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The Relationship Between Immediate Communication, Flow, and Motivation to Continue Learning and to Integrate Technology

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THE RELATIONSHIP BETWEEN IMMEDIATE COMMUNICATION, FLOW, AND MOTIVATION TO CONTINUE LEARNING AND TO INTEGRATE TECHNOLOGY

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Chapter I

The Research Problem

Statement of the Problem

According to Hidi and Harackiewicz (2000), motivation on the part of the student is one of the most important unresolved issues in education. These researchers stated that it is critical that educators investigate ways to address this issue. It is not sufficient for educators to help students to want to learn, but educators also must help students to want to keep learning on their own so that they are prepared to deal with the new situations that challenge them throughout their lives, becoming life-long learners. To enable individuals attending their classes continue to gain knowledge and skills, educators should help students increase their motivation to learn (Csikszentmihalyi, 1997). One way to increase student motivation when teaching is to use immediate communication behaviors (Christophel, 1990). Even though it has been found effective at motivating students (Andersen, 1979; Christophel, 1990; Christophel & Gorham, 1995), this communication style is not used by many instructors (McCroskey, Richmond, Sallinen, Fayer, & Barraclough, 1995). Often instructors simply introduce learning material without transmitting the meaning of the material, motivating students to continue learning the information, or increasing student motivation to use the information (Csikszentmihalyi, 1997).

Some students continue to learn and to use the newly gained knowledge, skills, and abilities, and some students do not. This lack of motivation could be found in many learning genres, for example if students attending a critical thinking skills class were motivated to continue learning and to integrate what they have learned, they could benefit by using those skills for life. Another example is the difficult student who shows little or no motivation to continue learning. By motivating those individuals to continue learning and motivate them to integrate what they have learned, educators could help the difficult student be more prepared for life.

Motivating students, to continue learning and to integrate what they learn, can include adult learners who need to continue learning to be effective in their careers. One example is teachers in the United States educational system who should be learning and integrating technology into their classrooms. Although most teachers were motivated to learn when they were in school, according to the National Center for Education Statistics (1999) the majority of teachers have not continued their professional development by continuing to learn about technology.

According to the *Biennial Report on Teacher Quality* (National Center for Education Statistics, 1999), only 20% of teachers in public schools reported they were "very well" prepared to integrate technology into their classrooms. Studying this phenomenon, researchers have found many external factors which teachers cite as preventing them from learning and integrating technology into the classroom (Felton, 1999; Rosen & Weil, 1995; Schifter, 2000; Strudler & Wetzel, 1999). Conversely, researchers studying successful and unsuccessful technology integrations found that inhibitors for teachers' learning and integrating technology into the classroom exist in both instances; successful teachers, however, had an intrinsic motivation to succeed that superseded the effect of the inhibitors (Ravitz, 1998; Schifter, 2000). These successful integrations show that, although extrinsic motivation is necessary, intrinsic motivation is an often overlooked key to enabling teachers to learn and integrate technology.

According to Wong and Csikszentmihalyi (1991),

> In this culture, we take for granted that work has to be separated from play. We assume that we can enjoy ourselves only when we are free from challenging obligations. Unfortunately, many educators share the view that study is inherently unpleasant and focus on setting up external controls to make sure students study. But perhaps the first step in enhancing motivation to learn is to change this preconception. By helping students to become absorbed in challenging tasks, and allowing them to take the initiative in learning, we may help them to find out that learning can be as enjoyable as any leisure activity. (p. 568)

This statement leads one to question, "how can researchers motivate students to become absorbed in challenging tasks and allow them to take initiative in learning?"

By understanding factors related to motivation, instructors can help their students gain more from the learning experience. Deci (1972) asserted that to increase intrinsic motivation in others one should concentrate less on external rewards such as grades or money and concentrate more on structuring situations that are interesting intrinsically, being supportive interpersonally, and giving verbal rewards of encouragement to those involved in learning. Studying education, one sees many opportunities to motivate students to understand the content by continuing to learn and integrating what was learned rather than just attaining good grades.

<u>Background and Need for the Study</u>

Studying teachers and their level of motivation to continue learning, one finds that current strategies that have been used to motivate teachers to continue to learn have been less than successful. The Clinton Administration and private business addressed the problem of teachers not being prepared to integrate technology with extrinsic motivators (i.e., more money, technical support), yet the high percentage of teachers reporting they are not very well prepared to integrate technology shows that this approach did not work

(Felton, 1999; Educational Record, 2000; National Center for Education Statistics, 1999; Rosen & Weil, 1995; Schifter, 2000; Strudler & Wetzel, 1999). Even though the teachers received the technology, they were not motivated to continue learning about the technology or to integrate the technology into their classrooms.

Even with technology, a new and what seems to be vital part of the future, teachers have been reluctant to embrace and continue life-long learning. Business and education leaders agree that students have new and different needs in the current highly technical, globally competitive economy. According to Galbreath (1999), businesses need employees with technology skills for most occupations. Also, students will need to manipulate "technologies for personal and professional survival" (p. 19). Trilling and Hood (1999) asserted that in the "knowledge-age" technology is vital to education.

According to Rosen and Weil (1995), not embracing technology can be seen as the misuse of technology that can have adverse effects on the students. They stated that those afraid of technology (technophobes) tend to avoid technology and, therefore, reinforce technophobia. As role models, these teachers unknowingly or knowingly communicate to students that computers are to be avoided, are scary, and are not easy to master. Through their inaction and actions, these teachers may create more technophobes.

Rozell and Gardner (1999) researched individuals' attitudes regarding computers and found that even when someone is trained to use a computer that person's intrinsic attitude will account for a majority of the person's computer use after the training. In other words, those individuals with negative attitudes toward computers will not use them no matter how much training they are given. Further, Rosen and Weil (1995) stated that simply putting computers in schools and requiring teachers to become computer literate will neither ensure that the computers will be used, nor help teachers use computers with their students, and will not, therefore, remove technophobia. These findings show that giving the schools money and forcing the teachers to use technology will not increase the number of teachers who report being motivated to integrate technology into the classroom.

One way to increase the percentage of teachers reporting that they are motivated to learn may be to use an instruction communication style associated with motivation to learn. One such instruction style called "immediacy" (described as using specific verbal and nonverbal communication behaviors) has been found to motivate students to learn (Anderson, 1979; Christophel, 1990).

Students should be motivated to a point where they want to return to the task, set higher goals for learning, learn about the topic more thoroughly, and engage in more challenging tasks. One such motivation theory is called flow. Csikszentmihalyi (1975, 1990, 1999) developed a theory of "flow," which is described as the "ultimate experience of intrinsic motivation." This state of flow is involvement in an activity for the experience itself. According to Csikszentmihalyi (1975), flow is defined as the state in which an individual feels motivated, cognitively efficient, and happy. Those who experience flow while learning have higher goals for future learning, continue to study topics more thoroughly outside of class, and participate in more challenging tasks (Ghani & Deshpande, 1994; Tuss, 1994; Wong & Csikszentmihalyi, 1991). Experiencing flow, therefore, should enable teachers to become more motivated to continue learning and to integrate technology into their classrooms.

Purpose

The purpose of this study was to assess the relationship between learner (teacher) perception of instructor immediate communication, learner (teacher) flow experiences during the learning process, and learner (teacher) motivation to continue learning and to integrate technology into the classroom. Using a cross-sectional survey model similar to the format used by Christophel (1990), data were collected from learners (teachers) attending classes for the purpose of learning to integrate technology into their own classrooms. The three variables studied were learner (teacher) perceptions of their instructor's communication immediacy, learner (teacher) experiences of flow, and learner (teacher) motivation to continue learning and to integrate technology into the classroom.

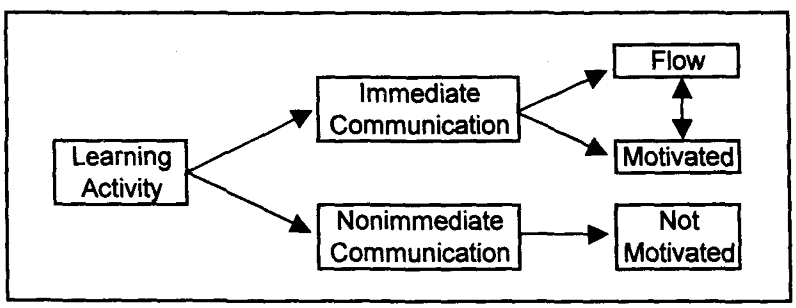

Figure 1. Model of Immediacy, Flow, and Motivation

In Figure 1, the Model of Immediacy, Flow, and Motivation illustrates the relationship of the three variables. The process starts with a learning activity where instructors communicate with either immediate or nonimmediate behaviors. If the instructors communicated with no immediate behaviors, past research shows the students were less likely to report being motivated (Christophel, 1990). If the instructors communicate with more immediate behaviors, the students were more likely to report being motivated (Christophel, 1990) and, as the current project investigated, to report experiencing flow. Past research has shown that individuals who report flow experiences were more likely to continue learning, have higher aspirations for learning, and seek out more challenging tasks (Ghani & Deshpande, 1994; Tuss, 1994; Wong & Csikszentmihalyi, 1991).

