, listening, and responding. They were told that they would be asked to facilitate the tying of knots with learners during the experiment (see Appendix I).

Feedback Training: TG1 Facilitators

TG1 facilitators were asked by email to meet at a second location on a different date for additional training and were asked to bring their rope-tying folder and rope segments. A total of

sixteen facilitators arrived. They were asked to fill out a pre-treatment questionnaire on attitudes, knowledge, and skills related to learning-oriented feedback, flow theory, and hands-on learning (see Appendix B). A PowerPoint presentation on flow theory, experiential learning, feedback, and facilitation (see Appendix J) was used to train facilitators. The training was designed to follow the stages of the experiential learning model--do, share, process, generalize, and apply.

For the “do” step, facilitators were asked to think of a time when they were so absorbed in learning or involved in an activity that they lost track of time and gave no thought to outside distractions. They were instructed to write down a few notes on what was remembered, including support or feedback offered by a mentor, a coach, or a facilitator who assisted them (see Appendix J, Slide 3).

The reflection step of the experiential learning cycle included “sharing” and “processing.” Students were asked to turn to persons close by and share their experiences in pairs or triads. Questions were posted on the PowerPoint slide (see Appendix J, Slide 4).

When most small groups finished, the researcher redirected the participants to a large group focus by asking and discussing “generalization” questions (Appendix J, Slide 5). Because new information is typically introduced at this part of the experiential learning cycle, training was then given on flow theory, experiential learning, facilitation, and feedback (see Appendix J, Slides 7-13).

The role and function of the facilitator were presented and discussed (see Appendix J, Slide 14). A comparison was made between learning-oriented feedback cues and performance-oriented feedback cues as facilitation devices (see Appendix J, Slide 17). A definition of facilitation was offered and ways to facilitate tying knots were discussed (see Appendix J, Slide

18). Using a chart that listed the domains and descriptions of verbal and nonverbal feedback cues (see Appendix K), examples of verbal and nonverbal domains were reviewed and discussed.

PowerPoint slide “Ways to Facilitate” (see Appendix J, Slide 15) was posted on the overhead. With the feedback domains and description chart, rope tying instructions, and rope segments in hand, TG1 facilitators practiced the facilitation of rope-tying using verbal and nonverbal learning-oriented feedback. They worked in pairs to tie ropes, taking turns being the facilitator and the learner. The researcher and three outside training assistants were available to answer questions and provide clarification. All TG1 facilitators had an opportunity to practice as facilitators and learners and to have their questions answered.

When all groups completed the practice session, the researcher resumed the training with the PowerPoint presentation. A large group discussion using the application questions, occurred in the final cycle of the experiential learning model (see Appendix J, Slide 18). When discussion ended, the session was dismissed. The facilitators were asked to keep what they had learned among the people in the room as part of the experiment. They were told that they would receive information through their professor and by email on the date, time, and location of the experiment.

Observer Training

Twelve observers met with the researcher to be trained on using two observation instruments: (1) the Verbal and Nonverbal Feedback Observation Form and (2) the Learner Engagement Rubric (see Appendices L and M). Care was taken to provide a practice session for observers that mirrored the treatment session. Five outside training assistants served as learners (3) and facilitators (2). The researcher provided to the observers the Domains and Descriptions of Verbal and Non-verbal Feedback as an information reference (see Appendix K). Observers

were instructed to use one Verbal and Nonverbal Feedback Observation Form and one Learner Engagement Rubric for each facilitator-learner pair observed. They were instructed to refer to the Domains and Descriptions of Verbal and Nonverbal Feedback as needed for additional information or clarification.

The observers were randomly divided into pairs for the training session and were instructed to continue observing facilitator-learner pairs across ten-minute periods until they reached a 90% agreement on the categorization and frequency of feedback cues and 100% accuracy on the degree of learner engagement observed in one ten-minute period. The frequency of facilitator feedback was averaged by observers for each category at the end of each ten-minute period and then compared their averages to determine when they reached the 90% level. The entire session took approximately one hour, ending for each facilitator-learner pair when the observers reached 90% agreement.

Each observer pair was asked to rank the learner's overall level of engagement for the ten-minute knot-tying session using a three-point scale representing low, medium, or high levels of engagement. A rubric with the criteria for each level of engagement and with space to gather data on observable behaviors was provided (see Appendix M). Observers rated four facilitator-learner pairs and compared the rated values. Discussion occurred among the pairs related to discrepancies in rated criteria and practice continued until each pair agreed 100% on the level of learner engagement.

The observers were asked to record the number of knots tied by the learner during the ten-minute session. This number was provided by the timekeeper, whose job it was to cue the observers at the beginning of each sequential minute using a stopwatch and to record the number

of knots correctly tied by each learner on a Timekeeper Directions and Record Sheet (see Appendix N).

Measures were taken to provide a practice session for observers that mirrored the treatment session. The researcher, paired with an outside learner, modeled the level of feedback facilitation expected to be seen from experimental group (TG1) facilitators. Two other outside facilitators and learners modeled the comparison group (TG2) and the control group (TG3) facilitator-learner pairs. The TG2 facilitator received limited training in facilitation prior to the session and modeled the TG2 facilitator. The TG3 facilitator received no facilitation training prior to the session and modeled the TG3 facilitator. All three facilitators were trained in the same rope-tying techniques used in the treatments. They were provided with schematics of each rope tying task (see Appendix H) and a card with written directions for the overall activity (see Appendix F). These procedures were consistent with the training provided to the group facilitators before treatment. The learners were provided no training. The facilitator-learner pairs repeated ten-minute cycles of rope tying in random order until observers reached a 90% agreement on the frequency of feedback cues.

Timekeeper Training

The timekeepers were trained and given practice on using a stopwatch, calling out one-minute intervals to the observers, and recording the number of knots tied by the learner (see Appendix N). Practice was provided in two different settings. One was during the observer training session. The second was in the researcher's office where specific questions about the timekeeping process could be addressed.

Learner Training

The learners received neither training nor instructions prior to the experiment.

Administration of the Treatment

Email correspondence with expectations and directions was sent to facilitators (see Appendix R), timekeepers, and observers (see Appendix P). Groups of learners and facilitators met at six different locations simultaneously to avoid cross communication among treatment groups and to meet the agreed-upon one-hour time schedule for observer participation. At each location an impartial adult room monitor was present.

Monitors served several functions, including monitoring and redirecting conversation while facilitators and learners waited their turn to cut down on cross-communication opportunities (see Appendix O). They handed out and collected consent forms, pre and post questionnaires, timekeeper packets, observer packets, and facilitator folders. They monitored the ten-minute segment allotted for each activity, cuing the timekeeper when necessary to move pairs in and out of the room. Observers and timekeepers were already present (see Appendices N & Q) in the rooms when participants arrived.

Learners and facilitators, paired one-on-one as they arrived, were escorted to the treatment area by the room monitor. Trained facilitators in the experimental group (TG1) followed the task card instructions provided to them prior to the session. They used the schematics as visual reinforcement and verbal and nonverbal learning-oriented feedback cues to encourage learner engagement in the knot-tying task.

Facilitators in the comparison group (TG2) followed the task card instructions, schematics, and written instructions provided to them in the training session. They were cognizant of the definition of facilitation previously provided and the general objective to facilitate knot tying, but they had no training in the systematic delivery of feedback cues, leaving them to instinct and prior knowledge.

Facilitators in the control group (TG3) followed the task card instructions, schematics, and written instructions provided to them in the training session. However, no formal definition of facilitation was offered and no structure for systematic delivery of feedback cues was provided.

Analysis of Data

Data were analyzed using the following procedures:

1. Learner engagement (Hypotheses 1 and 2)

Kruskal-Wallis and Mann Whitney tests were run to determine where significant differences occurred in learner engagement among the three groups: TG1, TG2, and TG3.

2. Learner performance: Number of knots tied (Hypotheses 3 and 4)

Kruskal-Wallis and Mann Whitney tests were run to determine where significant differences occurred in learner performance among the three groups: TG1, TG2, and TG3.

3. Learner self-efficacy (Hypotheses 5 and 6)

- a. Analysis of variance was used to compare the learner self-efficacy across the three groups: TG1, TG2, and TG3.
- b. Scheffé's post-hoc comparisons were used to locate differences in self-efficacy among the three groups: TG1, TG2, and TG3.
- c. An ANOVA contrast was used to examine differences in self-efficacy between the experimental group (TG1) and the average of the comparison (TG2) and control (TG3) groups.

4. Learner enjoyment (Hypotheses 7 and 8)
 - a. Analysis of variance was computed to compare learner enjoyment across the three groups: TG2, TG2, and TG3.
 - b. Sheffé's post-hoc comparisons were used to locate differences in learner enjoyment among the three groups: TG1, TG2, and TG3.
 - c. An ANOVA contrast was used to examine differences in learner enjoyment between the experimental (TG1) group and the average of the comparison (TG2) and control (TG3) groups.
5. Learner perception of personal engagement (Hypothesis 9)
 - a. Analysis of variance was used to compare perceptions of personal engagement across the three groups: TG1, TG2, and TG3.
 - b. Sheffé's post-hoc comparisons were used to locate differences in perceptions of personal engagement among the three groups: TG1, TG2, and TG3.
 - c. An ANOVA contrast was used to examine differences in perceptions of personal engagement between the experimental group (TG1) and the average of the comparison (TG2) and control (TG3) groups.
6. Learner perception of facilitator support (Hypothesis 10)
 - a. Analysis of variance was used to compare learner perceptions of facilitator support across the three groups: TG1, TG2, and TG3.
 - b. Sheffé's post-hoc comparisons were used to locate differences in learner perceptions of facilitator support among the three groups: TG1, TG2, and TG3.

- c. An ANOVA contrast was used to examine differences in learner perceptions of facilitator support between the experimental group (TG1) and the average of the comparison (TG2) and control (TG3) groups.

7. Facilitator attitude: experimental group.

A paired t-test was used to examine differences between pre-test and post-test results for:

- a. Importance of flow theory in educational practice (Hypothesis 11).
- b. Importance of feedback to learner success (Hypothesis 12).
- c. Hands-on learning as an effective teaching tool (Hypothesis 13).
- d. Facilitator competence in delivering learning-oriented feedback (Hypothesis 14).
- e. Facilitator competence in delivering verbal learning-oriented feedback to increase learner engagement (Hypothesis 15).
- f. Facilitator competence in delivering nonverbal feedback to increase learner engagement (Hypothesis 16).

8. Factor analysis

- a. An exploratory principal components analysis was used to reduce the number of variables used to explain variation in the facilitator data.
- b. An exploratory principal components analysis was used to reduce the number of variables used to explain variation in the learner data.

Chapter 4

Results

Facilitator and learner questionnaires, observer instruments, and timekeeper records were completed during and following treatment. Descriptive statistics were used to analyze demographic data. The Kruskal-Wallis test for one-way analysis of variance, the Mann-Whitney test for nonparametric groups, ANOVA, Scheffé's post-hoc comparisons, contrasts, paired t-tests, and factor analysis were used to examine data obtained from the questionnaires, observer instruments, and timekeeper records. Data were analyzed using the Statistical Package for the Social Sciences (2001).

Learning-Oriented Feedback and Learner Engagement and Performance

Data from the three treatment groups related to learner engagement and learner performance (number of knots tied) were not normally distributed. Therefore, Kruskal-Wallis one-way analysis of variance--a k-independent sample test, where k=3--was used to determine if there were differences among the three treatment groups. The mean ranks of engagement across treatment groups and the significance of the differences among those ranks are in Table 6.

Table 6. Kruskal-Wallis: Learner Engagement by Groups

| Group | <u>N</u> | Mean rank |
|-------------------|----------|-----------|
| TG1: Experimental | 12 | 21.50 |
| TG2: Comparison | 10 | 17.00 |
| TG3: Control | 9 | 7.56 |
| Total | 31 | |

Note. $\chi^2=17.57$, $df=2$, $p=.00$.

The Kruskal-Wallis test was then run to determine where significant differences occurred among the groups. Differences in the level of learner engagement were found between the experimental group (TG1) and the comparison group (TG2) and between the comparison Group (TG2) and the control group (TG3) (see Table 8). The experimental group (TG1) ranked higher on engagement than the comparison group (TG2), and the comparison group (TG2) ranked higher on engagement than the control group (TG3).

The Mann Whitney *U* Test was used for the comparison of engagement between TG1 and TG3 (see Table 7). The experimental group (TG1) ranked higher on learner engagement than the control group (TG3). A cross check between the Mann Whitney and the Kruskal-Wallis was performed between TG1/TG2 and TG2/TG3 with no change in results.

Table 7. ANOVA: Differences in Engagement Among Treatment Groups

| Group | Mean rank | Chi square | Sum of ranks | <u>df</u> | <u>Z</u> | <u>p</u> |
|-------------------|-----------|-------------------|--------------|-----------|--------------------|----------|
| TG1: Experimental | 13.00 | 3.98 ¹ | | 1 | | .05 |
| TG2: Comparison | 9.70 | | | | | |
| TG2: Comparison | 12.80 | 6.69 ¹ | | 1 | | .01 |
| TG3: Control | 6.89 | | | | | |
| TG1: Experimental | 15.00 | | 180.00 | 1 | -4.00 ² | .00 |
| TG3: Control | 5.67 | | 51.00 | | | |

¹Kruskal-Wallis one-way analysis of variance.

²Mann-Whitney *U* test .

The mean ranks of groups and the significance of differences among groups with regard to learner performance, designated by number of knots tied, are in Table 8. No significant differences were found across the groups in the number of knots tied by learners.

Table 8. Kruskal-Wallis: Learner Performance (Number of Knots Tied) by Groups

| Group | N | Mean rank |
|-------------------|----|-----------|
| Experimental: TG1 | 12 | 18.79 |
| Compaison: TG2 | 10 | 15.55 |
| Control: TG3 | 9 | 12.78 |
| Total | 31 | |

Note. $\chi^2=2.41$, $df=2$, $p=.30$.

Learning-Oriented Feedback and Self-Efficacy, Enjoyment, Personal Engagement, and Facilitator Support as Perceived by Learners

When analyzing learner self-efficacy, enjoyment, personal engagement, and perception of facilitator support, a one-way analysis of variance was used to determine if significant differences occurred in these variables among the three treatment groups. When differences were found, Sheffé's post hoc comparisons were run to determine where the differences occurred. To examine whether TG1 was the same as the average of TG2 and TG3, a contrast was constructed as follows: (contrast: TG1=1, TG2=-0.5, TG3=-0.5).

Significant differences were found among treatment groups for learner self-efficacy, represented by items 6 and 17 on the learner post-treatment questionnaire (see Appendix D) (see Table 9).

Table 9. ANOVA: Differences in Self-Efficacy Across Treatment Groups

| Self-efficacy items | Source of variance | SS | df | MS | F | p |
|---|--------------------|-------|----|------|------|-----|
| 6. Feedback from my facilitator helped me feel competent as a learner during this experience. | Between | 10.47 | 2 | 5.24 | 8.49 | .00 |
| | Within | 17.26 | 28 | .62 | | |
| | Total | 27.74 | 30 | | | |
| 17. The facilitator's cues helped me feel confident in my ability to complete the task. | Between | 13.68 | 2 | 6.84 | 8.94 | .00 |
| | Within | 21.41 | 28 | .77 | | |
| | Total | 35.09 | 30 | | | |

Scheffé's post-hoc comparisons (see Table 10) revealed significant differences between the experimental group (TG1) and the control group (TG3) on the two self-efficacy measures represented by items 6 and 17 on the learner post-treatment questionnaire. In both cases the experimental group (TG1) had higher mean efficacy scores than the control group (TG3). No significant difference was found between the experimental group (TG1) and the comparison group (TG2) on either item 6 or 17. Likewise, no significant difference was found between the comparison group (TG2) and the control group (TG3) on either item 6 or 17.

Table 10. Scheffé's Post-hoc Comparisons: Learner Self-Efficacy

| Self-efficacy items | (I) Group | (J) Group | Mean differences (I-J) | SE | p |
|---|-------------------|-----------------|------------------------|------|------|
| 6. Feedback from my facilitator helped me feel competent as a learner during this experience. | TG1: Experimental | TG2: Comparison | 0.83 | .35 | .07 |
| | | TG3: Control | 1.37 | .34 | .00 |
| | TG2: Comparison | TG3: Control | 0.53 | .36 | .35 |
| 17. The facilitator's cues helped me feel confident in my ability to complete the task | TG1: Experimental | TG2: Comparison | 0.75 | .39 | .17 |
| | | TG3: Control | 1.58 | .37 | .00 |
| | TG2: Comparison | TG3: Control | 0.83 | 0.40 | 0.14 |

Significant differences were found between the experimental group (TG1) and the average of the comparison and control groups (TG2 and TG3) on the two self-efficacy measures represented by items 6 and 17 on the learner post-treatment questionnaire (see Table 11). In both cases the experimental group (TG1) had higher mean self-efficacy scores than the average of the comparison group (TG2) and the control group (TG3).

Table 11. Contrast: Learner Self-Efficacy

| Self-efficacy items | Equality of variances ^a | Value of contrast | <u>SE</u> | <u>df</u> | <u>t</u> | <u>p</u> |
|---|------------------------------------|-------------------|-----------|-----------|----------|----------|
| 6. Feedback from my facilitator helped me feel competent as a learner during this experience. | Assume equal variances | 1.10 | .29 | 1 | 3.80 | .00 |
| 17. The facilitator's cues helped me feel confident in my ability to complete the task. | Assume equal variances | 1.17 | .32 | 1 | 3.62 | .00 |

Note. Contrast coefficients: TG1=1, TG2=-0.5, TG3=-0.5.

^aLevene's test for equality of variances: $p \geq .05$, assume equal variances.

A multivariate analysis of variance, MANOVA, is another way to measure differences among groups when looking at more than one response. Table 12 shows differences among the treatments when taking into account the relationship between items 6 and 17 on the learner post-treatment questionnaire (see Appendix D). There was a difference among groups when the two responses were analyzed together.

Table 12. MANOVA: Learner Self-Efficacy

| Effect | | Value | <u>F</u> | Hypothesis <u>df</u> | Error <u>df</u> | <u>p</u> |
|-----------|---------------|-------|---------------------|----------------------|-----------------|----------|
| Intercept | Wilks' Lambda | .04 | 365.28 ^a | 2 | 27 | .00 |
| Groups | Wilks' Lambda | .52 | 5.24 ^a | 4 | 54 | .00 |

Note. Design: intercept+ groups.

^a Exact statistic.

A significant difference was found among treatment groups for learner enjoyment, represented by question 13 on the learner post-treatment questionnaire (see Appendix D) (see Table 13).

Table 13. ANOVA: Differences in Learner Enjoyment Across Treatment Groups

| Learner enjoyment item | Source of variance | <u>SS</u> | <u>df</u> | <u>MS</u> | <u>F</u> | <u>p</u> |
|--|--------------------|-----------|-----------|-----------|----------|----------|
| 13. I enjoyed learning how to tie knots. | Between | 8.77 | 2 | 4.39 | 6.12 | .01 |
| | Within | 20.07 | 28 | .72 | | |
| | Total | 28.84 | 30 | | | |

Scheffé’s post-hoc comparisons revealed a significant difference between the experimental group (TG1) and the control group (TG3) on learner enjoyment, represented by question 13 (see Table 14). The experimental group (TG1) had a higher mean enjoyment score than the control group (TG3). No significant differences in learner enjoyment were found between the experimental group (TG1) and the comparison group (TG2) or between the comparison group (TG2) and the control group (TG3) (see Table 14).

Table 14. Scheffé’s Post-hoc Comparisons: Learner Enjoyment

| Learner enjoyment item | (I) Group | (J) Group | Mean differences (I-J) | <u>SE</u> | <u>p</u> |
|--|-------------------|-----------------|------------------------|-----------|----------|
| 13. I enjoyed learning how to tie knots. | TG1: Experimental | TG2: Comparison | .83 | .37 | .10 |
| | | TG3: Control | 1.23 | .36 | .01 |
| | TG2: Comparison | TG3: Control | .40 | .39 | .60 |

A significant difference was found between the experimental group (TG1) and the average of the comparison and control groups (TG2 and TG3) on learner enjoyment, question 13, on the learner post-treatment questionnaire (see Table 15). The experimental group (TG1) had a

higher mean enjoyment score than the average of the comparison group (TG2) and the control group (TG3).

Table 15. Contrast: Learner Enjoyment

| Learner enjoyment items | Equality of variances ^a | Value of contrast | <u>SE</u> | <u>Df</u> | <u>t</u> | <u>P</u> |
|--|------------------------------------|-------------------|-----------|-----------|----------|----------|
| 13. I enjoyed learning how to tie knots. | Assume equal variances | 1.03 | .31 | 28 | 3.31 | .00 |

^a Note. Contrast: TG1=1, TG2=-0.5, TG3=-0.5.
Levene's test: $p \geq .05$, assume equal variances.

Significant differences were found among treatment groups in the area of learner perception of personal engagement, item 2, on the learner post-treatment questionnaire (see Appendix D) (see Table 16).

Table 16. ANOVA: Differences in Learner Perception of Engagement Across Treatment Groups

| Learner perception of engagement item | Source of variance | <u>SS</u> | <u>df</u> | <u>MS</u> | <u>F</u> | <u>p</u> |
|---|--------------------|-----------|-----------|-----------|----------|----------|
| 2. I was engaged in the learning process. | Between | 10.10 | 2 | 5.48 | 7.97 | .00 |
| | Within | 19.24 | 28 | .69 | | |
| | Total | 30.19 | 30 | | | |

Scheffé's Post-hoc comparisons (see Table 17) revealed significant differences between the experimental group (TG1) and the comparison group (TG2) and between the experimental group (TG1) and the control group (TG3) on learner perception of personal engagement represented by question 2 on the learner post-treatment questionnaire (see Appendix D). In both cases the experimental group (TG1) had a higher mean engagement score. No significant difference was found between the comparison group (TG2) and the control group (TG3) on personal engagement, item 2.

Table 17. Scheffé's Post-hoc Comparisons: Learner Perception of Personal Engagement Across Treatment Groups

| Learner perception of engagement item | (I) Group | (J) Group | Mean differences (I-J) | SE | p |
|---|-------------------|-----------------|------------------------|-----|-----|
| 2. I was engaged in the learning process. | TGI: Experimental | TG2: Comparison | 1.14 | .37 | .02 |
| | | TG3: Control | 1.28 | .36 | .00 |
| | TG2: Comparison | TG3: Control | .14 | .38 | .93 |

A significant difference was found between the experimental group (TG1) and the average of the comparison and control groups (TG2 and TG3) on learner personal engagement, question 2 on learner post-treatment questionnaire (see Appendix D) (see Table 18). The experimental group (TG1) had a higher mean personal engagement score than the average engagement score of the comparison (TG2) and control (TG3) groups.

Table 18. Contrast: Learner Perception of Engagement Across Treatment Groups

| Learner perception of engagement item | Equality of variances ^a | Contrast | Value of contrast | SE | df | t | p |
|---|------------------------------------|----------|-------------------|-----|----|------|-----|
| 2. I was engaged in the learning process. | Assume equal variances | 1 | 1.21 | .31 | 28 | 3.31 | .00 |

Note. Contrast: TG1=1, TG2=-0.5, TG3=-0.5.

^aLevene's test: $p \geq .05$, assume equal variances.

A significant difference was found among treatment groups in learner perception of facilitator support, question 14 on the learner post-treatment questionnaire (see Appendix D) (see Table 19).

Table 19. ANOVA: Differences in Learner Perception of Facilitator Support Across Treatment Groups

| Learner perception of facilitator support item | Source of variance | <u>SS</u> | <u>df</u> | <u>MS</u> | <u>F</u> | <u>p</u> |
|---|--------------------|-----------|-----------|-----------|----------|----------|
| 14. I felt supported by the facilitator during this experience. | Between | 12.18 | 2 | 6.10 | 6.34 | .01 |
| | Within | 26.92 | 28 | .96 | | |
| | Total | 39.10 | 30 | | | |

There was no significant difference between the experimental group (TG1) and the comparison group (TG2) or between the comparison group (TG2) and the control group (TG3) on learner perception of facilitator support, question 14 on the learner post-treatment questionnaire (see Table 20). There was a significant difference between the experimental group (TG1) and the control group (TG3) on learner perception of facilitator support. The experimental group (TG1) perceived facilitator support to be higher, on average, than the control group (TG3). The experimental group (TG1) did not differ from the comparison group (TG2) on perceived facilitator support, nor did the comparison group (TG2) differ from the control group (TG3) on personal facilitator support.

Table 20. Scheffé's Post-hoc Comparisons: Learner Perception of Facilitator Support Across Treatment Groups

| Learner perception of facilitator support item | (I) Group | (J) Group | Mean differences (I-J) | <u>SE</u> | <u>p</u> |
|--|-------------------|-----------------|------------------------|-----------|----------|
| 14.I felt supported by facilitator during this experience. | TG1: Experimental | TG2: Comparison | 1.08 | .43 | .06 |
| | | TG3: Control | 1.42 | .42 | .01 |
| | TG2: Comparison | TG3: Control | .33 | .45 | .76 |

A significant difference was found between the mean of the experimental group (TG1) and the mean of the comparison and control groups (TG2 and TG3) on learner perception of

facilitator support (see Table 21). The experimental group (TG1) perceived more facilitator support than the comparison (TG2) and control (TG3) groups combined.

Table 21. Contrast: Learner Perception of Facilitator Support

| Learner perception of facilitator support item | Equality of variances ^a | Value of Contrast | <u>SE</u> | <u>df</u> | <u>t</u> | <u>Sig</u> |
|---|------------------------------------|-------------------|-----------|-----------|----------|------------|
| 14. I felt supported by the facilitator during this experience. | Assume equal variances | 4.10 ^b | .28 | 28 | 14.44 | .00 |

Note. Contrast: TG1=1, TG2=-0.5, TG3=-0.5.

^aLevene's test: $p \geq .05$, assume equal variances. ^bThe sum of the contrast coefficients is not zero.

Attitude and Competency Change in Experimental Group (TG1) Facilitators

The paired t-test, also called the dependent t-test, was used to examine mean differences in pre-test and post-test results of the same persons. Results of paired t-tests, run on the experimental group (TG1) facilitators, with the following variables are presented: (1) importance of flow theory to educational practice, (2) importance of feedback to learner engagement, (3) hands-on learning as an effective teaching tool, (4) facilitator competence in delivering learning-oriented feedback to improve learner skills, (5) facilitator competence in delivering verbal learning-oriented feedback to increase learner engagement, and (6) facilitator competence in delivering nonverbal learning-oriented feedback to increase learner engagement (see Tables 22-26).

Facilitator attitude toward the importance of flow theory in educational practice was more positive following treatment (see Table 22).

Table 22. Importance of Flow Theory in Educational Practice

| Variable | Descriptive statistics | | | | Paired difference | | | | |
|---|------------------------|----------|-----------|-----------|------------------------|-----------|----------|-----------|----------|
| | <u>M</u> | <u>N</u> | <u>SD</u> | <u>SE</u> | <u>M</u> difference | <u>SD</u> | <u>t</u> | <u>df</u> | <u>p</u> |
| Flow theory is important to educational practice. | | | | | | | | | |
| Post-test | 3.83 | 12 | .58 | .17 | | | | | |
| Pretest | 2.42 | 12 | .90 | .26 | 1.42 | 1.17 | 4.21 | 11 | .00 |

Facilitator attitude toward the importance of feedback to learner engagement was more positive following treatment (see Table 23).

Table 23. The Importance of Systematic Feedback to Learner Engagement

| Variable | Descriptive statistics | | | | Paired difference | | | | |
|---|------------------------|----------|-----------|-----------|------------------------|-----------|----------|-----------|----------|
| | <u>M</u> | <u>N</u> | <u>SD</u> | <u>SE</u> | <u>M</u> difference | <u>SD</u> | <u>t</u> | <u>df</u> | <u>p</u> |
| Systematic feedback is important to learner engagement. | | | | | | | | | |
| Post-test | 4.58 | 12 | .52 | .15 | | | | | |
| Pre-Test | 2.42 | 12 | .78 | .23 | .92 | .99 | 3.19 | 11 | .01 |

Facilitator attitude toward hands-on learning as an effective teaching tool was more positive following treatment (see Table 24).