Theoretical Rationale

This study focused on the theoretical constructs of immediacy theory, flow theory, and motivation to continue learning and to integrate what was learned with a focus on the problem that teachers are not reporting that they are prepared to integrate technology into the classroom. As Dewey (1938) asserted, humans are always learning and this learning has motive or reason for carrying out the tasks called for in the process of gaining knowledge, skills, and abilities (p. 25).

Gage and Berliner (1992) defined student motivation as the process where learning-directed activity is instigated and maintained. Intrinsic motivation is the internal reasoning desire one has for taking an action. Studying student intrinsic motivation, Deci (1971) found that intrinsic motivation decreased when money was used as a reward. Also, Deci found that intrinsic motivation increased when positive feedback and verbal reinforcement were used. Using meta-analytic methodology, Deci, Koestner, and Ryan (1999) found substantial support that tangible rewards undermine intrinsic motivation when the rewards are contingent upon doing, excelling in, or completing an interesting activity. In addition, Cordova and Lepper (1996) found that motivation to learn was increased when the teacher gave the students choices when learning, personalized the information for the individual students, and supplied a context for learning the information. Responding to students' needs, therefore, is an important component of student motivation. Although professional development can take a long time (Ericsson, Krampe, & Tesch-Römer, 1993), a benefit of improving one's communication behaviors is the opportunity to help students enjoy gaining the knowledge, skills, and abilities that will make them successful.

Researchers have found that when instructors deliver instruction using an immediate communication style students are more motivated to learn (Anderson, 1979; Christophel, 1990; Gorham, 1988). Students perceive this style in both verbal and nonverbal communication from the instructor. Verbal immediate communication includes being inviting, welcoming, encouraging, using personal and humorous examples, and speaking in present verb tense. Nonverbal immediate communication includes vocal variety, movement around the room, facial expressions, and gestures used while speaking.

Researchers have found that teaching with an immediate communication style provides many benefits. Among these benefits are student reports of higher motivation (Andersen, 1979; Christophel, 1990; Christophel & Gorham, 1995), reports that instructors are more effective (Andersen, 1979; Andersen, Norton, & Nussbaum, 1981; Comstock, Rowell, & Bowers, 1995), reports of improved learning (Gorham, 1988; Kelly & Gorham, 1988; Richmond, Gorham, & McCroskey, 1987), and reports of higher motivation for students from diverse cultures (McCroskey et al., 1995). Also, researchers found that instructors could monitor their own immediacy (Gorham & Zakahi, 1990) and that instructors could learn the skills to communicate in a more immediate manner, and therefore, improve their own effectiveness as instructors (Linger, 1997).

Another benefit to the students is that instructors learn more about the individuals attending their classes. By practicing immediacy, demonstrating both verbal and nonverbal communication, and having conversations with students, instructors can gain valuable understanding of each their students' needs. Not all students learn in the same ways. In fact, Gardner (1993) developed a theory of multiple intelligences where he outlined different ways individuals learn. One of the intelligences, called interpersonal learning, can be described as learning by conversing with other individuals. As Gorham (1988) found, some of the verbal immediate behaviors are beneficial to interpersonal learning because instructors are open to having conversations with students.

According to Csikszentmihalyi and Csikszentmihalyi (1988) and Wlodkowski (1999), flow is the optimal experience of intrinsic motivation and, therefore, is essential in the learning environment. Experiencing a high level of intrinsic motivation, students will approach the state of flow (Csikszentmihalyi, 1990). Once individuals have experienced flow or that ultimate experience in learning they are motivated to continue to explore that experience again (Csikszentmihalyi & Csikszentmihalyi, 1988). When individuals experienced flow, they perceived clear goals and feedback and were absorbed totally in their experience. Even though experiences may have been perceived as unpleasant, the total absorption seems to have motivated individuals to seek out flow experiences again (Wong & Csikszentmihalyi, 1991). Helping students achieve flow, therefore, should be a goal of instructors.

This project researched the relationship between learner (teacher) perceptions of instructor immediate communication, learner (teacher) flow experiences, and learner (teacher) "reported" motivation to continue learning and to integrate technology into the classroom. This research investigating a correlation between immediacy, flow, and motivation could be a first step in research that could be followed by studies investigating immediate communication, flow, and "actual" integration of technology into the classroom.

Research Questions

Studying immediacy, flow, and learner motivation to continue learning and to integrate technology into their classrooms led to the following research questions:

1. To what extent do learners (teachers) in the classes perceive instructor immediate communication behaviors?

2. To what extent do learners (teachers) in the classes experience flow?

3. To what extent do learners (teachers) in the classes experience motivation to continue learning and to integrate technology into their classrooms?

4. To what extent do learners' (teachers') perception of instructor immediate behaviors correlate with learners (teachers) flow experiences?

5. To what extent do learners' (teachers') perception of instructor immediate behaviors correlate with learners' (teachers') motivation to continue learning and to integrate technology into their classrooms?

6. To what extent do learners' (teachers') perceived flow experiences correlate with learners' (teachers') motivation to continue learning and to integrate technology into their classrooms?

Definition of Terms

Terms operationalized in this study are defined as follows:

Instructors are the individuals delivering instruction in class.

Learners are the individuals accepting instruction in class sessions. For the purposes of this study, learners are individuals who are attending technology classes and currently are employed as teachers.

Students are the individuals accepting instruction in class sessions.

Teachers are those individuals who are attending technology classes. These individuals will be considered learners for the purposes of this study.

Educators are those individuals responsible for the development of students.

Communication is the exchange of verbal and nonverbal cues to create meaning.

Communication Style is the form in which one transmits verbal and nonverbal cues. According to Norton (1993), style gives form to message content. Because the message one communicates is shaped by the verbal and nonverbal manner in which the message is presented, individuals' communication styles influence their listeners. For example, an individual speaking in an enthusiastic style can make the listeners enthusiastic.

Immediacy is the preference to locate oneself close to individuals, to be more open to conversation, and to be easier to approach when communicating with others (Mehrabian, 1971). For this study, immediacy was operationalized by surveying participants and having them respond to questions about their perceptions of instructor immediacy in their technology classrooms.

Immediate Teaching Style is defined as teaching with communication behaviors that students find likable (Anderson, 1979). Immediate communication behaviors include both nonverbal and verbal communication cues. For this study, learner (teachers) perception of the immediate teaching style of their instructors was assessed using the

Immediate Behavior Scale (IBS, see Appendix A) instrument with learners attending classes to learn about integrating technology in their classrooms.

Nonverbal Immediacy cue examples consist of three basic forms: eye contact the instructors show the class, the instructors' movement around the room, and the instructors' body motions, including facial expressions and gestures, used while they deliver lectures (Frymier, 1994).

Verbal Immediacy cue examples consist of four basic forms. First, instructors speak with a more positive, open, and humorous attitude and have the students address them by first name. Second, instructors encourage students to contribute to class discussions and are available to talk with students before and after class. Third, instructors use "we" language and invite class opinion with regard to assignments, due dates, and discussion topics. Fourth, instructors use praise for students' work, comments, and actions (Frymier, 1994).

Flow is defined as the state in which an individual feels motivated, cognitively efficient, and happy (Csikszentmihalyi, 1975). In a flow state, one is so absorbed in the activity at hand that irrelevant thoughts are screened out. What is most important is being involved in the experience, not the extrinsic result of the experience. The flow state is described by the following characteristics: goals are clear and compatible, feedback is immediate and relevant, and challenge is in balance with skills and knowledge. In a flow state, action and awareness are merged, and control becomes a paradox where individuals feel in complete control, yet has less control than normal, because they are challenged highly. Finally, while in flow, the time in which one is involved in the task seems to be distorted. For this study, learner flow was assessed using the Flow Experience Scale (FES, see

Appendix A) instrument for learners (teachers) attending classes to learn about integrating technology in their classrooms.

Learner Motivation is the reason a learning-directed activity is instigated and maintained and can be defined either as intrinsic or extrinsic in orientation (Gage & Berliner, 1992).

Intrinsic Motivation is the internal reasoning desire one has for taking an action (Gage & Berliner, 1992; White, 1959). Individuals who are motivated intrinsically engage in an activity as an end in itself (Schunk, 2000). Intrinsic motivation for working on an activity is internal to the task. The rewards can be self-satisfaction, competence and control, pride in work done, and task success. Benefits to students are that they enjoy their studies which leads to continued learning and higher retention of what they learn.

Extrinsic Motivation is the external reward an individual gains for taking an action (Gage & Berliner, 1992). Extrinsic motivation involves engaging in a task for reasons external to the activity, and, according to Schunk (2000), extrinsic motivation becomes short-term reward conditioning. Benefits of extrinsic learning are good grades and sometimes monetary rewards in different forms (i.e., cash bonuses or promotions from employers).

Motivation to continue learning about technology is the learners' reported desire to continue learning about the technology that was presented in the class sessions of the study. For this study, learner motivation to continue learning about technology was assessed using the Motivation Scale (MS, see Appendix A) instrument for teachers attending classes to learn about integrating technology in their classrooms.

Motivation to integrate technology into the classroom is the learners' reported desire to integrate the technology that was presented in the class sessions of the study. Because they are employed currently as teachers or trainers, the learners were surveyed about their motivation to integrate what they learned into their own teaching and classrooms. For this study, learner motivation to integrate technology into their classrooms was assessed using the Motivation Scale (MS, see Appendix A) instrument.

The chapter that follows contains a literature review of motivation, flow, and immediate communication. The next chapter of the dissertation includes details of the methodology used in this research. In Chapter four, the results of analyses of the data are presented. Finally, in Chapter five, a discussion is presented with the implications and suggestions for future research.

Chapter II

Review of the Literature

To develop an understanding of the relationship between immediacy, flow, and motivation and the effect of these variables on teachers' reporting that they are motivated to continue learning and to integrate technology into their classrooms, research must investigate the effect of these variables on motivation. To assist instructors in reporting they are motivated to learn and integrate technology, many researchers and practitioners are touting the need to motivate teachers extrinsically to help them learn and integrate technology into their classrooms (Educational Record, 2000; Felton, 1999; National Center for Education Statistics, 1999; Vessel, 2000; White House Press Release, 2000). Conversely, other researchers provide evidence that extrinsic motivators are not of primary importance in helping teachers learn and integrate technology into the classrooms (Rosen & Weil, 1995; Schifter, 2000; Strudler & Wetzel, 1999). The contents of this review cover ways used to inspire teacher motivation to learn and integrate technology into the classroom. This review is divided into sections outlining research on motivation, teachers' motivation to learn and integrate technology, immediate communication, and flow theory of optimal experience.

Motivation

Developing motivation theories relevant to learning, Abraham Maslow (1968) defined growth motivation as the rising to the potential of one's self-actualization and asserted this is the most important motivation. Maslow also developed a theory of growth motivation that evolves as one develops individually and is vital to the student and to education. Writing about his fascination of what makes humans take action, Maslow studied intrinsic motivation and created the distinction between process and product behavior orientations. This distinction led him to describe peak process experiences resembling flow experiences. He described people who involved themselves in intense activities and experiences, because the work itself was rewarding and not because they expected conventional rewards. Maslow described this intrinsic motivation as a need to discover one's potentials and limitations as self-actualization. Although modest, these findings set a foundation for later research into specific types of motivation to learn.

Researching what inspires students to want to learn, Deci (1971) studied the effects of externally mediated rewards on intrinsic motivation of undergraduates. The researcher conducted investigations in which external rewards were given to the experimental group (n=12) after completing a learning task, whereas another group (n=12) received verbal reinforcement that is known to enhance intrinsic motivation. In this study, the researcher asked participants to complete four puzzles during each of three separate one-hour sessions. In the sessions, participants were asked to solve each puzzle within 13 minutes, and then were left alone to do as they pleased in a free-choice period for 8 minutes. At the beginning of the second session, the experimental group was offered $1 for each puzzle they solved during the time limit. In the third session, the participants were not offered money. The researchers timed each of the sessions and took the difference of time spent working on the puzzle during the free-choice period. The difference in time spent between the first and third sessions for the control group was 27.9 seconds and for the experimental group was –49.7 seconds. The difference between the experimental and control groups was 77.6 seconds. This reduction in free-choice time spent on working the puzzle supported the researchers hypothesis that extrinsic rewards can decrease intrinsic motivation.

The results indicated that intrinsic motivation decreased when money was used as an external reward. Also, intrinsic motivation increased when verbal encouragement and positive feedback were used, reinforcing the need for understanding of intrinsic motivation. Although the findings of this research support the need to use verbal rewards to increase intrinsic motivation, the number of participants in this study was small.

Continuing to develop the understanding of the effects of extrinsic influences on intrinsic motivation, Deci (1972) replicated his research by observing undergraduates (n=96) solve puzzles. In this study, the researcher asked participants to complete puzzles, and when they were finished, the researcher offered rewards. After solving the puzzles, participants were left alone to do as they pleased for 8 minutes. During those 8 minutes of free-choice time, the participants were observed. The participants were put into one of six conditions: (a) not rewarded, (b) rewarded with money after the free-choice period, (c) rewarded with money before the free-choice period, and (d), (e), and (f) were rewarded verbally in combination with each of the first three.

Table 1
Mean Number of Seconds Spent by Subjects on
Puzzles in the 8-Minute Free-Choice Period

Condition	No verbal reinforcement		Verbal reinforcement	
	Females	Males	Females	Males
No money	292.4	124.4	124.5	197.8
Money after	151.6	65.6	240.4	219.9
Money before	346.0	248.4	384.4	392.9

Deci (1972) found that individuals who were rewarded with money were less intrinsically motivated and, therefore, spent less free-choice time working on the puzzle than individuals in the no money condition. Also, the researcher found that participants who were reinforced verbally were more motivated intrinsically than those who were not rewarded verbally (see Table 1).

The researcher tested the results by using a 3 X 2 X 2 (Money and Timing X Verbal Reinforcements X Gender) analysis of variance (ANOVA) on the amount of time the participants spent working on the puzzles during the free-choice period. The first variable, money and timing, was statically significant and accounted for 14% of the variation in the amount of time spent working. The second variable, verbal reinforcement, was in the predicted direction although it did not reach statistical significance. The third variable, gender, as well as, the Gender X Verbal Reinforcement interaction showed no statistically significant main effect (see Table 2). These findings support the need to continue to develop intrinsic motivation even for those who are receiving external rewards.

Table 2
ANOVA Summary Table on Amount of Free-Choice Time Spent by All Subjects Working on Puzzles

Source	*df*	*MS*	*F*	η^2
Money & timing (A)	2	288304.13	6.95*	.14
Verbal (B)	1	81550.04	1.97	.02
Gender (C)	1	63551.04	1.53	.02
A X B	2	57706.79	1.39	.03
A X C	2	289.54	.01	.00
B X C	1	104148.38	2.51	.03
A X B X C	2	13398.88	0.32	.01
Error	84	41474.38		

* Statistically significant when the error rate was controlled at .05 level.

Studying issues and offering suggestions for ways instructors can help students become motivated to learn, Brophy (1983) outlined directions in motivation and the effects instructors can have on these directions. Based on his review of literature, Brophy termed two directions in motivation: positive and negative motivation. Positive motivation is enjoyable usually and satisfying and promotes eagerness to learn. Negative motivation, seen as a punishment, creates anxiety and results in alienation or resistance. Brophy concluded that instructors affect both positive and negative aspects of student motivation through reward and punishment. He also stated that "freedom from anxiety, fear of failure, and other types of negative motivation, as well as opportunities to work on tasks of appropriate difficulty level, appear to be necessary (but not sufficient) conditions to allow motivation to learn to develop" (p. 214). Learning motivation often is stimulated by communication through various forms of modeling, communication of expectations, direct instruction, or socialization by instructors. Because communication is the one tool that the instructor has complete control over, the way instructors communicate will influence student motivation and flow experiences.

Building on his earlier works with suggestions for motivating learning, Brophy (1987) developed strategies for motivating students to learn. Summarizing conclusions drawn from a review of literature, Brophy indexed these strategies in five different categories. The first three categories were essential preconditions (positive classroom environment and instructor attitude), motivating by maintaining expectations for students' success by linking their actions with purposes and giving recognition rewards, and motivating by supplying extrinsic incentives and by offering external rewards. The fourth category is motivating by capitalizing on student intrinsic desires to increase their own involvement with the class and peers. Brophy's fifth category of motivation is stimulating student motivation to learn by using a clear, enthusiastic presentational style. More relevant to the present study, the fourth and fifth categories exemplify the different ways students can be motivated, and, therefore, these categories should be studied more thoroughly. Brophy provided a comprehensive list of ways instructors can increase motivation with intrinsic incentives and communication behaviors.