Table 24. Hands-on Learning as an Effective Teaching Tool

| Variable | Descriptive statistics | | | | Paired difference | | | | |
|--|------------------------|----------|-----------|-----------|---------------------|-----------|----------|-----------|----------|
| | <u>M</u> | <u>N</u> | <u>SD</u> | <u>SE</u> | <u>M difference</u> | <u>SD</u> | <u>t</u> | <u>df</u> | <u>p</u> |
| Hands-on learning is an effective teaching tool. | | | | | | | | | |
| Post-test | 5.00 | 12 | .00 | .00 | 1.42 | 1.17 | 4.21 | 11 | .00 |
| Pre-test | 3.92 | 12 | .79 | .23 | | | | | |

Facilitator competence in delivering learning-oriented feedback to improve learner skills increased following treatment (see Table 25).

Table 25. Facilitator Competence in Delivering Learning-oriented Feedback to Improve Learner Skills

| Dependent variable | Descriptive statistics | | | | Paired difference | | | | |
|--|------------------------|----------|-----------|-----------|---------------------|-----------|----------|-----------|----------|
| | <u>M</u> | <u>N</u> | <u>SD</u> | <u>SE</u> | <u>M difference</u> | <u>SD</u> | <u>t</u> | <u>df</u> | <u>p</u> |
| I am able to use learning-oriented feedback to improve learner skills. | | | | | | | | | |
| Post-test. | 4.17 | 12 | .39 | .11 | 1.92 | 1.00 | 6.67 | 11 | .00 |
| Pre-test | 2.25 | 12 | .97 | .28 | | | | | |

Facilitator competence in delivering verbal learning-oriented feedback to increase learner engagement increased following treatment (see Table 26).

Table 26. Facilitator Competence in Delivering Verbal Learning-oriented Feedback to Increase Learner Engagement

| Dependent variable | Descriptive statistics | | | | Paired difference | | | | |
|--|------------------------|----------|-----------|-----------|---------------------|-----------|----------|-----------|----------|
| | <u>M</u> | <u>N</u> | <u>SD</u> | <u>SE</u> | <u>M difference</u> | <u>SD</u> | <u>t</u> | <u>df</u> | <u>p</u> |
| I am able to use verbal learning-oriented feedback to increase learner engagement. | | | | | | | | | |
| Post-test | 4.08 | 12 | .29 | .08 | 1.92 | .67 | 9.93 | 11 | .00 |
| Pre-test | 2.17 | 12 | .72 | .21 | | | | | |

Facilitator competence in delivering nonverbal, learning-oriented feedback to increase learner engagement increased following treatment (see Table 27).

Table 27. Facilitator Competence in Delivering Nonverbal, Learning-Oriented Feedback to Increase Learner Engagement

| Dependent variable | Descriptive statistics | | | | Paired difference | | | | |
|--|------------------------|----------|-----------|-----------|---------------------|-----------|----------|-----------|----------|
| | <u>M</u> | <u>N</u> | <u>SD</u> | <u>SE</u> | <u>M difference</u> | <u>SD</u> | <u>t</u> | <u>df</u> | <u>p</u> |
| I am able to use nonverbal learning-oriented feedback to increase learner engagement | | | | | | | | | |
| Post-test | 3.83 | 12 | .58 | .17 | 1.58 | .97 | 5.51 | 11 | .00 |
| Pre-test | 2.25 | 12 | .75 | .22 | | | | | |

Factor Analysis

Factor analysis is used to reduce the number of variables that explain variation in data. Although the small numbers in this study would affect the validity of such an analysis, an

exploratory principal components analysis was performed. More subjects per question are needed to make this explanation valid.

The eigenvalues revealed four components or factors for the learner data and four components for the facilitator data. A coefficient of .50 was used to identify primary items in each factor, and components were named by examining the content of the items. See Table 28 for facilitator principal components analysis data and Table 29 for learner principal components analysis data.

Table 28. Principal Components Analysis of Facilitator Post-Treatment Attitude Data

| Facilitator data | Component | | | |
|---|---|------------|--------------------|-------------------------|
| | Knot-tying: teaching and learning | Feedback | Cues: nonverbal | Knot-tying knowledge |
| 1. Hands-on learning is an effective tool. | .28 | .43 | .62 | -.18 |
| 2. My learner was engaged in the task. | .12 | .86 | .20 | .24 |
| 3. Systematic feedback is important to learner success. | .22 | .62 | .26 | .33 |
| 4. Verbal cues were more effective than nonverbal cues. | .36 | .34 | .49 | -.01 |
| 5. Flow theory is important to educational practice. | .45 | .65 | -.01 | .15 |
| 6. Feedback moved learner to greater engagement. | .16 | .84 | -.01 | -.06 |
| 7. Learning oriented feedback increased learner interest in the task. | .26 | .80 | .25 | .14 |
| 8. Nonverbal cues were more effective than verbal ones. | .00 | .20 | .82 | .25 |
| 9. I knew how to tie knots prior to training. | .30 | .16 | -.00 | .83 |
| 10. Teaching knot tying was frustrating. | -.69 | -.23 | .14 | -.30 |
| 11. I did not know how to tie knots prior to training. | -.14 | -.18 | -.12 | -.82 |
| 12. Teaching knot tying was easy. | .83 | .23 | .07 | .24 |
| 13. I enjoyed teaching knot tying to a learner. | .76 | .13 | .25 | .26 |
| 14. My learner understood my directions. | .70 | .31 | .33 | .00 |
| 15. My learner learned to tie the knots. | .75 | .33 | .21 | .07 |
| 16. I felt prepared to teach knot tying to a learner. | .74 | .10 | .52 | .24 |
| 17. I did not feel prepared to teach knot tying to a learner. | -.35 | .04 | -.52 | -.48 |
| 18. I felt successful in using feedback cues to assist my learner. | .56 | .44 | .28 | .11 |
| 19. Feedback helped to match the task difficulty and the learner's skill. | .39 | .65 | .43 | .17 |

Extraction Method: Principal Components Analysis.
Rotation Method: Varimax with Kaiser Normalization.

Table 29. Learner Principal Components Analysis of Learner Post-Treatment Attitude Data

| | Component | | | |
|---|---------------------|---------------|---------------------|-----------------|
| | Effects of training | Self-efficacy | Non-verbal feedback | Prior knowledge |
| 1. Hands-on learning is an effective way to learn a task. | .20 | .89 | .13 | -.04 |
| 2. I was engaged in the learning process. | .50 | .66 | .26 | -.12 |
| 3. Verbal feedback from the facilitator helped me complete the task. | .36 | .75 | .16 | -.25 |
| 4. Nonverbal feedback from the facilitator helped me complete the task. | .06 | .09 | .91 | .13 |
| 5. I can tie the knots I was taught. | .60 | .45 | -.11 | .03 |
| 6. Feedback from my facilitator helped me feel competent as a learner during this experience. | .58 | .56 | .27 | -.13 |
| 7. I knew how to tie the knots before the training. | -.15 | -.42 | .09 | .68 |
| 8. Verbal cues from the facilitator helped me understand the task. | .53 | .60 | .07 | -.08 |
| 9. Nonverbal cues from the facilitator helped me understand the task. | .15 | .19 | .85 | .03 |
| 10. Learning knot tying was easy. | .38 | .25 | .31 | .72 |
| 11. I did not know how to tie knots prior to training. | .24 | .22 | .06 | -.79 |
| 12. I understood the facilitator's directions. | .81 | .25 | .07 | .23 |
| 13. I enjoyed learning how to tie knots. | .72 | .42 | -.18 | .20 |
| 14. I felt supported by the facilitator during this experience. | .70 | .39 | .39 | -.13 |
| 15. I could teach knot tying to another learner. | .20 | .67 | .48 | .27 |
| 16. Tying knots was frustrating. | -.53 | -.24 | -.06 | -.66 |
| 17. The facilitator's cues helped me feel confident in my ability to complete the task. | .85 | .28 | .12 | -.01 |
| 18. The facilitator's cues helped my performance. | .79 | .38 | .29 | .06 |
| 19. The facilitator's cues hindered my performance. | -.76 | .01 | -.19 | .19 |

Extraction Method: Principal Components Analysis.
 Rotation Method: Varimax with Kaiser Normalization.

Chapter 5

Summary of Findings, Conclusions, Discussion with Recommendations for Future Research, and Implications for Practice

This chapter has a summary of the major findings, a statement of conclusions, recommendations for future research, implications for practice, and a discussion of the findings and conclusions. The Summary of Findings Table (see Table 30) contains a synopsis of findings by dependent variable.

The study was conducted primarily to assess the effects of trained facilitation of verbal and nonverbal learning-oriented feedback on (1) learner engagement (2) learner performance (3) learner self-efficacy (4) learner enjoyment (5) learner perception of personal engagement, and (6) learner perception of support from facilitators. Changes in the attitudes of trained facilitators (TG1) before and after treatment were also examined with regard to (1) importance of flow theory to educational practice, (2) the importance of systematic feedback to the engagement of learners, (3) use of hands-on learning as an effective teaching tool, (4) competence in the use of learning-oriented feedback to increase learner skills, (5) competence in the use of verbal learning-oriented feedback to increase learner engagement, and (6) competence in use of nonverbal learning-oriented feedback to increase learner engagement. The researcher manipulated the level of facilitator training on learning-oriented feedback in three groups: experimental (TG1), comparison (TG2), and control (TG3).

Table 30. Summary of Findings by Dependent Variable^a

| Dependent variable | Comparisons | | | TG1- (TG2 and TG3) | TG1 Facilitator Pre-Post |
|--|-------------|-------------|---------|--------------------------|-----------------------------|
| | TG1-TG2 | TG1- TG3 | TG2-TG3 | | |
| Learner engagement | x | x | x | | |
| Learner performance (number of knots tied) | | | | | |
| Learner self-efficacy Item 6 Item 17 Items 6 and 17 | | x x | | x | |
| Learner enjoyment | | x | | x | |
| Learner perception of engagement | x | x | | x | |
| Learner perception of facilitator support | | x | | x | |
| Facilitator attitude: importance of flow theory to educational practice | | | | | x |
| Facilitator attitude: importance of systematic feedback to learner success | | | | | x |
| Facilitator attitude: hands-on learning as an effective teaching tool | | | | | x |
| Facilitator competence: delivering learning- oriented feedback to improve learner skills | | | | | x |
| Facilitator competence: delivering verbal learning-oriented feedback to increase learner engagement | | | | | x |
| Facilitator competence: delivering nonverbal learning-oriented feedback to increase learner engagement | | | | | x |

^aAn x means that a significant difference was found.

Summary of Findings

The Importance of Facilitated Learning-Oriented Feedback to Learner Engagement

Learner engagement was rated significantly higher in the experimental group (TG1), where extensive facilitator training in flow theory, experiential learning, facilitation skills, and use of verbal and nonverbal learning-oriented feedback cues occurred, than in either the comparison (TG2) or control (TG3) groups. Learner engagement in the comparison group (TG2), where minimal training on facilitation occurred, was higher than learner engagement in the control group (TG3), where no training occurred.

The Importance of Facilitated Learning-Oriented Feedback to Learner Performance

No significant differences were found in learner performance on knot-tying among the three treatment groups.

The Importance of Facilitated Learning-Oriented Feedback to Learner Self-Efficacy

Learner self-efficacy was significantly higher in the experimental group (TG1) than in the control group (TG3) for items 6 and 17. No significant differences were found between the experimental group (TG1) and the comparison group (TG2) or between the comparison group (TG2) and the control group (TG3) for either item 6 or 17. Learner self-efficacy for the experimental group (TG1) was higher than the average of the comparison and control groups (TG2 and TG3).

The Effects of Facilitated Learning-Oriented Feedback on Learner Enjoyment

Learner enjoyment was significantly higher in the experimental group (TG1) than in the control group (TG3). No significant differences were found between the experimental group (TG1) and the comparison group (TG2) or between the comparison group (TG2) and the control

group (TG3). Learner enjoyment was higher for the experimental group (TG1) than for the combined comparison and control groups (TG2 and TG3 combined).

The Effects of Facilitated Learning-Oriented Feedback on Learner Perception of Engagement

Learner perception of engagement was significantly higher in the experimental group (TG1) than in the comparison (TG2) and control (TG3) groups. No difference in learner perception of engagement was found between the comparison (TG2) and control (TG3) groups. Learner perception of engagement was significantly higher in the experimental group (TG1) than in the comparison (TG2) and the control (TG3) groups combined.

The Importance of Facilitated Learning-oriented Feedback to Learner Perception of Facilitator Support

Learner perception of facilitator support was significantly higher in the experimental group (TG1) than in the control group (TG3). No significant difference was found between the experimental group (TG1) and the comparison group (TG2) or between the comparison group (TG2) and the control group (TG3). Learner perception of facilitator support was significantly higher in the experimental group (TG1) than in the combined comparison and control groups (TG2 and TG3).

Attitude Changes in Trained (TG1) Facilitators

Pre-post treatment measures showed a significant positive attitude change in TG1 facilitators toward the importance of flow theory to educational practice, the importance of systematic feedback to learner success, and the effectiveness of hands-on learning as a teaching tool.

Competency Changes in Trained (TG1) Facilitators

Pre-post treatment measures showed a significant positive change in competence of TG1 facilitators after treatment in delivering learning-oriented feedback to improve learner skills and the use of verbal and nonverbal learning-oriented feedback to increase learner engagement.

Conclusions

1. Learning engagement is increased by delivery of learning-oriented feedback by trained facilitators.
2. Learner performance is not affected by the intentional use of verbal and nonverbal learning-oriented feedback by trained facilitators.
3. Learner self-efficacy in knot-tying is increased by facilitators trained to deliver learning-oriented feedback.
4. Learner enjoyment is increased by facilitated learning-oriented feedback.
5. Learner perception of facilitator support and personal engagement is increased by facilitators trained to deliver learning-oriented feedback.
6. Facilitator attitude toward flow theory and hands-on learning is increased by training and delivery of learning-oriented feedback.
7. Facilitator attitude toward the importance of systematic feedback is increased by training and delivery of learning-oriented feedback cues.
8. Facilitator competence in delivering learning-oriented feedback is increased by training and delivery of learning-oriented feedback.

Discussion of Findings and Conclusions with Recommendations for Future Research

Engagement, which is influenced by a learner's perception of personal ability to do a task, can be leveraged through consistent, intentional use of feedback. Learner engagement was

found to increase when a clearly defined task was facilitated by the intentional use of specific verbal and nonverbal feedback cues with college students. The small sample size warrants additional research to support these findings before generalizations are made to a larger population. An expansion of population would be necessary to generalize findings to populations beyond the one defined in this study.

Although verbal and nonverbal learning-oriented feedback did not have a significant effect on learner performance in this study, researchers (Earley, 1986, 1988; Ilgen et al., 1979; Langer & Wurf, 1999) have shown that both performance-oriented feedback and learning-oriented feedback have had effects on performance. Lysakowski and Walberg (1982) found that performance is increased when cues provide instruction about what is to be learned and what the student is to do. Ilgen et al. (1979) found that feedback offering increments of knowledge about a task or what a learner is to do enhances learner performance.

The cues chosen for this study provided direction, redirection, incremental chunks of content, answers to questions about the process and task, and offered approval. The cues were intended to provide immediate reinforcement, information, and to encouragement to self-regulate engagement and to complete the task.

For self-regulated activities, where learners are able to measure unfolding cognitive processing against standards or goals of the task at hand, Butler and Winne (1995) found feedback to be an inherent catalyst for learning. Feedback during the knot-tying task in this experiment assisted learners (1) to make initial decisions related to approach and choice of knot-tying tasks as outlined in the overall task directions, (2) to use specific direction or redirection cues to support the task progression as pictured in the knot-tying schematics, and (3) to use previous successes to build on the next step of the knot-tying task. Although feedback cues were

used to encourage performance as well as engagement, the groups did not perform differently on the knot-tying task. Thus, further research is warranted to explore how self-regulation affects performance. By redesigning the task so that learners are taught more variations of fewer knots, performance could be measured against increments of task accomplishment and learners could more readily regulate the process for task completion. If they can measure where they are, they can regulate how they work.

How learners view learning tasks and themselves in the process of learning is influenced by both learning-oriented and performance-oriented feedback (Johnson, Perlow, & Pieper, 1993; Langer & Wurf, 1999). In the current study, learners who were paired with highly trained facilitators (TG1) felt more competent, experienced greater enjoyment, felt more engaged, and felt more supported by the facilitators than learners paired with TG3 facilitators who had no training. TG1 learners perceived themselves to be more engaged in the learning process than learners paired with TG3 facilitators who received minimal or no training. Facilitated feedback had a positive effect on learner perceptions in this study. Examining the relationship between facilitator perceptions of the effects of verbal and nonverbal feedback and learner perceptions of benefits of verbal and non-verbal learning-oriented feedback could provide an interesting topic for future research. It might provide better understanding of points of influence between the teacher and the learner during a coaching or facilitated training process.

Implications for Practice

Merging the need of teachers to increase learner engagement, performance, self-efficacy, and enjoyment with a hands-on learning activity that meets the needs of divergent learners provided the rationale for this study. This study provides useful implications for practice in the

classroom and in non-formal educational settings. Practitioners may want to consider the following suggestions with regard to feedback, engagement, self-efficacy, and enjoyment:

- Train students or program youth to facilitate learning tasks or skills on a one-on-one basis or in small group settings. Follow the training outline (see Appendix I), making adaptations for divergent learners by considering (1) ability levels, (2) learning styles or preferences, (3) developmental characteristics and their implications for learning, (4) brain dominance, (3) multiple intelligences, and (4) content.
- Use verbal and nonverbal feedback (see Appendix K) to increase student engagement in small and large group settings. Model the use of feedback cues, use mini-lessons to teach and practice what they are and how to use them, and encourage students to use them when coaching or mentoring peers or younger learners.
- Use positive, learning-oriented feedback on a consistent basis in activities to enhance learner self-efficacy and enjoyment.
- Do ongoing evaluation of learner perception of teacher support through the use of feedback. Provide opportunities for public sharing of what is working and not working. Use student suggestions in revising support approaches and refining use of feedback.
- Develop teacher research opportunities for personal growth. Create pre-post measures that can be used to determine personal attitude and competence changes. Use professionals with evaluation experience to assist you in developing them.

Discuss the outcomes with professional peers. What outcomes in yourself did you anticipate? What surprised you?

Research lends credence to the thesis that learning best takes place in environments that provide hands-on learning, experiential learning, opportunities for reflection and processing, and challenges that match learners' growing skills (Zemelman, Daniels, & Hyde, 1993). The present study focused on this type of learning environment through a compressed experiment with college students. The study provided a hands-on learning opportunity to meet the skill level of learners through challenges related to a given task. Exploration of the effects of verbal and non-verbal learning-oriented feedback in different settings, and specifically through different experiential processes, could offer corroborating information to the current body of research on feedback.

References

- Alexander, P. A., Schallert, D. L., & Hare, V. C. (1991). Coming to terms: How researchers in learning and literacy talk about knowledge. *Review of Educational Research, 61*, 315-343.
- Ary, D., Jacobs, L., & Razavieh, A. (1996). *Introduction to research in education* (5th ed.). Orlando, FL: Harcourt Brace & Co.
- Balzer, W. K., Doherty, M. E., & O'Connor, R. (1989). Effects of cognitive feedback on performance. *Psychological Bulletin, 106*, 410-433.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice Hall.
- Bedwell, L., Hunt, G., Touzel, T., & Wiseman, D. (1991). *Effective teaching: Preparation and implementation* (2nd ed.). Springfield, IL: Charles C. Thomas.
- Boud, D., Keough, R., & Walker, D. (1985). *Reflection: Turning experience into learning*. London: Kegan Page.
- Butler, D., & Winne, P. (1995). Feedback and self-regulated learning: A theoretical synthesis. *Review of Educational Research, 65*(3), 245-281.
- Carver, R. (1996). Theory for practice: A framework for thinking about experiential education. *Journal of Experiential Education, 19*(1), 8-13.
- Chan, T., & Ahern, T. (1999). Targeting motivation: Adapting flow theory to instructional design. *Journal of Educational Computing Research, 21*(2), 151-163.
- Chapman, S., McPhee, P., & Proudman, B. (1992). What is experiential education? *Journal of Experiential Education, 15*(2), 16-23.
- Chen, D., & Singer, R. N. (1992). Self-regulation and cognitive strategies in sport participation. *International Journal of Sport Psychology, 23*, 277-300.
- Cooley, C. H. (1902). *Human nature and the social order* (Rev. ed.). New York: Scribner.
- Costanzo, M., & Archer, D. (1991). A method for teaching about verbal and nonverbal communication. *Teaching of Psychology, 18*(4), 223-226.
- Covington, M. V. (1992). *Making the grade: A self-worth perspective on motivation and school reform*. New York: Cambridge University Press.

- Crable, R. (1979). What can you believe about rhetoric? In J. McKay (Ed.), *Exploration in speech communication* (pp. 114-132). Columbus, OH: Charles E. Merrill.
- Csikszentmihalyi, M. (1975). *Beyond boredom and anxiety: The experience of playing work and games*. San Francisco, CA: Jossey-Bass.
- Csikszentmihalyi, M. (1997a). *Finding flow: The psychology of engagement with everyday life*. New York: Harper-Collins.
- Csikszentmihalyi, M. (1990). *Flow: The psychology of optimal experience*. New York: Harper and Row.
- Csikszentmihalyi, M. (1997b). Flow and creativity. *NAMTA Journal*, 22(2), 61-97.
- Csikszentmihalyi, M. (2001). Preparing for the world of work. *Namta Journal*, 26(1), 23-38.
- Csikszentmihalyi, M. (1982). Toward a psychology of experience. In L. Wheeler (Ed.), *Review of personality and social psychology* (pp. 13-35). Beverly Hills, CA: Sage.
- Deci, E., & Ryan, R. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum.
- Deci, E., Koestner, R., & Ryan, R. (2001). Extrinsic rewards and intrinsic motivation in education: Reconsidered once again. *Review of Educational Research*, 71(1), 1-27.
- Dela Harpe, B., & Radloff, A. (1997). *Do first year students reflect on their learning? Why they should and how they can*. Paper presented at the annual Higher Education Research and Development Society of Australasia International Conference, Auckland, New Zealand.
- Dewey, J. (1916). *Democracy and education. An introduction to the philosophy of education* (1966 ed.). New York: Free Press.
- Dewey, J. (1938). *Experience and education*. New York: MacMillan.
- Diener, C., & Dweck, C. (1978). An analysis of learned helplessness: Continuous changes in performance, strategy, and achievement cognitions following failure. *Journal of Personality & Social Psychology*, 36(5), 451-462.
- Dweck, C. S. (1996). Motivational processes affecting learning. *American Psychologist*, 5, 1179-1187.
- Earley, P. C. (1986). An examination of the mechanisms underlying the relation of feedback to performance. *Academy of Best Paper Proceedings*, pp. 214-218.
- Earley, P. C. (1988). Computer generated performance feedback in the magazine-subscription industry. *Organizational Behavior and Human Decision Processes*, 41, 50-64.

- Early, P. C., Northcraft, G. B., Lee, C., & Lituchy, T. R. (1990). Impact of process and outcome feedback on the relation of goal setting to task performance. *Academy of Management Journal*, 33, 87-105.
- Elawar, M., & Corno, L. (1985). A factorial experiment in teachers' written feedback on student homework: Changing teacher behavior a little rather than a lot. *Journal of Educational Psychology*, 77(2), 162-173.
- Erdley, C., & Dweck, C. (1993). Children's implicit personality theories as predictors of their social judgments. *Child Development*, 64(3), 863-878.
- Firestone, W. A., & Pennell, J. R. (1993). Teacher commitment, working conditions, and differential incentive policies. *Review of Educational Research*, 63(4), 498-525.
- Gibbons, M., & Hopkins, D. (1980). How experiential is your experience-based program? *Journal of Experiential Education*, 3(1), 32-37.
- Glass, G. V., Wilson, V. L., & Gottman, J. M. (1975). *Design and analysis of time-series experiments*. Boulder, CO: Colorado Associated University Press.
- Goodenow, C. (1992, April). *School motivation, engagement, and sense of belonging among urban adolescent students*. Paper presented at the annual meeting of the American Educational Research Association..
- Harter, S. (1980). The perceived competence scale for children. *Child Development*, 51, 218-235.
- Hedin, D., & Conrad, D. (1979). Johnny says he is learning...through experience. *Journal of Experiential Education*, 2(1), 12-17.
- Hendricks, P. (1998). *Developing youth curriculum using the targeting life skills model*. Ames, IA: Iowa State University.
- Hickson, M., & Stacks, D. (1989). *Nonverbal communication: Studies and applications*. Madison, WI: Brown & Benchmark.
- Hickson, M., & Stacks, D. (1993). Teaching the introductory communication theory course to undergraduates. *Communication Quarterly*, 4(3), 261-68.
- Hock, M., Deshler, D., & Schumaker, J. (1999). Tutoring programs for academically underprepared college students: A review of the literature. *Journal of College Reading & Learning*, 29(2), 101-122.
- Horton, R., Hutchison, S., Barkman, S., Machtmes, K., & Myers, H. (1999). *Developing experientially based 4-H curriculum*. Columbus, OH: Ohio State University Press.

- Huang, S., & Waxman, H. (1996, April). *Learning environment differences between high-and low-achieving minority students in urban middle schools*. Paper presented at the annual meeting of the American Educational Research Association.
- Huebner, A., & McFarland, M. (2000). *Youthworks self study guides: Creating environments that meet needs*. Manhattan, KS: Kansas State University.
- Hutchings, P., & Wutzdorff, A. (1988). *Knowing and doing: Learning through experience*. New York: Jossey-Bass.
- Ilgel, D. R., Fisher, C. D., & Taylor, M. S. (1979). Consequences of individual feedback on behavior in organizations. *Journal of Applied Psychology*, 64, 349-371.
- Jacoby, J., Mazursky, D., Troutman, T., & Kuss, A. (1984). When feedback is ignored: Disutility of outcome feedback. *Journal of Applied Psychology*, 69, 531-545.
- Jacobs, J. E., & Eccles, J. S. (1992). The impact of mothers' gender-role stereotypic beliefs on mothers' and children's ability perceptions. *Journal of Personality and Social Psychology*, 63, 932-944.
- James, T. (1990, May). Kurt Hahn and the aims of education. *Journal of Experiential Education*, 13(1), 6-9.
- Janelle, C. M., Kim, J., & Singer, R. N. (1995). Subject-controlled feedback and learning of a closed motor skill. *Perceptual and Motor Skills*, 81(2), 627-628.
- Jernstedt, G. (1980). Experiential components in academic courses. *Journal of Experiential Education*, 3(2), 11-19.
- Johnson, D., Perlow, R., & Pieper, K. (1993). Differences in task performance as a function of feedback: Learning-oriented versus performance-oriented feedback. *Journal of Applied Psychology*, 23, 303-320.
- Joplin, L. (1995). On defining experiential education. In K. Warren, M. Sakofs & J. Kielsmeier (Eds.), *The theory of experiential education* (pp. 22-29). Dubuque, IA: Kendall-Hunt.
- Knapp, M., & Hall, J. (1992). *Nonverbal communication in human interaction* (3rd ed.). Fort Worth, TX: Harcourt Brace.
- Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development*. Englewood Cliffs, NJ: Prentice Hall.
- Kolb, D. A. (1974). On management and the learning process. In D. A. Kolb, I. M. Rubin & J. M. McIntyre (Eds.), *Organizational psychology: A book of readings* (2nd ed.) (pp. 27-42). Englewood Cliffs, NJ: Prentice Hall.

- Kohn, A. (1993). *Punished by rewards: The trouble with gold stars, incentive plans, A's, praise, and other bribes*. Boston: Houghton Mifflin.
- Laird, S. (1988). Reforming "woman's true profession": A case for feminist pedagogy in teacher education? *Harvard Educational Review*, 58, 449-463.
- Landin, D. (1994). The role of verbal cues in skill learning. *Quest*, 46(3), 299-313.
- Langer, A., & Wurf, E. (1999). The effects of channel-consistent and channel-inconsistent interpersonal feedback on the formation of metaperceptions. *Journal of Nonverbal Behavior*, 23(1), 43-65.
- Liden, R. C., & Mitchell, T. R. (1985). Reactions to feedback: The role of attributions. *Academy of Management Journal*, 28, 391-308.
- Locke, E. A., & Latham G. P. (1990). *A theory of goal setting and task performance*. Englewood Cliffs, NJ: Prentice Hall.
- Luckmann, C. (1996). Defining experiential education. *Journal of Experiential Education*, 19(1), 6-7.
- Lysakowski, R., & Walberg, H. (1982). Instructional effects of cues, participation, and corrective feedback: A qualitative synthesis. *American Educational Research Journal*, 19(4), 559-578.
- Malone, T. W. (1981). Toward a theory of intrinsically motivating instruction. *Cognitive Science*, 4, 333-369.
- Marcus, H., & Ruvulo, A. (1990). Possible selves. Personalized representations of goals. In L. Pervin (Ed.), *Goal concepts in psychology* (pp. 211-241). Hillsdale, NJ: Lawrence Erlbaum.
- Marzano, R. (2003). *What works in schools: Translating research into action*. Alexandria, VA: ASCD.
- McCroskey, J. C., & McCain, T. A. (1972). *The measurement of interpersonal attraction*. Paper presented at the annual convention of the Western Speech Communication Association, Honolulu, HI. (ERIC Document Reproduction Service No. ED 071140)
- McDonald, J. (1992). *Teaching: Making sense of an uncertain craft*. New York: Teachers College Press.
- Mead, G. H. (1934). *Mind, self, and society*. Chicago: University of Chicago Press.