Studying extrinsic and ego incentive value on persistence after failure, Miller and Hom (1990) involved 131 university students in completing solvable and unsolvable tasks. Testing these variables, the researchers had students complete two tasks with 15 trials each. First, a computer program matching task presented a figure to the participants for 5 seconds and participants were to select one of six figures that were shown for up to 20 seconds. Second, participants received a puzzle with scrambled words, and were asked to solve the it. To employ ego, Miler and Hom gave the level of difficulty and encouragement to the participants so they would feel more committed. The researchers found that with the higher level of ego, extrinsic motivation increased productivity, $t(62) = 2.14$, $\eta^2 = .07$. Conversely, for those with a lower the ego level, extrinsic motivation hindered productivity, $t(62) = 1.85$, $\eta^2 = .05$. Because confidence was associated with ego involvement, students not possessing the confidence in the learning task were hindered by the extrinsic rewards.

Examining the effects of contextualization, personalization, and choice for enhancing student motivation, Cordova and Lepper (1996) involved 70 fourth and fifth graders in computer activities in control and experimental groups. The researchers created three computer games called Treasure Hunt, Space Quest, and a math game. They set up one control and four experimental conditions where the control was the basic game and unembellished. The four experimental groups were divided in two and half of the students were given the generic fantasy and half were given a personalized fantasy. Half of each of these groups was given no choices, and half was given incidental game feature choices. The researchers found that students in the experimental groups where learning material was contextualized and personalized and where the students were given choices produced dramatic increases in mean values in motivation, depth of engagement in learning, amount learned in a fixed time period, perceived competence, and levels of aspiration (see Table 3). By communicating with immediate behaviors, instructors can help students contextualize and personalize and develop choices in learning. The means and standard deviations for the different conditions and factors in the study are provided in Table 3.

Table 3
Means and Standard Deviations for Contextualization, Personalization, and Choice

	Conditions				
Variable	No Fantasy	Gen No Choice	Gen Choice	Per No Choice	Per Choice
Willingness to stay after class					
M	3.00	3.21	4.57	4.00	5.57
SD	1.11	2.19	1.34	2.18	1.55
Relative enjoyment composite					
M	2.75	2.90	3.82	3.93	5.42
SD	0.86	1.58	1.66	1.16	0.08
Use of Hints					
M	0.55	0.49	0.84	0.80	0.20
SD	0.80	0.89	1.27	1.08	0.25
% of times more challenging program was selected					
M	29.00	80.00	80.00	64.00	82.00
SD	0.12	0.22	0.24	0.23	0.19
Use complex operations					
M	0.80	1.33	1.30	2.06	1.83
SD	0.61	0.96	1.43	1.15	0.91
Perceived competence					
M	4.71	4.64	5.60	5.40	5.93
SD	1.07	1.13	1.07	0.97	0.73
Desired level of difficulty for future game					
M	3.79	4.43	5.21	5.00	6.14
SD	1.12	1.28	0.98	0.88	0.77

Note. Gen = generic fantasy; Per = personalized fantasy.

Reviewing research on reinforcement, reward, and intrinsic motivation, Cameron and Pierce (1994) conducted a meta-analysis of results from 96 articles. The researchers found that rewards do not impact negatively intrinsic motivation and that verbal praise produced an increase in intrinsic motivation. Also, when they were expected, tangible rewards given to individuals for simply doing a task decreased intrinsic motivation. The findings from the meta-analysis lend support to the need to find ways to help students become motivated to learn.

In another meta-analysis of studies examining the effects of extrinsic rewards on intrinsic motivation, Deci, Koestner, and Ryan (1999) reviewed 128 studies. The researchers determined that engagement-, completion-, and performance-contingent rewards significantly undermined free-choice intrinsic motivation and reported self-interest. Also, all tangible and expected rewards undermined free-choice intrinsic motivation and self-reported interest. Conversely, positive feedback enhanced both free-choice behavior and self-reported interest, and children seem to be more responsive to rewards and feedback than college students. This research is relevant, because engagement and completion are vital to learning and motivation to continue learning.

The theories outlined in this section on motivation provide an understanding of motivation for the present research project. Contained in the next section is research on the influence of intrinsic motivation to integrate technology.

Teachers' Motivation to Learn and Integrate Technology

Many researchers have studied teachers' motivation to learn and integrate technology into their classrooms (Educational Record, 2000; Felton, 1999; National Center for Education Statistics, 1999; Vessel, 2000; White House Press Release, 2000). Only a few of these studies, however, concentrated on intrinsic motivation and other closely related factors. The following studies address the need to increase teacher intrinsic motivation to learn and integrate technology into the classroom.

Schifter (2000) analyzed faculty motivators and inhibitors for using distance education at a large university. Surveying 263 full-time faculty, she required them to rank motivators and inhibitors to participation in the program. From the data, Schifter listed motivators and inhibitors for participants (those who participated) and nonparticipants (those who did not participate) in the distance-education program. Schifter listed the top five responses in each category (see Table 4) and found very little difference between the participant and the nonparticipant lists.

Table 4

Schifter's Motivators and Inhibitors to Participation in the Distance Education Program

Group	Motivators	Inhibitors
Participants	1 Personal motivation to use technology	1 Lack of technical support provided by the institution
	2 Opportunity to develop new ideas	2 Lack of release time
	3 Opportunity to improve my teaching	3 Concern about faculty workload
	4 Opportunity to diversify program offerings	4 Lack of grants for materials/expenses
	5 Greater course flexibility for students	5 Concern about quality of courses
Non-participants	1 Opportunity to develop new ideas	1 Lack of technical support provided by the institution
	2 Technical support provided by the institution	2 Concern about quality of courses
	3 Personal motivation to use technology	3 Concern about faculty workload
	4 Intellectual challenge	4 Lack of distance education training provided by the institution
	5 Overall job satisfaction	5 Lack of release time

One difference, however, was that the participants named "Personal motivation to use technology" (p. 44), an intrinsic variable, as their primary motivator, whereas the nonparticipants listed personal motivation to use technology as third most important. This difference in motivators suggests that personal (intrinsic) motivation is a key to faculty learning and integrating technology into the classroom. The present project, therefore, focused on the intrinsic motivation to integrate technology into the classroom.

Matthew, Parker, and Wilkinson (1998) studied faculty concerns about adoption of new technology at a large Southern university. Using a questionnaire to assess the intensity of concerns of faculty about changes in technology, the researchers ranked the stages of concern that influence faculty (n=47) during the integration of a new computer system on a university campus. The stages of concern consist of a 7-level process which includes (a) awareness, (b) information, (c) personal (abilities and uncertainties), (d) management, (e) consequence, (f) collaboration, and (g) refocusing. Matthew et al. found that the first four factors were intrinsic and the last three were extrinsic concerns. The researchers asserted that it is important to provide intrinsic support to the faculty members' in the first four stages of development and extrinsic support to faculty members in the last three stages. Because external factors such as time constraints and individual capabilities impinge on the faculty's movement through the stages of concern, Matthew et al. found that if faculty were not supported in the intrinsic stages they did not progress to the extrinsic stages. Further, the researchers stated that if teachers were to integrate technology into their classrooms the teachers needed to feel comfortable using the technology.

Matthew et al. (1998) found that, although extrinsic barriers existed, intrinsic motivation helped teachers continue to learn about technology and move to the higher stages. By having the strong intrinsic motivation, teachers were able to keep moving through the different stages of concern during the technology-adoption process. These findings suggest that if faculty are to integrate technology they must address the intrinsic factors before the extrinsic.

In a study conducted in the business environment that supports Schifter's (2000) assertions, Compeau and Higgins (1995) investigated computer self-efficacy of individuals in the business environment. Surveying randomly selected participants (n=1,071) from a list of subscribers of a business periodical, the researchers found that computer users' beliefs in their abilities strongly influenced their computer work products, emotional reactions to computers, and actual computer use. Also, individuals' beliefs about their abilities to use computers competently was influenced positively by encouragement from coworkers and by seeing coworkers use computers. Unexpectedly, the researchers found that computer support had a negative relationship with computer self-efficacy and work-product expectations. Because teachers often assert that lack of support prevented them from integrating technology into the classroom, this finding demonstrated the importance of intrinsic motivation in overcoming obstacles and supported the need to investigate intrinsic motivation.

The findings of Schifter's (2000), Compeau and Higgins (1995), and Matthew et al. (1998) support the need to increase teachers' intrinsic motivation to integrate technology into their classrooms. Schifter's (2000) findings suggested that personal motivation was key to faculty learning and integrating technology into the classroom. Matthew et al. (1998) found that intrinsic motivation was necessary for teachers to continue their learning and development in using computers. Compeau and Higgins (1995) found that internal beliefs strongly influenced computer use. Brophy (1987) listed ways to increase learning motivation and included specific ways teachers motivate students using intrinsic incentives and communication behaviors. To build on this understanding of motivation, the next section of this review includes research on a communication style, called immediacy, that has been found to motivate students.

Immediate Communication

Immediate communication is a construct that has been studied with regard to teaching and learning motivation and the effects these have on one another. Studies relevant to the present research project have focused on the relationship between immediacy and instructor effectiveness and student motivation (Andersen, 1979) and found a correlation between these variables. Defining behaviors that characterize effective teaching researchers listed immediate characteristics (Andersen, Norton, & Nussbaum, 1981; Comstock, Rowell, & Bowers, 1995). Also, studies relevant to this project have found a positive correlation between immediacy and learning (Gorham, 1988; Kelly & Gorham, 1988; Richmond, Gorham, & McCroskey, 1987). Other researchers found a relationship between immediacy, learning, and motivation have on one another (Christophel, 1990; Christophel & Gorham, 1995). Further, research relevant to the current project found a positive relationship between immediacy and learning in different cultures (McCroskey et al., 1995).

Immediacy is defined by Mehrabian's (1971) statement that "people are drawn toward persons and things they like, evaluate highly, and prefer; and they avoid or move away from things they dislike, evaluate negatively, or do not prefer" (p. 1). This finding is similar to Brophy's (1983) assertions. Mehrabian theorized that communicators who were liked and preferred were perceived to communicate more effectively.

Using Mehrabian's (1971) definition of immediacy when studying students (n=205) and instructors (n=13) at the university level, Andersen (1979) found a relationship between immediacy and instructor effectiveness. Using surveys, interviews, and observations to gather data from university students for her dissertation, Janice Andersen found a statistically significant positive correlation ($n = 205$, $r = .41$) between student perception of immediacy and instructor effectiveness. The students reported that, when instructors demonstrated more immediate behaviors, instructors were seen as more effective at teaching. Also, using Nunnally's internal reliability formula, Anderson found a positive agreement between student perceptions of immediacy and reports of (n=15) trained observers, demonstrating the validity of using student responses as valid data for analysis. The students felt that the instructor was more inviting and helped them become interested in the material. This is the first study that found a relationship between learning and immediacy. Because immediacy is related to learning and motivation and instructor effectiveness, immediacy is a construct useful to this project. Also, because Anderson found agreement between student perception of immediacy and trained observer perceptions of immediacy, learner perception of immediacy was adopted in this study.

To determine what behaviors constitute effective teaching styles, Andersen, Norton, and Nussbaum (1981) conducted two studies using cross-sectional surveys with university students (n=198 & 323). In the first study all students were attending a multisectioned course taught by 13 instructors to correlate immediate behaviors to communicator style. Immediacy was measured using a 15-item, 5-point Likert scale, and style was measured using a 51-item, 7-point Likert scale. The researchers found a statistically significant correlation between perceived instructor immediacy and perceived communicator style with a canonical correlation between variables of .68.

In the second study, all students were attending a multisectioned course taught by 10 graduate-assistant instructors to correlate communicator style to affective learning, behavioral commitment, and cognitive learning. Style was measured using a 51-item, 7-point Likert scale, affective learning using a 8-item semantic differential scale, behavioral commitment using a 4-item semantic differential scale, and cognitive learning using a 50-item multiple-choice examination. The researchers found that style was statistically significant in relation to affective learning $F(10,312) = 5.37$, $p < .01$ and accounted for 11% of variance. The researchers found that style was statistically significant in relation to behavioral commitment $F(10,312) = 3.23$, $p < .01$ and accounted for 9.3% of variance. The researchers found that style was statistically significant in predicting cognitive learning $F(10,312) = 2.55$, $p < .01$ and accounted for 7.6% of variance.

The researchers found immediacy communication styles were related to effective instruction and should include both verbal and nonverbal immediacy. The researchers found that, although immediacy and motivation were related, the relationship between immediacy, instructor communication, and students' attitude toward learning was not clear.

Researching the relationship of immediacy, verbal control messages, and students' attitude toward learning, Plax, Kearney, McCroskey, and Richmond (1986) performed two studies. They asked junior- and senior-high-school students (n=620) and college students (n=1,320) to complete a cross-sectional survey that contained questions regarding students attitude toward learning in response to the instructors' verbal messages. The researchers found that positive student attitude toward learning is associated with verbal control messages that are synchronous with nonverbal immediacy, that is, when the instructor is consistent in both nonverbal immediacy and verbal messages, the students have a positive attitude toward learning. Regression analysis generated a statistically significant association of a linear combination of variables (R^2 = .686, F = 9.70) for high-school students and (R^2 = .467, F = 45.85) for college students. Also, Plax et al. found that immediacy was associated with affective learning. Simple correlations generated statistically significant correlations of .67 for high-school students and .61 for college students when the overall error rate was controlled at .05 level. The researchers applied a sample method of asking students their perceptions of the "class directly before" the class in which they completed the survey and found this method effective for sampling and eliminating random bias errors. Although the researchers found immediacy and student attitude toward learning were related, the relationship between immediacy and actual learning was not addressed.

To clarify the relationship of instructor nonverbal immediacy and learning, Richmond, Gorham, and McCroskey (1987) studied university students. Using a cross-sectional survey in two studies (n=361 & 358), the researchers found a relationship between nonverbal instructor immediacy and cognitive learning. To determine cognitive learning, the researchers created a scale with items numbered from 0 to 9 for students to report their level of learning by asking, "how much did you learn?" and the level of learning loss by asking, "how much do you think you could have learned had you had the ideal instructor?" (p. 581). The first study was designed to provide an upper estimate of potential influence of immediacy on learning by surveying the students about communication behaviors of their "best" or "worst" instructors in college. The researchers asked half of the participants to recall and rate the best instructor they had in college to determine the "best" instructors. To determine the "worst" instructors, researchers asked the other half of the participants to recall and rate the worst instructor they had in college. The researchers found that with learning and immediacy the analyses indicated correlation of the shared variance of approximately 50% and slightly higher for simple and multiple analyses, respectively. Also, a discriminate analysis of Study 1 data indicated that 95% of students classified instructors correctly in the best- and worst-instructor categories. Best and worst instructors had a statistically significant difference on a linear combination of variables, $F(9,345) = 87.53$, Wilks's Lambda = .30, measure of explained variation is .23. These findings reveal that the best instructors demonstrated highly immediate communication behaviors and worst instructors were described as moderately low in immediacy.

The second study was designed to provide a realistic estimate of potential influence of immediacy on learning by surveying the students about the communication behaviors of a instructor in a class "inside" or "outside" their major or intended major and to classify students into "low," "medium," and "high" based on their responses to the learning question. A discriminate analysis of Study 2 data indicated that 68% of students classified instructors correctly in the low, medium, and high categories. Best and worst instructors had a statistically significant difference on a linear combination of variables, $F(8,656) = 11.80$, Wilks's Lambda = .76, measure of explained motivation is .48. Again, these findings demonstrated that students who reported high learning also observed immediate behaviors from their instructors.

To address the relationship between instructor verbal immediacy and learning, Gorham (1988) studied these two variables using a cross-sectional survey with 387 university students. The survey included questions referring to the students' perception of instructor immediacy, cognitive learning, and affective learning. Gorham identified a set of verbal and nonverbal communication behaviors that were related to increased student learning (see Table 5). Also, Gorham found that verbal immediacy tends to increase in value as class size increases. Correlation coefficients based on samples of less than 30 are suspect, as the coefficient is not stable until the sample size is 30 or greater.

Table 5
Simple Correlations Between Verbal and Nonverbal Immediacy Items and Learning Measures by Class Size[a]

	Learning			Total Affect		
Immediacy	S	M	L	S	M	L
Total Verbal	.33	.43	.47	.48	.54	.55
Total Nonverbal	.33	.41	.50	.53	.59	.61

Correlations are statistically significant when overall error rate was controlled at .05 level.
a – Class Size: S = Small (1-25), M = Medium (26-50), L = Large (51+).

Researching instructor immediacy and information recall, Kelly and Gorham (1988) asked students (n=100) to recall information that was presented using both high immediacy (physical closeness and eye contact) and low immediacy (physical distance and no eye contact.) The researchers performed this study by having a trained presenter give information to students and then having them write down the information on paper. The presenter gave this information to the students with and without physical distance and with and without eye contact. Using a two-way analysis of variance with repeated measures, the researchers found that immediacy had a positive influence on information recall for students. "Physical immediacy was statistically significant and accounted for 11.4% of the variance in recall (F = 89.75, df = 1,279), eye contact was statistically significant and accounted for 6.9% of the variance (F = 54.76, df = 1,279), the interaction between eye contact and physical distance was statistically significant and accounted for

1.2% of the variance (F = 9.73, df = 1,279), and the total variance accounted for was approximately 19.5%" (p. 204). Using a two-tailed t test to probe the interaction, the researchers found that physical immediacy and eye contact showed a statistically significant higher score than any other condition, whereas low physical immediacy and no eye contact showed a statistically significant lower score than any other condition. These findings demonstrated the need to use immediate behaviors to help students recall information. Kelly and Gorham asserted that immediacy behaviors aroused students curiosity and gained their attention. Because students were paying more attention, they learned more.