- Mehrabian, A. (1969). Significance of posture and position in the communication of attitude and status relationships. *Psychology Bulletin*, 71, 359-372.
- Miller, P. (1988). *Nonverbal communication: What research says to the teacher* (3rd ed.). Washington, DC: National Education Association.
- Moneta, G., & Csikszentmihalyi, M. (1996). The effect of perceived challenges and skills on the quality of subjective experience. *Journal of Personality*, 64(2), 275-310.
- Moneta, G., Schneider, B., & Csikszentmihalyi, M. (2001). A longitudinal study of the self-concept and experiential components of self-worth and affect across adolescence. *Applied Developmental Science*, 5(3), 125-152.
- Nolen, S. B., & Haladyna, T. M. (1990). Personal and environmental influences on student beliefs about effective study strategies. *Contemporary Educational Psychology*, 15(2), 116-130.
- Norman, D. (1996). Optimal flow. *Arts Education Policy Review*, 97(4), 35-38.
- Ott, R., & Longnecker, M. (2001). *An introduction to statistical methods and data analysis* (5th ed.). New York: Wadsworth Group.
- Owen, P. (1996). *Identifying I Knots: The new compact study guide and identifier*. Edison, NJ: Chartwell Books.
- Paris, S. G., & Byrnes, J. P. (1989). The constructivist approach to self-regulation and learning in the classroom. In B. J. Zimmerman & D. H. Schunk (Eds.), *Self-regulated learning and academic achievement: Theory, research, and practice* (pp. 169-200). New York: Springer-Verlag.
- Parsons, J. E., Adler, T. F., & Kaczala, C. M. (1982). Socialization of achievement attitudes and beliefs: Parental influences. *Child Development*, 53, 310-321.
- Parsons, J.E., Kaczala, C.M. & Meece, J.L. (1982). Socialization of achievement attitudes and beliefs: Classroom influences. *Child Development*, 53, 322-339.
- Pawson, D. (1998). *The handbook of knots*. ND: K Publishing.
- Pfeiffer, J. W., & Jones, J. E. (1980). *The 1980 annual handbook for group facilitators*. San Diego, CA: University Associates.
- Pfeiffer, J. W., & Jones, J. E. (1985). *Reference guide to handbook and annuals*. San Diego, CA: University Associates.

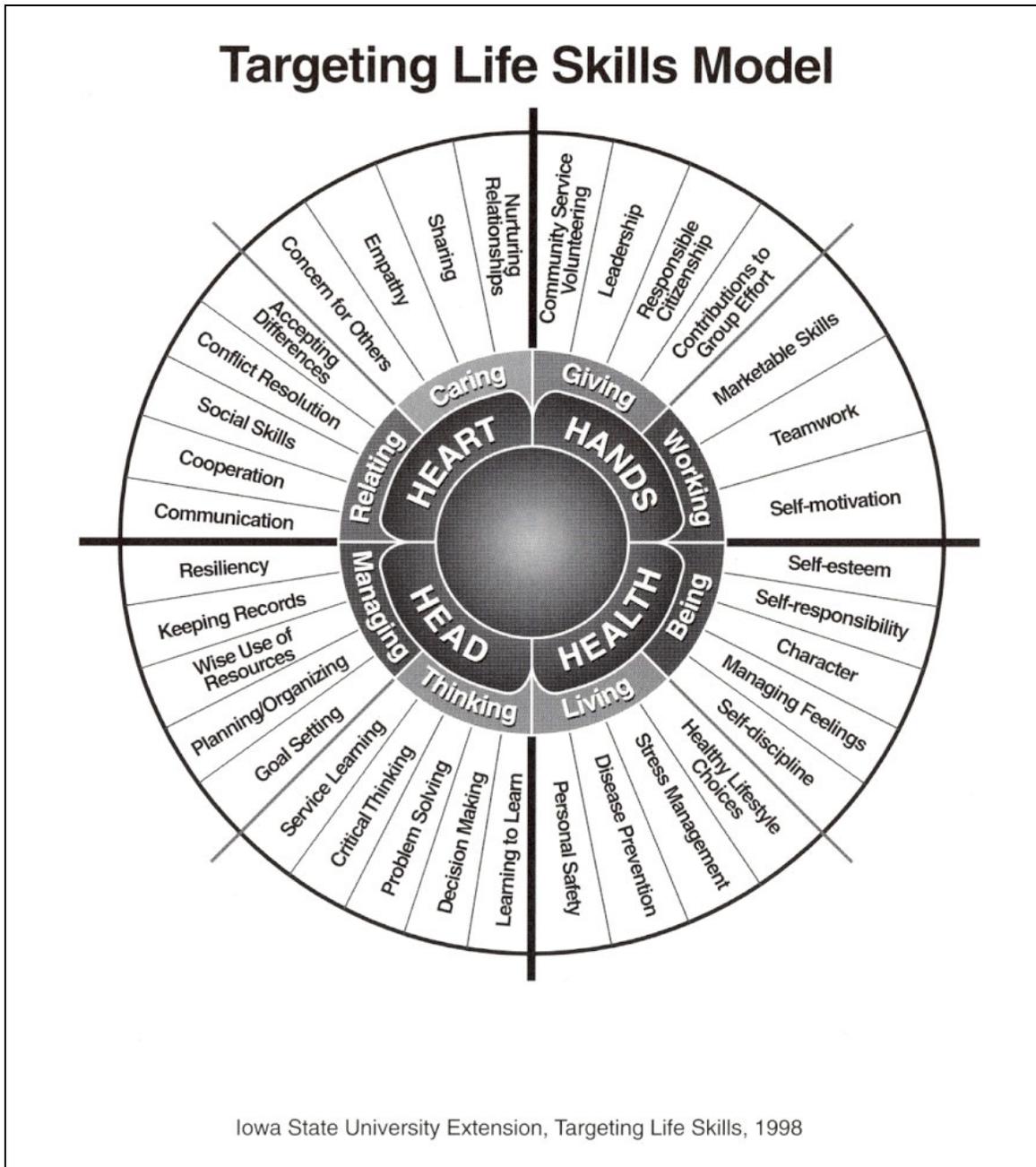
- Prochazka, L. (1995). Internalizing learning: Beyond experiential education. In K. Warren, M. Sakofs & J. S. Hunt Jr. (Eds.), *The theory of experiential education* (pp. 143-147). Dubuque, IA: Kendall-Hunt.
- Reynolds, S. (1981, Fall). A marriage proposal: Competency based education and experiential education. *Journal of Experiential Education*, 34-39.
- Sansone, C., Sachau, D. A., & Weir, C. (1989). Effects of instruction on intrinsic interest: The importance of context. *Journal of Personality and Social Psychology*, 57, 819-829.
- Sax, G. (1974). *Principles of educational measurement and evaluation*. Belmont, CA: Wadsworth.
- Sinclair, D. A., & Vealey, R. S. (1989). Effects of coaches' expectations and feedback on the self-perceptions of athletes. *Journal of Sport Behavior*, 11, 77-91.
- Steinaker, N. W., & Bell, R. M. (1979). *The experiential taxonomy: A new approach to teaching and learning*. New York: Academic Press.
- Sugerman, D., Doherty, K., Garvey, D., & Gass, M. (2000). *Reflective learning: Theory and practice*. Dubuque, IA: Kendall-Hunt.
- Thiagarajan, S. (1980). *Experiential learning packages*. Englewood Cliffs, NJ: Educational Technology Publications.
- United States Army Community and Family Support Center, United States Department of Agriculture, Cooperative State Research, Education and Extension Service. (ND 1999). *Moving ahead: Preparing the youth development professional*. Manhattan, KS: Author.
- Warren, K., Sakofs, M., & Hunt, J. S. (Eds.). (1995). *The theory of experiential education*. Dubuque, IA: Kendall-Hunt.
- Wentzel, K. R. (1993). Does being good make the grade: Social behavior and academic competence in middle school. *Journal of Educational Psychology*, 85(2), 357-364.
- Williamson, J. (1995). Designing experiential curricula. In R. Kraft & J. Kielsmeier (Eds.), *Experiential learning in schools and higher education* (pp. 39-44). Dubuque, IA: Kendall-Hunt.
- Wurdinger, S. (1995). A critical interpretation of commonly held assumptions in adventure education. *Journal of Adventure Education & Outdoor Leadership*, 12(2), 6-10.
- Zellermayer, M. (1991). The development of elaborative skills: Teaching basic writing students to make the commitment to audience and topic. *Linguistics & Education*, 3(4), 359-383.

Zemelman, S., Daniels, H., & Hyde, A. (1993). *Best practice: New standards for teaching and learning in America's schools*. Portsmouth, NH: Heinemann.

Zimmerman, B. J. (1989). Models of self-regulated learning and academic achievement. In B. J. Zimmerman & D. H. Schunk (Eds.), *Self-regulated learning and academic achievement theory, research, and practice: Progress in cognitive development research* (pp. 1-26). New York: Springer-Verlag.

Appendix A

Targeting Life Skills Model



Note. From *Developing Youth Curriculum Using the Targeting Life Skills Model*, p. 5, by P. A. Hendricks, 1998, Ames, IA: Iowa State University. Reprinted with permission.

Appendix B (continued)

Facilitator Pre-Treatment Questionnaire (p. 2)

Current attitude is the way you currently feel.

| <u>Current Attitude</u> 1 = "do not agree" 5 = "highly agree" | | | | | |
|--|---|---|---|---|---|
| 1. Hands-on learning is an effective teaching tool. | 1 | 2 | 3 | 4 | 5 |
| 2. Engagement is important to learner success. | 1 | 2 | 3 | 4 | 5 |
| 3. Feedback is important to learner engagement. | 1 | 2 | 3 | 4 | 5 |
| 4. Flow theory is important to educational practice. | 1 | 2 | 3 | 4 | 5 |
| 5. Learning-oriented feedback moves learners toward engagement. | 1 | 2 | 3 | 4 | 5 |
| 6. Learning-oriented feedback increases learner interest in the task. | 1 | 2 | 3 | 4 | 5 |

Initials here: _____

Appendix C (continued)

Facilitator Post-Treatment Questionnaire

Directions: Please self-rate the following items using the 1-5 scale. Circle your answer.

| |
|-------------------------|
| Current Attitude |
| 1= Strongly Disagree |
| 2=Disagree |
| 3=Neutral |
| 4= Agree |
| 5= Strongly Agree |

| | | | | | |
|---|---|---|---|---|---|
| 1. Hands-on learning is an effective teaching tool. | 1 | 2 | 3 | 4 | 5 |
| 2. My learner was engaged in the task. | 1 | 2 | 3 | 4 | 5 |
| 3. Feedback is important to learner engagement. | 1 | 2 | 3 | 4 | 5 |
| 4. Verbal cues were more effective than nonverbal cues. | 1 | 2 | 3 | 4 | 5 |
| 5. Flow Theory is important to Educational Practice. | 1 | 2 | 3 | 4 | 5 |
| 6. Learning-oriented feedback moved learner to greater engagement. | 1 | 2 | 3 | 4 | 5 |
| 7. Learning-oriented feedback increased learner interest in the task. | 1 | 2 | 3 | 4 | 5 |
| 8. Nonverbal cues were more effective than verbal cues. | 1 | 2 | 3 | 4 | 5 |
| 9. I knew how to tie the knots prior to training. | 1 | 2 | 3 | 4 | 5 |
| 10. Teaching knot tying was frustrating. | 1 | 2 | 3 | 4 | 5 |
| 11. I did not know how to tie knots prior to training. | 1 | 2 | 3 | 4 | 5 |
| 12. Teaching knot tying was easy. | 1 | 2 | 3 | 4 | 5 |
| 13. I enjoyed teaching knot tying to a learner. | 1 | 2 | 3 | 4 | 5 |
| 14. My learner understood my directions. | 1 | 2 | 3 | 4 | 5 |
| 15. My learner learned to tie the knots. | 1 | 2 | 3 | 4 | 5 |
| 16. I felt prepared to teach knot tying to a learner. | 1 | 2 | 3 | 4 | 5 |
| 17. I did not feel prepared to teach knot-tying to a learner. | 1 | 2 | 3 | 4 | 5 |
| 18. I felt successful in using feedback cues to assist my learner. | 1 | 2 | 3 | 4 | 5 |
| 19. Feedback helped to match the task difficulty and the learner's skill. | 1 | 2 | 3 | 4 | 5 |

Appendix D

Learner Post-Treatment Questionnaire

Gender M F

Status F S Jr Sr

Current Attitude

1= Strongly Disagree

2=Disagree

3=Neutral

4= Agree

5= Strongly Agree

Directions: Please self-rate the following items using the 1-5 scale. Circle your answer.