The studies reviewed to this point have not addressed the three variables immediacy, learning, and motivation and the influence each has on the others. Investigating immediacy, learning, and motivation, Christophel (1990) focused on the three-way relationship between the variables. Using a cross-sectional format in two studies (n = 562 & 1,304) with students at the university level, she found that the three variables were related. Divided into four sections, the survey contained questions on demographics, immediacy behaviors, motivation, and learning. Surveying the students regarding instructors from the most recent class before the class in which the data were collected, Christophel found correlations for the relationships of immediacy and learning, immediacy and motivation (see Table 6), and learn and motivation (see Table 7). Investigating multiple correlations for the three variables, the researcher found strong support for the use of immediacy to increase learning and motivation. This work provided the model from which the current project was designed.

Table 6
Multiple Correlation Coefficients Between Immediacy and State Motivation and Between Immediacy and Learning

Correlation Between	Data Set	Verbal	Nonverbal	Combined
Immediacy and State Motivation	Study 1	.47	.34	.49
Immediacy and State Motivation	Study 2	.36	.47	.60
Immediacy and Learning	Study 1	.50	.51	.58
Immediacy and Learning	Study 2	.42	.52	.53

Correlations are statistically significant when overall error rate was controlled at .05 level.

Table 7
Simple Correlations Between Motivation and Learning

Data Set	State	Trait	Combined
Study 1 Simple Cognitive Learning	.25	.60	.60
Study 1 Affective Learning	.31	.66	.66
Study 2 Simple Cognitive Learning	.37	.69	.69
Study 2 Affective Learning	.44	.64	.66

Correlations are statistically significant when overall error rate was controlled at .05 level.

Researching changes in student-perceived motivation and instructor immediacy across the span of an academic semester, Christophel and Gorham (1995) found a causal relationship between university instructor behaviors and student motivation to learn at different times during the semester. Using a cross-sectional survey format, the researchers surveyed university students (n=319) with a broad range of majors and academic grade levels to determine if student learning motivation changed during the semester and the extent of that change. Surveying the students regarding instructors from the most recent class before the class in which the data were collected, the researchers used a test-retest procedure to investigate whether student motivation changed during the semester. Because they found no statistically significant difference between the first and second data collection (X^2 [2, N = 319] = 2.92, Cramer's V = .07), Christophel and Gorham speculated that "there is a pattern in which student motivation is influenced by instructor behavior in the early part of the semester and remains fairly consistent from that point on" (p. 301). This work provides support that a cross-sectional survey will gather data sufficiently on immediacy and motivation: two constructs that were used in this project.

To determine the most effective level of immediacy instructors should use when communicating, Comstock, Rowell, and Bowers (1995) studied low (using very few immediate behaviors), medium (using a moderate number of immediate behaviors), and high (using many immediate behaviors) frequency of immediate behaviors in relation to student motivation for university students. The researchers trained a professor, as an experimental confederate, to deliver a workshop to help students learn about foods that could help increase academic performance.

In the low-immediacy condition, the instructor arrived at the workshop just before he began and left as soon as he was finished. He wore a suit, tie, and glasses during the entire presentation. He read directly from a script, never made eye contact, smiled, or nodded, spoke in a quiet, barely audible voice, used a monotonous tone, remained immobile behind the podium, and did not touch any subjects. In the moderately high condition, the instructor arrived a few minutes before he began and left a few minutes after finishing. He loosened his tie and took off his coat before speaking, and wore no glasses. He made eye contact 30% of the time, glanced at his notes from time to time, smiled 30 % of the time, nodded, varied his voice with inflection and intonation, spoke with moderate volume, walked in front of the class, stayed a minimum 1.5 ft from subjects, and did not touch any subjects. In the excessively high condition, the instructor spent more time with students by arriving before he started speaking and leaving after all students. He wore no glasses and before he started he took off his tie and coat, rolled up his shirt sleeves. He did not use notes when he spoke, he made eye contact and smiled about 60 % of the time, nodded, spoke in a loud voice, varied his voice intonation and inflection, wondered the aisles, from time to time touched a student's upper arm or shoulder, and approached some students within 1.5 ft.

Using a one-way ANOVA, Comstock et al. found that $F = (2, 107) = 8.84$, $\eta^2 = .14$, moderately high ($M = 6.90$) frequency of immediate behaviors was more effective for cognitive learning than either low ($M = 5.69$) or excessively high ($M = 6.34$). The results implied that those who teach with low or excessively high immediacy will not create the best learning environment. Because the level of immediacy an instructor demonstrates is related to motivation, the amount of immediate behaviors and motivation are important to the current project. This work did not, however, supply information on monitoring immediacy behaviors.

Researching instructors' ability to monitor their own immediacy, Gorham and Zakahi (1990) found that instructors were very aware of how they used the behaviors when instructing at the university level. By surveying both students (n=526) and instructors (n=35) regarding immediacy being demonstrated by the instructor, Gorham and Zakahi concluded that both groups' perceptions of immediacy agree (see Table 8) and, therefore, instructors can learn to monitor effectively both the behaviors and outcomes suggested in the immediacy research literature (Anderson, 1979; Gorham, 1988). If instructors can monitor their own effectiveness, then they have the power to change their immediacy. By changing their own immediacy, instructors have the ability to influence motivation in the classroom. Confirming Andersen's (1979) assertion that student perceptions are valid assessments of instructor immediacy, Gorham and Zakahi found further support for the validity of using student reports of perceived instructor immediacy that were used in the present study.

Table 8
Means, Standard Deviations, and Pearson Product-moment Correlation Coefficients Between Instructor and Student Perceptions of Instructor Immediacy and Student Learning

		Student		Instructor	
Variables	r	Mean	SD	Mean	SD
Verbal Immediacy Total	.81	37.63	8.68	42.74	10.35
Nonverbal Immediacy Total	.70	43.96	5.07	45.56	5.44
Cognitive Learning	.62	6.12	1.47	6.79	1.31
Total Affective Learning	.48	131.20	17.61	134.90	25.46

Correlations are statistically significant when overall error rate was controlled at .05 level.

Also studying university students (n=356) perceptions of their instructors' immediacy, Correia (1995) found instructors who demonstrate too many immediacy behaviors can inhibit the willingness of those who are afraid to speak up or ask questions. According to Correia, students with high communication apprehension found that moderately high instructor immediacy was more helpful in reducing communication apprehension than very high instructor immediacy. By controlling their own communication behaviors, instructors empowered the timid students to speak up and ask questions in class, which resulted in students who reported feeling more motivated. This study focused on ways to help instructors motivate students to learn by communicating with moderately high immediacy which should enable students to feel confident, speak up, and ask questions.

Investigating instructors' learning to be more immediate, Linger (1997) used a pretest-posttest design where 8 prospective instructors were taught immediacy communication skills in a workshop environment. Expert raters evaluated videotapes of 3 randomly selected participants of the workshop and responded in survey format that the students learned to increase their use of immediate communication behaviors. Results of t test analysis indicated that the students had a statistically significant increased average immediacy score from the beginning (M = 60.58 SD = 17.38) of the workshop to the end (M = 87.00, SD = 6.27), (t = -6.37, df = 2, η^2 = .95). Also, using a pretest posttest survey design and t test analysis, participants perceived that their own immediacy had a statistically significant improvement from the beginning (M = 35.88, SD = 7.06) of the workshop to the end (M = 44.38, SD = 5.58), (t = -2.84, df = 7, η^2 = .54). These findings support the effectiveness of a workshop designed to help instructors learn immediacy skills so they can teach more effectively.

Studying the influence of instructor immediacy on students from different cultures, McCroskey et al. (1995) found that students are more likely to give immediate instructors higher evaluations. Completing cross-sectional surveys in their respective first languages, university students from Australia (n=139), Finland (n=151), Puerto Rico (n=431), and the United States (n=365) evaluated instructors from the most recent class before the class in which the data were collected. The researchers found a relationship between immediacy and students' evaluation of instructors across the diverse cultural and linguistic communities. McCroskey et al. found a positive relationship between students perceived immediacy and better evaluations of the instructors implying students were more satisfied with the instruction (see Table 9). The researchers asserted that "in the contemporary 'total quality management' environment, the concept of customer satisfaction, is being brought into academia. It would appear that if we want to make 'satisfied customers' of our students, we would be well-advised to be immediate in our teaching" (p. 289). The researchers also noted that this "customer service" is not "pampering" or being overly sensitive to students.

Table 9
Multiple Correlation Coefficients Between Nonverbal Immediacy Measures and Instructor Evaluation Measures

	Sample			
Total Immediacy Score	Australia	Finland	Puerto Rico	U.S.
Affect toward instructor	.60	.69	.44	.59
Willingness to enroll in another course with same instructor	.54	.66	.52	.55

All correlations are statistically significant when overall error rate was controlled at .05 level.