Current attitude is your feeling about the items given.

| | | | | | |
|---|---|---|---|---|---|
| 1. Hands-on learning is an effective way to learn a task. | 1 | 2 | 3 | 4 | 5 |
| 2. I was engaged in the learning process. | 1 | 2 | 3 | 4 | 5 |
| 3. Verbal feedback from the facilitator helped me complete the task. | 1 | 2 | 3 | 4 | 5 |
| 4. Nonverbal feedback from the facilitator helped me complete the task. | 1 | 2 | 3 | 4 | 5 |
| 5. I can tie the knots I was taught. | 1 | 2 | 3 | 4 | 5 |
| 6. Feedback from my facilitator helped me feel competent as a learner during this experience. | 1 | 2 | 3 | 4 | 5 |
| 7. I knew how to tie the knots before the training. | 1 | 2 | 3 | 4 | 5 |
| 8. Verbal cues from the facilitator helped me understand the task. | 1 | 2 | 3 | 4 | 5 |
| 9. Nonverbal cues from the facilitator helped me understand the task. | 1 | 2 | 3 | 4 | 5 |
| 10. Learning knot tying was easy. | 1 | 2 | 3 | 4 | 5 |
| 11. I did not know how to tie knots prior to training. | 1 | 2 | 3 | 4 | 5 |
| 12. I understood the facilitator's directions. | 1 | 2 | 3 | 4 | 5 |
| 13. I enjoyed learning how to tie knots . | 1 | 2 | 3 | 4 | 5 |
| 14. I felt supported by the facilitator during this experience. | 1 | 2 | 3 | 4 | 5 |
| 15. I could teach knot tying to another learner. | 1 | 2 | 3 | 4 | 5 |
| 16. Tying knots was frustrating. | 1 | 2 | 3 | 4 | 5 |
| 17. The facilitator's cues helped me feel confident in my ability to complete the task. | 1 | 2 | 3 | 4 | 5 |
| 18. The facilitator's cues helped my performance. | 1 | 2 | 3 | 4 | 5 |
| 19. The facilitator's cues hindered my performance. | 1 | 2 | 3 | 4 | 5 |

Order of Knot-Tying

There is a potential for a learner to tie 11 knots total:
7 knots and 4 variations.

1. Overhand
2. Hitch
3. Square knot
4. Clove hitch
5. Bowline
6. Highwayman hitch
7. Sheepshank
8. Two hitches
9. Two square knots
10. One hitch and one square
11. One clove hitch and one square

If time remains, repeat the sequence.

Appendix F

Overall Task Directions

Overall Task Directions

Situation: 7 Knot-tying activities and 4 variations.

Directions:

1. Look at the pictures of the knots I have placed in front of you. You will tie the knots in the order of the pictures.
2. Notice the written directions beside the pictures of the knots. You may use these to help you tie the knots.
3. Pick up your rope. To tie the knots you will need to know two things about the rope:
 - The “working end” (WE) is knotted
 - The “standing end” (SE) is unknotted
4. I will help you learn to tie the knots.
5. We will not move to the next knot until the current one is correctly tied.

Appendix G

Directions for Facilitators

1. Look over the order of knots. There is potential for a learner to tie 7 knots and 4 variations of the knots--11 total.

- Seven Basic Knots

1. Overhand _____
2. Hitch _____
3. Square knot _____
4. Clove hitch _____
5. Bowline _____
6. Highwayman hitch _____
7. Sheepshank _____

- Four Variations of Knots

8. Two hitches _____
9. Two square knots _____
10. One hitch and one square _____
11. One clove hitch and one square _____

2. Place the rope schematic with written directions for the first knot in front of the learner.

- Give learner a rope segment.
- Place your rope segment in front of you.
- Read the *Overall Task Directions* aloud.
- Let the timekeeper know you are ready.
- Ask learner to begin when timekeeper says go.
- Assist learner to tie knot.
- When the learner completes the knot correctly, remove the schematic and put the next one listed in front of the learner.
- Continue until all knots are tied correctly.

If there is additional time, instruct learner to tie knot variations 8-11 in order. Put each schematic in front of the learner as a visual reminder.

If there is still additional time, repeat the entire process.

Appendix H-1

Overhand Knot

Used as a handhold or a stopper to prevent rope from slipping in your hand; used to secure.



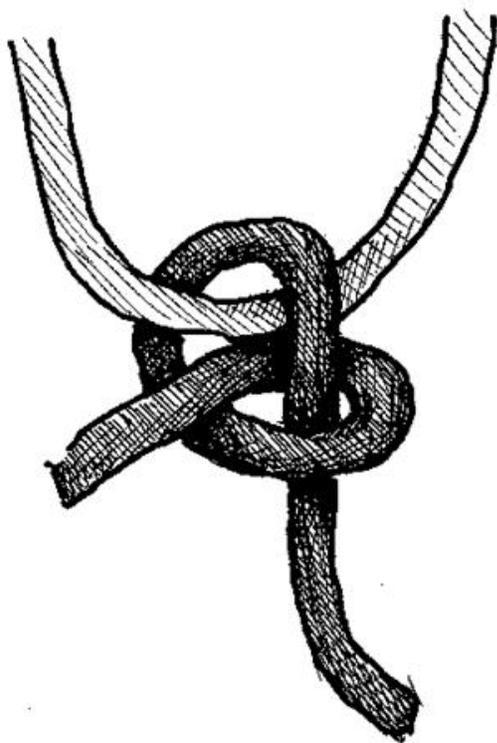
- a) Lay working end over standing end, making a loop; pinch together.
- b) Move standing end over working end and up through loop.
- c) Pull ends tight.



Note. Drawings completed by Emily Williamson (2003), Artist, Floyd County, VA.

Appendix H-2

Hitch Knot



Use to tie a rope around an object

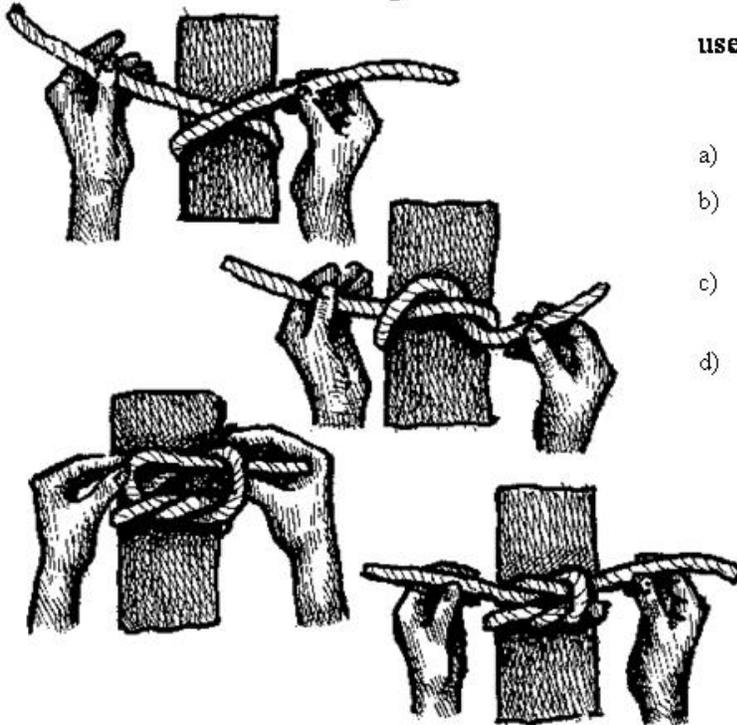
- a) Fold the rope into 2 sections of length.
1/3 = working end with knot at end
2/3 = standing end
- b) Loop rope around pole or holder.
- c) Lay WE over SE and bring WE up through the hole
- d) Pull both ends to tighten gently to form a half hitch
- e) Lay WE under SE.
- f) Fold WE over SE and pull through loop gently until tight to form a hitch.

Note. Drawings completed by Emily Williamson (2003), Artist, Floyd County, VA.

Appendix H-3

Square Knot

A simple binding knot; traditionally used to tie up a sail.



- a) Divide rope into halves.
- b) Loop rope around pole, equally divided.
- c) WE over SE; then WE under SE through loop – pull tight.
- d) WE under SE, then WE over SE through loop, pull tight.

Note. Drawings completed by Emily Williamson (2003), Artist, Floyd County, VA.

Appendix H-4

Bowline Knot



Used to attach a rope to an object or form a fixed loop at the end of a line; at sea used for rigging, hoisting, joining, and salvaging.

- a) Hold WE in right hand, SE hangs
- b) Loop SE counterclockwise on top of WE and hold together in your fist where they cross.
- c) SE under and up through loop (*rabbit out of the hole*)
- d) Up and around WE (*rabbit around the tree*)
- e) SE down through the loop (*rabbit into the hole*)
- f) Gently pull ends tight.

Note. Drawings completed by Emily Williamson (2003), Artist, Floyd County, VA.

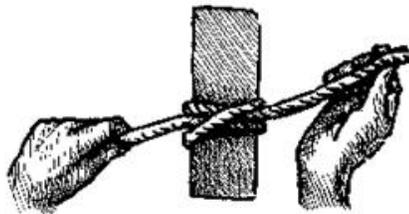
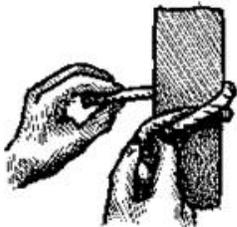
Appendix H-5

Clove Hitch Knot

A clove knot used as a basis for many other knots.



- a) Loop rope around post. Pass left side of rope under the right side.
- b) Continue looping rope up and around post with right hand.
- c) Tuck rope under *second loop*.
- d) Pull both ends to tighten.

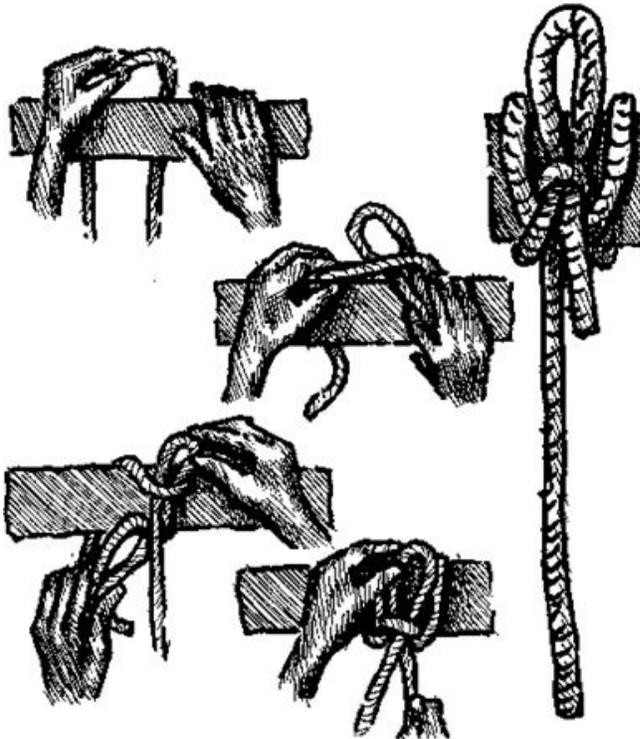


Note. Drawings completed by Emily Williamson (2003), Artist, Floyd County, VA.

Appendix H-6

Highwayman's Hitch Knot

Used to tie a horse or dingy for quick release.

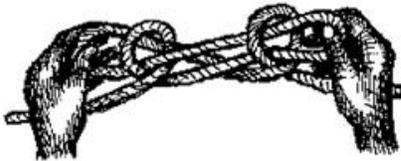
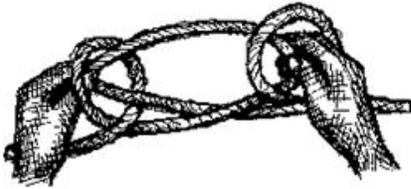
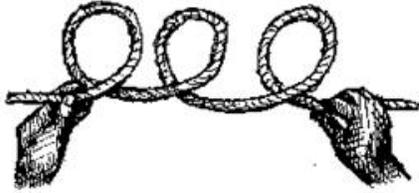


- a) Double rope to form a loop (about 8"). Pass loop behind post.
- b) Make a loop with the standing end and pass this loop through the first loop. Pull working end tight to lock in place.
- c) Double the working end to form a third loop and pass through the second loop.
- d) Pull hard on standing end and 3rd loop to lock in place.
- e) Pull working end to release.

Note. Drawings completed by Emily Williamson (2003), Artist, Floyd County, VA.

Appendix H-7

Sheepshank Knot



Used to shorten a rope in service or to relieve strain on a worn section of rope.

- a) Secure the Working end of the rope to post while the teacher holds the other end. Leave plenty of slack to make loops.
- b) Make 3 loops along the rope, each in a clockwise direction. The right section crossing on top of the rope.
- c) Pull the center loop through the back of the right loop and through the front of the left loop.
- d) Tighten by holding onto center loop and pulling away from secured ends that are tied to the post and held by the teacher.

Note. Drawings completed by Emily Williamson (2003), Artist, Floyd County, VA.

H-8 Knot Variations

8. Two hitches
9. Two square knots
10. One hitch/one square
11. One clove hitch/one square

If time remains, repeat the sequence .

TG2 Facilitator Training Outline

- I. Define facilitation with focus on:
 - a. Assisting
 - b. “Making it easier”
 - c. Helping to bring about

- II. Discuss strategies to promote facilitation
 - a. Watch
 - b. Listen
 - c. Respond

Appendix J

TG1 Facilitator Training Packet

Slide 1

Facilitation Training

MERGING ACTION AND AWARENESS

Slide 2

Goals of Training

- Use verbal and nonverbal cues to facilitate knot tying
- Discriminate between learning-oriented and performance-oriented feedback
- Increase understanding of Flow Theory and its relevance to educational practice
- Relate the tenets of Flow Theory to personal life situations
- Recognize benefits of hands-on education



Slide 3



Remember when...

- Think of a time when you were totally absorbed in something you were learning- no thoughts of time or outside distraction
- Write down who was there, if anyone, and what part they played

Slide 4

Share and Process Questions

- Share this experience with a partner or in triads: What happened? How did you feel? What worked especially well for you?
- What patterns did you notice in the experience?
- If you could do your experience again what would you do differently?
- What did you learn about yourself?



Slide 5

Generalizing What I Experienced...

- How did you go about deciding what to do in this experience?
- How did you related this experience to your life in specific and the world in general?
- What did you learn about yourself through this experience?
- How does this experience relate to real life and not just to the activity?

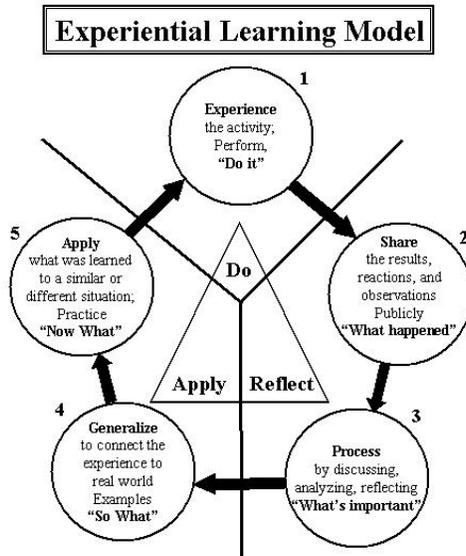
Slide 6

Generalization=New Information

The generalization step of the Experiential Learning Cycle is the point in the learning process where new information is added.

The Experiential Learning Cycle looks like this...

Slide 7



Note. From *Moving Ahead: Preparing the Youth Development Professional*, by United States Army Community and Family Support Center, United States Department of Agriculture, Cooperative State Research, Education and Extension Service, 1999, Manhattan, KS: Author.

Slide 8

Generalization Asks: So What? Why is this important?

People learn best when their skills match the challenges required to complete a task.

When skills and challenge are a match, learners "get into" their task, becoming immersed in ways that you described earlier.

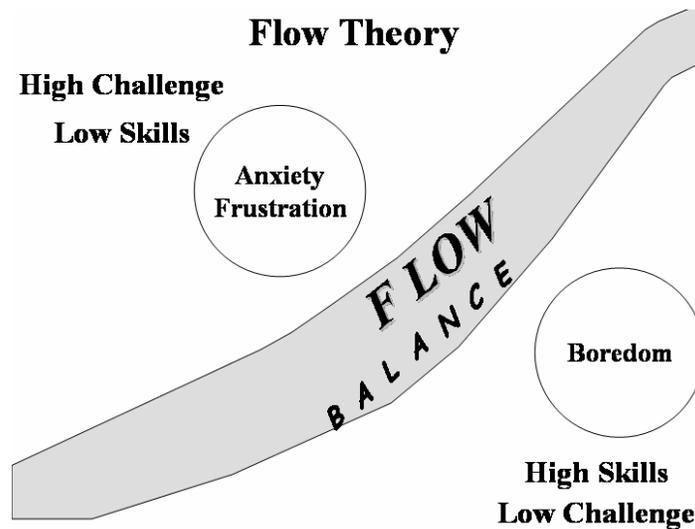
Slide 9

Balancing Skills and Challenges
Consciousness is ordered by information

- Like the three bears, information and challenge needs to be: not too little, not too much... but just right
- In ordered consciousness there is a balance between what there is to do and what one is capable of doing, a balance of skills and challenges.



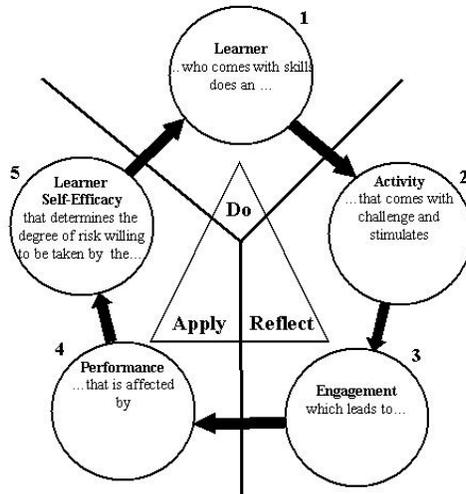
Slide 10



Note. From *Beyond Boredom and Anxiety: The Experience of Play in Work and Games* (p. 49), by M. Csikszentmihalyi, 1975, San Francisco, CA: Jossey-Bass. Adapted with permission.

Slide 11

How does a learning situation look?



Note. From *Moving Ahead: Preparing the Youth Development Professional*, by United States Army Community and Family Support Center, United States Department of Agriculture, Cooperative State Research, Education and Extension Service, 1999, Manhattan, KS: Author.

Slide 12

What affects risk?



- Clarity of Expectation
- Perceived balance of learner skills and task degree of challenge

Slide 13

What can make risk-taking easier? Facilitation!

Assisting
Making easier
Help bring about



Listening: frustration or boredom
Watching: shifts in attitude or direction
Clarity: clear expectations and knowledge
Knowledge of task: how to take apart and
put together

Slide 14

How can a facilitator help?

- Watch for signs of frustration
- Watch for signs of boredom
- Use verbal and non-verbal learning-oriented feedback to help learner regain balance

WATCH LISTEN OFFER

Slide 15

Ways to Facilitate

- Know your task
- Listen
- Watch
- Use your cues!

Slide 16

You will facilitate Knot-tying...

- Your tools will be cues...both verbal and nonverbal... that we will practice until you feel competent!

You will use the cues as ongoing feedback or “learning-oriented feedback” to let learners know how they are doing as they learn to tie knots.

Slide 17

Research says...

- Learning-oriented feedback provides greater competency in learners than performance-oriented feedback.
- We want to *increase competency* of knot-tyers, not just *prove competency*!

Slide 18

Applying What I've Learned

- How will the issues raised by the memory activity be useful in the the teaching of knot-tying?
- How could facilitation of a deep level of involvement increase learner engagement?
- How will you act differently in the future as a result of the memory activity? The training on Flow and Experiential Learning?

Appendix K

Domains and Descriptions of Verbal and Nonverbal Feedback

Nonverbal

Kinesics—Body actions: head movements, postures, body movements, and facial expressions that show behaviors are referred to as kinesics. Facilitators lean toward someone to express warmth or positive feelings. Head nodding is seen as acceptance. (Mehrabian, 1969).

Proxemics—The use of space or distance for communication is referred to as proxemics. The facilitator moves toward the working space of learners to let them know there is interest in their performance.

Haptics—Non-verbal behavior through touching is known as haptics. While touching is a basic means of non-verbal communication, it can make learning situations awkward. Facilitators touch to interpret, redirect, or show encouragement.

Oculesics—The use of the eyes and eye movement behavior is known as oculesics. The facilitator will establish good eye contact with students. When learners are speaking, eye contact from the facilitator should be evident. This shows interest and models one aspect of engagement.

Vocalics—The use of the voice and how it can communicate various types of messages is termed vocalics. It is important that facilitators know how to communicate with the voice. Learners pay attention to voices that change in inflection. Changes in pitch, volume, and rate of speech have favorable learner reactions (Crabbe, 1979).

Facial expressions—Voluntary facial expressions such as raising the eyebrows, wrinkling the brow, or curling the lips show feelings and attitudes. (Miller, 1988).

Verbal

Approval explicative: Facilitators show approval through short, positive phrases such as: “You’re right on target,” “You’ve got it,” and “Great thinking.”

Directions: Facilitators offer verbal directions to direct learners when they need initial or additional information.

Redirections: Facilitators use single words to get attention and let learners know that redirection is needed.

Questions: Facilitators use questions to gather needed information to determine their next step. They ask questions to determine where learner is in the process, how learner feels he is doing, or what clarification is needed.

Content information: Facilitator provides content information when it is needed to take the next step or increase performance.

Note. From Hickson, M., & Stacks, D. (1989). *Nonverbal communication: Studies and applications*. Madison, WI: Brown & Benchmark.

Appendix L

Verbal and Nonverbal Feedback Observation Form

Facilitator Initials _____

Learner Initials _____

Observer / Timekeeper Initials _____

Pair: 1 2 3 4 5

Learner Engagement

| L | M | H |
|---|---|---|
| | | |

of knots tied in 10 minute period

Chart number of knots tied across 10-minute period.

Mark each verbal and nonverbal feedback cue once per minute as noticed. Put an asterisk (*) beside the cue if behavior occurs more than once during the minute interval.

Minutes

| Verbal | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|----|
| Approval You're right on target; Great job; You've got it | | | | | | | | | | |
| Directions | | | | | | | | | | |
| Redirections Stop; watch; listen; restate with emphasis | | | | | | | | | | |
| Questions | | | | | | | | | | |
| Content information Name and function of knot | | | | | | | | | | |
| Nonverbal | | | | | | | | | | |
| Nods head | | | | | | | | | | |
| Gestures | | | | | | | | | | |
| Smiles | | | | | | | | | | |
| Changes inflection | | | | | | | | | | |
| "Shows" or models | | | | | | | | | | |
| Touches learner's work Leans into learner workspace; touches learners rope | | | | | | | | | | |
| Touches learner to show approval | | | | | | | | | | |
| Notes: | | | | | | | | | | |

Appendix M

LEARNER ENGAGEMENT RUBRIC

Tally each criterion each time it is noticed across the ten minute period.

| | (1) LOW | (2) MEDIUM | (3) HIGH | SCORE |
|------------------------|---|--|---|-------|
| TRIES | Avoidance of Task Refusals <input style="width: 50px; height: 20px;" type="text"/> Few "Tries" <input style="width: 50px; height: 20px;" type="text"/> | Somewhat Involved in Task Tries and Stops <input style="width: 50px; height: 20px;" type="text"/> More "tries", but erratic <input style="width: 50px; height: 20px;" type="text"/> | Highly Involved in Task Involved in task; resilient <input style="width: 50px; height: 20px;" type="text"/> Consistent "tries" <input style="width: 50px; height: 20px;" type="text"/> | |
| FOCUS | Distracted, avoids, looks away <input style="width: 50px; height: 20px;" type="text"/> Little-no eye contact <input style="width: 50px; height: 20px;" type="text"/> Little watching of facilitator <input style="width: 50px; height: 20px;" type="text"/> | Somewhat attentive, (focuses most of the time) <input style="width: 50px; height: 20px;" type="text"/> Some eye contact <input style="width: 50px; height: 20px;" type="text"/> Infrequent "watching" of facilitator <input style="width: 50px; height: 20px;" type="text"/> | Completely focuses on task <input style="width: 50px; height: 20px;" type="text"/> Frequent eye contact <input style="width: 50px; height: 20px;" type="text"/> Consistent focus on facilitator <input style="width: 50px; height: 20px;" type="text"/> | |
| SELF-INITIATING | Little self-correction <input style="width: 50px; height: 20px;" type="text"/> Waits for prompts <input style="width: 50px; height: 20px;" type="text"/> | Self-correction some of the time <input style="width: 50px; height: 20px;" type="text"/> Asks for help some of the time – some frustration involved <input style="width: 50px; height: 20px;" type="text"/> | Consistent self-correction <input style="width: 50px; height: 20px;" type="text"/> Requests clarification consistently as needed <input style="width: 50px; height: 20px;" type="text"/> | |
| BODY LANGUAGE | Shifts, taps, wiggles, moves <input style="width: 50px; height: 20px;" type="text"/> Avoids participation turns away <input style="width: 50px; height: 20px;" type="text"/> | Sits still <input style="width: 50px; height: 20px;" type="text"/> Turns at an angle toward Facilitator, makes effort to participate <input style="width: 50px; height: 20px;" type="text"/> | Leans forward "Leans into work" <input style="width: 50px; height: 20px;" type="text"/> Actively participates <input style="width: 50px; height: 20px;" type="text"/> | |

Appendix N

Timekeeper Directions and Record Sheet

Materials: Stopwatch

Timekeeper's Initials _____

Function:

- To track one-minute intervals for observers.
- To state the number of each minute aloud as a new interval begins (e.g. 1, 2, 3, 4).
- To count, record, and relay to observers the number of knots each learner completes correctly (the facilitator's directions are to not move to the next knot until the current one is tied correctly).

Duties:

- Pick up stopwatch from monitor.
- Have the form in front of you to chart the number of knots completed correctly in 10 minutes in the box located at the bottom of the page.
- Sit closely enough to the observer so s/he can hear each minute interval signaled aloud. Speak only loud enough to be heard by the observer, not to distract the learner.
- When everyone is ready, say "go" and click stopwatch.
- After one minute is up, state the beginning of the next minute and continue with each subsequent minute (e.g. 2, 3, 4 ...to 10).
- At the end of the 10th minute, say, "stop."
- Clear stopwatch.
- Release facilitator / learner pair quickly. The room monitor will send in the next pair. Follow-up quickly if they don't arrive immediately.
- Relate to the observer the number of knots tied by the learner.
- Repeat procedure.

Important: Charting the Number of Knots

| |
|------------------------------------|
| Total # of Knots Completed: |
|------------------------------------|

Appendix N (continued)

Timekeeper Directions and Record Sheet p. 2

Across the activity, check off each knot the learner ties successfully. There is a potential of 7 knots and 4 variations – 11 Total. Give form to observer when facilitator-learner pair leaves.

Pair 1

| | | | |
|-----------------------|-----|--------------------------------|-----|
| 1. Overhand | ___ | 8. Two hitches | ___ |
| 2. Hitch | ___ | 9. Two square knots | ___ |
| 3. Square knot | ___ | 10. One hitch/one square | ___ |
| 4. Clove hitch | ___ | 11. One clove hitch/one square | ___ |
| 5. Bowline | ___ | | |
| 6. Highwayman's hitch | ___ | | |
| 7. Sheepshank | ___ | | |

Pair 2

| | | | |
|-----------------------|-----|--------------------------------|-----|
| 1. Overhand | ___ | 8. Two hitches | ___ |
| 2. Hitch | ___ | 9. Two square knots | ___ |
| 3. Square knot | ___ | 10. One hitch/one square | ___ |
| 4. Clove hitch | ___ | 11. One clove hitch/one square | ___ |
| 5. Bowline | ___ | | |
| 6. Highwayman's hitch | ___ | | |
| 7. Sheepshank | ___ | | |

Pair 3

| | | | |
|-----------------------|-----|--------------------------------|-----|
| 1. Overhand | ___ | 7. Sheepshank | ___ |
| 2. Hitch | ___ | 8. Two hitches | ___ |
| 3. Square knot | ___ | 9. Two square knots | ___ |
| 4. Clove hitch | ___ | 10. One hitch/one square | ___ |
| 5. Bowline | ___ | 11. One clove hitch/one square | ___ |
| 6. Highwayman's hitch | ___ | | |

Pair 4

| | | | |
|-----------------------|-----|--------------------------------|-----|
| 1. Overhand | ___ | 7. Sheepshank | ___ |
| 2. Hitch | ___ | 8. Two hitches | ___ |
| 3. Square knot | ___ | 9. Two square knots | ___ |
| 4. Clove hitch | ___ | 10. One hitch/one square | ___ |
| 5. Bowline | ___ | 11. One clove hitch/one square | ___ |
| 6. Highwayman's hitch | ___ | | |

Pair 5

| | | | |
|-----------------------|-----|---------------------------|-----|
| 1. Overhand | ___ | 7. Sheepshank | ___ |
| 2. Hitch | ___ | 8. Two hitches | ___ |
| 3. Square knot | ___ | 9. Two square knots | ___ |
| 4. Clove hitch | ___ | 10. One hitch/One square | ___ |
| 5. Bowline | ___ | 11. One clove/ One square | ___ |
| 6. Highwayman's hitch | ___ | | |

Appendix O

Room Monitor Directions

Who?