In summary, the assertion that immediacy promotes learning and has been widened to many types of classrooms. The findings of the research (Anderson, 1979; Christophel, 1990; Gorham 1988; Kelly & Gorham, 1988; McCroskey et al., 1995) support the importance of immediacy in the classroom.

Flow

Immediate communication is important to this study only to the extent it increases teacher motivation to continue learning and to integrate technology into the classroom. Researchers studying flow (the ultimate experience of intrinsic motivation) in a variety of contexts related to learning and computers have found that students who reach flow have been highly motivated intrinsically and are more likely to continue to learn and use what they have learned (Chen, Wigand, & Nilan, 1999; Ghani & Deshpande, 1994; Moneta & Csikszentmihalyi, 1999; Tuss, 1995; Wong & Csikszentmihalyi, 1991). Also, flow is associated with improved work product quality, increased personal learning goal strivings, enhanced exploratory behavior that was associated with the length and depth of computer use, increased selection of more difficult classes, and studied the topics more thoroughly (Ghani & Deshpande, 1994; Larson, 1988; Moneta & Csikszentmihalyi, 1999; Tuss, 1995; Wong & Csikszentmihalyi, 1991).

The flow state has been described as the best feelings and most enjoyable experiences one can attain (Chen et al., 1999). Csikszentmihalyi (1999) conceptualized flow as having the following primary characteristics: (a) in flow the goals are clear and compatible, (b) feedback is immediate and relevant, (c) challenge is in balance with skills and knowledge, (d) action and awareness are merged, (e) concentration focuses on the task at hand, (f) there becomes a paradox of control where one feels in complete control yet has less control than normal because the individual is highly challenged, (g) self-consciousness seems to disappear, (h) the time span in which one is involved in the task is perceived to be distorted, and (i) the experience itself is more important than the result. Csikszentmihalyi (1990, 1994, 1997) asserted that once in flow in a certain activity the individual changes to more advanced thinking and evolution. Because flow is an ultimate experience, students perceive that they have grown and want to continue to grow as they gain new skills. Wlodkowski (1999) referred to flow as "one of the pinnacles of what learning can be" (p. 213).

In his doctoral dissertation, Mahaly Csikszentmihalyi (1965) first investigated artists' flow experiences as they painted. He found that the artists were involved totally in the activity of creating, and, when they finished, their paintings were tossed into the corner as meaningless. It is this total involvement in the activity that he referred to as flow. In his research, Csikszentmihalyi found that artists creating original work operated with unselfconscious assurance and remained open to and involved in the activity. It was this openness to being in the moment that helped create the flow experiences. The present study investigated the relationship of instructor immediacy and students being open to experience learning.

To gain an understanding of the effects of flow in enhancing the learning experience, Larson (1988) focused his research on 90 adolescents involved in writing research papers. Having an assignment to complete a 9- to 10-page paper, the group of students in one study were asked to complete eight evaluations regarding their reactions during the completion of the assignment, while students in the other study were interviewed. The responses on the forms and those given in the interviews then were compared with the work product of each student.

Larson (1988) organized the responses in three categories: those who experienced anxiety often, those who experienced boredom often, and those who experienced flow often. Even though most students reported being overly aroused or anxious at some point while writing the paper, students who reported that anxiety was endemic to the task produced work products reflecting poorly controlled and impulsive writing or created cognitive and emotional havoc that made writing impossible. What the students described as boredom occurred most often during the writing phase of the assignment. Students who reported bored reactions produced papers lacking challenge for the reader and seemed to be stymied by having too few expectations. Students who reported enjoyment and flow-like involvement with their writing described experiences like deep absorption, loosing track of time, and being challenged yet feeling in control of the material. The written products of those who reported the flow experiences reflected a higher level of organization and a more progressively developed train of thought allowing them to build more coherent and sophisticated papers. It should be noted that those who produced more well written papers neither possessed higher skill levels nor reported spending more time on the task than the others. These students seemed to enjoy the task and get more done in the time spent writing. These positive feelings and increased productivity resulted in more enjoyment that was related to efficient and creative writing.

Larson (1988) mentioned that the findings of his study do not assert that flow experiences are either caused good writing or resulted from good writing. The researcher stated that the flow conditions are related closely to good writing. He suggested that successful writing is related partially to the interaction between the writer and the work that engenders and sustains attention. This attention kept the person involved and motivated in the task and helped them avoid debilitating emotions like anxiety and boredom. In summary, Larson asserted that these flow-like conditions are not only useful for writing but also for all tasks that involve concentration on problems that require creative or original solutions. This concentration to develop creative and original solutions is similar to the concentration needed to continue learning and to integrate technology into the classroom.

Using flow theory, Wong and Csikszentmihalyi (1991) examined motivation and academic achievement of 170 high-school students' experiences with academic performance. To gain more "natural" responses to the students' experiences, researchers used the Experience Sampling Method (ESM) where they asked participants to carry pagers and questionnaires. At random times when the participants were signaled, they were to answer questions about feelings, moods, and thoughts. The researchers found two types of motivation in academic achievement: one directed toward ongoing enjoyment of studying (intrinsic motivation) and the other toward long-term goals (work orientation). The results showed that enjoyment of studying, the motivational intrinsic variable, was related to increased challenge level of classes student selected. Further, Wong and Csikszentmihalyi found the enjoyment individuals experienced while studying affected the depth of progression in those studies, whereas work orientation affected grades. These findings showed that the students who reported flow (higher intrinsic motivation) took more difficult classes and studied the topics more thoroughly than other students. The findings in this study support the assertion that flow experiences encourage students to accept higher levels of challenge similar to those some individuals experience when learning and integrating technology. Although this study involves academic achievement, it does not concentrate specifically on student interest and quality of experience in the classroom.

Studying student interest and the quality of experience (flow), Schiefele and Csikszentmihalyi (1994) asked high-school freshmen and sophomores to describe learning experiences using the ESM. The researchers compared the ESM responses with students' scores on achievement tests and the students grades in each of the areas involved. The researchers found that interest proved to be a stronger predictor than achievement motivation and ability at predicting intrinsic motivation, self-esteem, and perception of skill. Although this study involves interest and quality of experience in classrooms, it does not concentrate specifically on interactions humans can have with computers.

Studying flow conditions in human and computer interaction, Ghani and Deshpande (1994) surveyed professionals in different organizations (n=149) regarding workplace technology experiences like enjoyment, perceived control, concentration, perceived use, and exploratory use. The researchers found that having a perceived sense of control and task challenge were key characteristics related to the optimal experiences of enjoyment and intense concentration or flow. Also, Ghani and Deshpande found that control and challenge were linked to interest and exploratory behavior that were associated with the length and depth of computer use. The challenges these researchers described are similar to those faced by individuals who continue learning and integrate technology into their classrooms. To learn and integrate technology into the classrooms, teachers will be challenged and will need to perceive control so they will continue to engage in exploratory behavior that is characteristic of flow and learning.

Researching flow experiences of enjoyment and involvement, Tuss (1994) asserted that intrinsic motivation, in Csikszentmihalyi's flow theory, was associated with the students' skill-level development while participating in challenging tasks. Using the (ESM) with 78 academically talented high-school students in a summer science program, Tuss found that levels of enjoyment and involvement were related to the students' personal goal strivings (i.e., those who reported higher enjoyment and involvement raised their personal goals to a higher level). The results showed that the highest quality experiences occurred when the students were involved in laboratory activities as opposed to lectures. Students reported optimal experiences in a few notable lectures, which, because lecture is the predominate form of teaching, supports the need to understand the relationship between immediate communication and flow.

Examining the relationships between interest, achievement motivation, ability, quality of experience (flow), and achievement while doing mathematics, Schiefele and Csikszentmihalyi (1995) found that quality of experience was correlated with grades and interest in mathematics. The researchers compared 108 high-school freshman and sophomore students' grades, scores on an interest rating survey, an achievement motivation questionnaire, and Preliminary Scholastic Aptitude Test. Along with these assessments Schiefele and Csikszentmihalyi had these students respond to the ESM for one week. The researchers found that quality of experience when doing mathematics was related mainly to interest. Using a correlational analysis, Schiefele and Csikszentmihalyi found that quality of experience had a positive statistically significant relationship with grades ($r = .29$). Because immediacy was found to increase student involvement and interest and quality of experience was related to interest, immediate communication behaviors should be related to flow.

Having a better understanding of the relationship of immediate communication and flow, instructors will be more effective at motivating and enabling students to learn. This research is relevant because the goal of the current project was to increase the level of motivation of the learners (teachers).

Summary

One goal of this research project was to find ways to increase the number of learners (teachers) who reported that they were motivated to continue learning and to integrate technology. Research demonstrates that flow in learning has been correlated with intrinsic motivation of the students to continue learning and use what was learned. Also, instructors who demonstrate immediate behaviors have been associated with students' increased motivation. Instructors who use immediate behaviors when they are teaching or training technology will enable learners (teachers) to achieve flow and have higher goals for future learning, continue to study topics more thoroughly outside of class, and participate in more challenging tasks.