- Pairs of learners and facilitators in 10-minute waves.
- Two observers per room.
- Two timekeepers per room.

What?

- 10-minute rotational teaching/learning tasks.
- Timekeeper will keep the facilitator/learner pairs moving to make the one-hour timeframe work, but might need your assistance.

What do I need?

- Monitor folder with extra forms to have available as needed.
- Facilitator folder, including ropes, schematics, and directions.
- Sand filled bottle for facilitators to use as a tie post.
- Observer packet.
- Timekeeper packet, including a stopwatch.
- Permission slips packet.
- Opscan packet for class credit and folder for completed forms.
- Exit questionnaires and folder for completed questionnaires.
 - Facilitators
 - Learners

What do I do?

1. Set up the room
 - **Learner and facilitator** on one side of the table or desk with facilitator folder (purple) and the tie post in front of them on the table.
 - **Observers and timekeepers** should sit close to each other across from the facilitator-learner pair. Each will need their envelope packets on their chairs. The observer will need something to write on if a table surface isn't available. Pencils are included in their packets. Pens are provided also.
2. Make sure that every person involved has filled out a consent form. Some learners may not have completed one at this point. Collect from any learner who hasn't filled one out and put into packet.
3. Discuss plan with observer and timekeeper who have been asked to come early. Review information and directions together. Make sure both have all they need to proceed. Call Kathy on cell with any questions. Call Dorothy on cell if someone is missing.

Appendix O (continued)

Room Monitor Directions (p. 2)

4. Remind timekeeper to say “go” as close to 2PM as s/he can.
5. Keep the pairs moving in and out of the room in a timely manner. Send in first pair of learner-facilitators; tell timekeepers to go as soon as everyone is ready, close door.
6. While you wait:
 - Redirect conversation away from experiment to avoid cross communication.
 - You might have people trailing in across the hour, so check each facilitator-learner pair against your list for completed permission slips.
 - Be alert when each wave ends. The post-treatment questionnaire is a **CRITICAL EXIT SURVEY** for learner and facilitator.
7. Before Learner and Facilitator leave:
 - Exit surveys completed, collected, and put into designated folder.
 - Opscan sheets filled out, collected, collected, and put into designated folder.
8. :As the session ends
 - Gather all packets, folders, surveys, permission slips, posts, etc.
 - Check room for cleanliness/orderliness.
 - Turn in key.

Appendix P

E-mail Correspondence: Observer Treatment Instructions

To: Observers and Timekeepers
From: Kathleen Jamison
Re: Experiment
Attachments: Directions for Observers, Timekeepers; Verbal and Nonverbal Observation Form; Learner Engagement Form; list of observer codes and assigned locations

Hello Observers,

Thank you for the opportunity to work together in training. I am attaching the observation sheets for you to review before Thursday. Both will be available on site for your use on Thursday. To allow everyone to meet the 3PM finish deadline on Thursday as discussed at the training, we are making the observations **one hour only, 2-3PM, for all observers**. This means that six locations are needed. We now **have one observer per location**. I have assigned a timekeeper for each observer group.

How It Works

You were assigned to the groups below as either an observer or timekeeper. The directions for timekeepers are attached. Read over the information and call if it is not clear. **If you are observing, recall the observer training. If you are a timekeeper, recall the timekeeper's training and read the attachment. CALL ME WITH QUESTIONS.**

Observer Information and Attachments

The information that you requested has been added to the recording instrument, **Verbal and Nonverbal Feedback Observation Form**. I still suggest that you tally the behavior noticed once each minute as we discussed. If you see it several times during a minute, put slash marks beside it to cue me of repetitive behaviors. **Remind the timekeeper to track the number of knots tied correctly per 10-minute period and give those to you at the end. Record them on your observation form.** Thanks.

The **Learner Engagement Rubric** looks a bit different based on your suggestions from training, but contains the same information. I made sure that each level of criteria 1-2-3 had the same number of boxes. I also made the boxes larger for you to tally what you notice **across the 10 minute period**. Be aware that there are differences between the levels of L-M-H. Look carefully at what differentiates the levels to maintain an accurate assessment of each learner on an individual basis.

Who: Observers and timekeepers

Where / When:

Hutcheson Hall @ 1:45PM on Thursday

Hutcheson Hall is between Sandy and Campbell on the drill field – same side as war memorial gym, almost to West Campus Drive. It is on the opposite side of the drill field from Burruss. Come in the front door of Hutcheson and turn right. Go to end of hall. My office is there. We will meet in the hallway at 1:50PM. A monitor will be available to take you to your designated room. Check out a campus map to make sure you have directions or call my office. I need everyone to be on time so you can leave on time.

Wallace Hall @ 1:45 PM on Thursday

Come to Room 300. A monitor will be there to direct you or take you to your correct room: Room 300, Dr. Roger's Office; the Dean's Suite.

(Researcher listed codes and locations here on the email, but removed them for anonymity)

Please be timely. There will be a monitor at this location with an observer's packet and timekeeper's packet.

Thanks for your wonderful attitudes and willingness to participate. This is the last dance!! Let's make it accurate, but relaxed.

KJ

Appendix Q

Observer: Experiment Directions

Materials:

- Verbal and Nonverbal Feedback Observation Form
- Learner Engagement Rubric

Objectives:

- To tally verbal and nonverbal learning-oriented feedback cues provided by the facilitator during each one-minute interval.
- To rank the level of learner engagement across the ten-minute observation period using the Learner Engagement Rubric.
- To chart the number of knots, provided by the timekeeper, that the learner tied correctly within the ten-minute observation period.

Duties:

1. **Pick up** the “Observer Packet” from the monitor.
2. **Put** both the “Verbal and Nonverbal Observation Form” and the “Learner Engagement Rubric” in front of you.
3. **Write** initials in appropriate spaces: yours, timekeeper’s, facilitator’s, and learner’s on “Verbal and Nonverbal Feedback Observation Form.”
4. **Write** initials, room, and time started in appropriate spaces on the “Learner Engagement Rubric.”
5. Be prepared to **start** when timekeeper says “go.”
6. **Observe and chart** verbal and nonverbal cues used by facilitator during each minute as practiced during the training session.
7. **Listen** for the cue from the timekeeper to move to the box for the next minute increment.
8. If you notice one facilitator behavior happening more than once in a minute, add slashmarks beside the tally mark in that box to alert researcher of repetitive action and to assist you in making a decision on level of engagement.
9. **Observe and chart** the number of times you notice criteria for learner engagement. At the end of the ten-minute period, make a decision of L-M-H engagement based on what you noticed.
10. **Write** number of knots tied on the “Verbal and Nonverbal Feedback Observation Form”; given by timekeeper.
11. **Make general and specific notes** of anything unusual or interesting. **Place** forms back in packet.
12. **Repeat** process.

Appendix R

Email Correspondence: Facilitator Treatment Instructions

To: Facilitators
From: Kathleen Jamison
Re: Training the Learners: Information

Hello Facilitators,

Thank you for coming to the facilitator training last week. For the final training of the learners, you will need to come to _____ on ____ by _____. A monitor will be available to take you to your designated room. Check out a campus map to make sure you have directions or call my office.

This will be the final day for the experiment – your chance to teach learners to tie the knots you learned. I am available on Monday and Wednesday for any questions or “knot reminders” if you forgot how to tie. My office address is _____; my phone number is _____; my secretary is _____ and her number is _____. You may call to let me know when you have a break and need to come by. I am available to you from 8-5 or later, if need be, to answer questions. I know you will do a great job, and I am appreciative that you are a part of this study.

What is the Task?

To teach learners to tie knots in a given order for a 10 minute period. I have attached the “Order of Knots” for the knot-tying.

What do you need to bring ?

1. **You will need to sign a consent form, if you haven’t already done so, and bring it with you.**

One is attached for you to print off and sign. There will also be blank forms at your training room on the day of the training.

2. Bring your folder with the knot schematics, the rope, and the *Order of Knots* attachment you printed off from this email. If you are unable to print it, one is available from my office. I would like you to look over it before you work with the learner.

Where do you need to go?

You will go to the following locations to meet your learners and will enter the training room in pairs at ten-minute intervals. “The order of go” is coded below. There will be a couple of minutes of transition time, so be there a few minutes early.

(Each treatment group had location and coded pairs listed here)

Appendix R (continued)

Email Correspondence: Facilitator Treatment Instructions (p. 2)

Who will be at the training site?

1. A room monitor to “give and gather” things you might have forgotten and to provide a post-questionnaire for you to complete at the end of the 10-minute training.
2. You and a learner.
3. An observer in the room to gather data while you teach the learner to tie knots.
4. A time-keeper in the room to assist the observer.

What do you do?

1. Pick up from the monitor any supplies or folder inserts you forgot to bring (rope, schematics, order of knot-tying).
2. Go into the room when it is your turn and sit beside your learner in front of the weighted bottle used for tying.
3. When the timekeeper says “go,” you will introduce the activity and keep working for the entire ten minutes until the timekeeper says “stop.”
4. You will follow the order of knots that we discussed. I have attached another copy of the list. If you go through all seven knots before the ten-minute time period is up, you will have the learner tie the alternate patterns in the order listed.
5. When the timekeeper says “stop,” you will go back outside to the monitor and the next pair will enter the room.
6. The monitor will collect any supplies given to you earlier and will provide you with a questionnaire and an opscan sheet.
7. Complete the questionnaire and the opscan sheet and return them to the monitor.

You will be finished with the experiment. Thanks for the time and energy!!! Enjoy summer!

Vita

Kathleen A. Jamison

649 Easter Creek Road, NW
Riner, Virginia 24149
Telephone: 540-763-2197
E-mail: jamisonk@vt.edu

A. Education:

2003: Ph.D. Curriculum and Instruction, Virginia Tech
1995: Certification, Playback Theater, Vassar College
1994: Administrators Academy, Montgomery County Schools, VA
1982: MS, Special Education, Old Dominion University
1972: BS, Elementary Education, Old Dominion University
1968: Advertising Layout and Design, Varsity Business Academy

B. Previous Experience:

2000-Present: Extension Specialist, 4-H Curriculum and Learning
1999-2000 Adjunct Instructor, Radford University, Education
1998-2000 Graduate Assistant, VPI & SU
1998-1999 Adjunct Instructor, Radford University, English
1996-97 General Education Teacher, Montgomery Co, VA
1991-1996 Special Education Teacher, Montgomery Co, VA
1993-95 Radford University: Adult Education Grant
1993-96 Technical Assistance Center, Virginia Tech, Consultant
1986-91 Special Education Teacher, Chesapeake, VA
1984-86 Special Education Teacher, Franklin, VA
1982-84 Special Education Teacher, Chesapeake, VA
1976-78 Special Education Teacher, Chesapeake, VA

C. Honors and Awards

2003 National Service Award: 4H Cooperative Curriculum System
2002 Outstanding Service Award – University of Wyoming
1972-Present Outstanding evaluations and recommendations
1993-97 Commendation, Montgomery County Public Schools
1997 Initiated into Phi Kappa Phi Honor Society
1994 Initiated into Phi Delta Kappa Professional Organization
1993 Selected for training: Aspiring Administrators Academy, Montgomery County, VA
1993 Virginia DOE, PEAR Institute Commendation
1987 Teacher of the Year, Chesapeake, Virginia
1987 Leadership award, Chesapeake, VA
1982 Initiated into Kappa Delta Pi Educational Honor

D. Membership and Major Offices in Professional Organizations

National 4H Cooperative Curriculum System, 2002-Vice Chair; 03-Chair
Association of Experiential Education, 2002
National / Virginia Association of Extension 4-H Agents, 2001-02
Virginia Extension Service Association (VESA), 2001-02
American Education Research Association 1995-2002

Association for Supervision and Curriculum Development, 1995-2002
Chesapeake Reading Association, 1982-90, Secretary, 1984-87
International Playback Theater Association, 1994-2002
Virginia Association for Teachers of English, 1990-95

E. Community Organization Involvement

1997-2003 Floyd Community Center for the Arts, VP, Programming
1998-2000 American Heritage River Initiative
1997-2000 MIRA Grant, Kellogg Foundation.
1995-1998 Century Council, Committee Chair
1994-1999 Mt. Tabor 4-H Vaulters, Leader
1991-1993 Floyd 4-H Riding Club Volunteer
1982-1991 Unity Renaissance, Education Superintendent.
1976-1980 AUC, East Coast consultant on Youth Education
1980-1982 Social Workers, Southeast Region Consultant
1969-1982 Unity Church of Tidewater, Teaching/Ministerial

F. Participation on University, College or Extension Committees

2003 Excellence in Teaching and Learning Task Force
2002-2003 Educational Design Team, Chair
2001-2002 4-H Specialists Committee, VPI & SU
2001-2002 4-H State Leadership Council
2001-2002 Publications Process Task Force, Chair
2001 Extension Web Based Publications Committee
1999 Education Design Team: VPI &SU Science Museum and American Heritage River Initiative

1998 Dean's student advisory committee, CHRE
1993 Advisory Committee: RU Middle Education Program

G. Research

2002-2003 The Effects of Learning-oriented feedback on learner engagement
2002-2003 Statewide curriculum surveys and reports
2001 4HCCS, National Surveys
2001 Experiential Education, doctoral background
1996 Participatory Action Research Project: Even Start Paper
1996 Virginia DOE, PEAR Committee
1995 Special Education Aides, Montgomery Co VA Schools
1994 School-to-work in Middle School, Montgomery Co VA
1982 Reading Comprehension: Masters Thesis Published, Old Dominion University

H. Grants

2003 National Afterschool Grant: JC Penny
2002 Virginia Tobacco Settlement Foundation
2001 National Science Foundation, Biotechnology
2002 Mini Grants, 4-H Printing and Publications
2000 ARC Renovation Grant, Arts Incubation, Floyd, VA
1999 VFH, *Ellen Foster* Presentation & Public Forum
1997 School-to-Work Initiative, *Creativity Lab*, Public Schools
1988-2000 Mini Grants: numerous local, state, & national

I. Publications

- 1997 Book Chapter, Aspen Publishers
1996 Training Module, Adult Education
1996 Model Student Notebook, Montgomery County
1994 Consulting Teacher Handbook, Virginia DOE
1995 Teacher Aid Handbook, Montgomery County Schools
1994 Middle School Exploration: A *School-to-work process*. Paper
1994 *Even Start: A participatory action process to look at needs and change*.
Paper.
1987 Journal Article, Aspen Publishers.