The results of the studies reviewed in this chapter support the importance of immediacy and flow to learning motivation. This project studied the relationship between these variables. Using a self-report format, learners in this research project were surveyed regarding their perception of the immediacy behaviors that their instructors demonstrate, the "flow" they experience, and the motivation they perceive. These results will help educators understand the relationship between these variables and integrating technology into the classroom.

Chapter III

Methodology

The purpose of this research was to investigate the relationship between immediate instructor behaviors, flow, and learner motivation to continue learning and to integrate technology into the classroom. This chapter contains information on the following topics: research design, subjects, protection of human subjects, procedure, pilot study, instrumentation, and data analysis.

Research Design

This study was modeled after Christophel's (1990) study in which she investigated the relationship, for university students, between immediacy, motivation, and learning. In the current project, immediacy, flow, and motivation data were collected using structured closed-ended questions that gather the participants perceptions' of the respective variables. This correlational study assessed whether there were statistically significant relationships between learner perceptions of instructor immediacy, learner perceptions of flow, and learner reports of motivation to continue learning and to integrate technology into their classrooms.

Subjects

In this study, individuals were recruited to participate during the Spring and Fall 2001 semesters. Participants were individuals attending Teacher Education Technology (Ed Tech) computer courses at a private university in the San Francisco Bay Area. Participants returned 115 surveys; 53 surveys met the study threshold criterion by answering "yes" to the question, "are you currently a teacher or trainer?" (see Table 10 &

Appendix A). Of these 53 surveys, only one was not usable for analysis because only the immediacy and demographics sections were completed. Students in classrooms were recruited by the researcher to participate in this study. Participants were solicited verbally from the front of the classrooms. For recruitment from the classes, the investigator requested permission from the Ed Tech Director to contact the individual instructors. Also, the investigator requested permission from the individual course instructors to recruit potential participants from the instructor's classes. The recruitment presentation for volunteers occurred near the end of class.

For recruitment, students were told that this was a study regarding classroom behaviors and that the questionnaire would take 10 to 15 minutes to complete. Upon agreement to participate, students were given the questionnaire sheet to complete on their own. Participants listened to the informed consent script, which explained the purpose of the study and the survey instrument to be completed. Participants then completed the survey and returned it to the researcher. As part of the recruitment script, participants were offered an article to read about technology if they choose not to complete the survey, and none accepted this offer.

Because data were collected over two semesters, the demographics data were separated for comparison purposes (see Table 10. In the Fall semester, a higher percentage of males completed the questionnaire. Also, the Spring group returned responses from a higher percentage of graduate and business teachers than the Fall.

A few characteristics were consistent across both semesters. For the age question, a majority of respondents reported they were in the 25- to 35-year-old category. Also, a majority of respondents reported that they taught at primary and secondary levels. For the "hours per week computer use in class" question, the majority reported use of more than 6 hours (see Table 10).

Table 10
Demographic Characteristics of the Study Participants

	Spring		Fall		Total	
Demographic Characteristics	f	%	f	%	f	%
Gender						
Female	19	58	10	50	29	55
Male	14	42	10	50	24	45
Total	33	100	20	100	53	100
Age						
Less than 25	3	9	0	0	3	6
25 – 35	15	45	12	60	27	51
35 – 45	4	12	2	10	6	11
45 – 55	9	27	4	20	13	25
More than 55	2	6	2	10	4	8
Total	33	100	20	100	53	100
Years teaching						
Less than 2	5	15	6	30	11	21
2 – 4	5	15	2	10	7	13
4 – 6	8	24	2	10	10	19
6 – 8	7	21	3	15	10	19
More than 8	8	24	6	30	14	26
Total	33	100	19	95	52	98
Grade level teaching						
K – 6	9	27	9	45	18	34
7 – 12	9	27	6	30	15	28
Higher education	8	26	2	10	10	19
Graduate	1	3	0	0	1	2
Business	4	12	1	5	5	9
Total	31	94	18	90	49	92
Years using computer in class						
Less than 2	3	9	4	20	7	13
2 – 4	6	18	8	40	14	26
4 – 6	9	27	2	10	11	21
6 – 8	4	12	2	10	6	11
More than 8	10	30	4	20	14	26
Total	32	97	20	100	52	98
Hours per week use computer in class						
Less than 2	2	6	0	0	2	4
2 – 4	5	15	4	20	9	17
4 – 6	8	24	4	20	12	23
6 – 8	6	18	4	20	10	19
More than 8	12	36	8	40	20	38
Total	33	100	20	100	53	100

If Total is < 53, individuals did not respond to the question.

Students in the Ed Tech program attended courses that combined hands-on experience, theory, and practical fieldwork opportunities. In the program, core focuses were fundamental skill development, learning theories, curriculum integration, and leadership skills. By program end, students were to have a portfolio of course products in the form of disk, CD-ROM, or Web media. The overall objectives of the Ed Tech courses were to teach conceptual and practical tools, pedagogy, and responsibility in integrating technology into the learners' classrooms or future classrooms.

Protection of Human Subjects

All participants were informed of the general purpose of the study during the initial verbal recruitment script (see Appendix C). The time commitment involved and the importance of the study were explained before the learners agreed to participate. Further, the participants were informed that their participation in the study was voluntary and that their decision to participate would not influence their course grade. They had the right to withdraw from the study at any time, and their anonymity was protected.

The fundamental human rights of all participants were protected and preserved in compliance with the American Psychological Association's (1992) ethical guidelines. Information and assessment results remained confidential, and only group scores were reported in the data analysis. All data collected were kept in locked files away from the study locations.

Procedure

University classes were chosen because they consist of individuals interested in planning, designing, and integrating technology-based learning solutions. The sampled courses were semester long and met biweekly in 4-hour class sessions. The 4-hour time period provided adequate exposure to the instructor's communication behaviors. All of the assessments were administered at the end of the second or third class session during the semester. Enrollment was limited to 16 students per class; however, only one class had a full roster of 16 individuals. A total of 12 classes and 7 different instructors were surveyed. Because the surveys were conducted over two semesters, two instructors had three classes surveyed and two instructors had two classes surveyed, and each of the remaining instructors had one class surveyed.

Also, to determine if the instructors used immediacy behaviors as they were delivering instruction or to notice what may have been other confounding variables, the researcher observed the instructors on the survey dates. Taking notes, the researcher noticed that some instructors demonstrated more immediacy behaviors than other instructors. The classroom desk and computer arrangement, however, did not seem conducive to immediate communication. In the center of the classrooms were a group of tables all together with chairs arranged around them in a conference-room-style configuration. While the instruction was being presented, learners sat around the center table taking notes, asking questions, or discussing the learning issues. The computers were located on the perimeter of the rooms, and, when using the computers, the learners were facing the walls and had their backs to the instructors and other classmates.

Instrumentation

A closed-ended format questionnaire was administered to those who agreed to participate. This questionnaire consisted of four sections: a general demographic questionnaire, an immediacy behavior scale (The Immediacy Behavior Scale; Gorham, 1988), a flow experience scale (Flow Experience Questionnaire; Chen et al., 1999), and a motivation scale (The Motivation Scale; Christophel, 1990). Because past research supported the usefulness of these instruments in similar types of studies, these instruments were selected to measure the variables of interest.

In the demographics section of the questionnaire (see Appendix A), participants provided personal information such as gender, age, academic background, job function, and amount of time they were currently spending using the computer in class per week. Data gathered from participants were analyzed to assess the extent of possible confounding variables due to demographic differences.

With the Immediacy Behavior Scale (IBS; see Appendix A), perceptions of instructor immediate behaviors were measured. The original immediacy scale (Gorham, 1988), used as a model for the instrument in this study, was developed from Mehrabian's (1971) descriptions of immediate behaviors, measured verbal and nonverbal instructor communication behaviors. Reliability of the original instrument was obtained using a Cronbach's coefficient alpha which ranged from .80 to .89 in studies of university students ($n = 562$ & $n = 1{,}304$; Christophel, 1990).

Anderson (1979) gathered data about communication behaviors by surveys and compared the information with that from trained observers. Comparing these data, Anderson found that the trained observer descriptions of the communication behaviors supported the validity of the questions in the instrument. Also, Andersen, Norton, and Nussbaum (1981) gathered data using more specific descriptions of communication behaviors and compared the results with data from trained observers. Again, the researchers found that trained observers confirmed the descriptions of the students. Richmond, Gorham, and McCroskey (1987) surveyed students asking about the communication behaviors of their "best" and "worst" instructors and analyzed the data looking for a relationship. The researchers' analysis determined that there was a statistically significant correlation between student perception of instructor effectiveness and student evaluation of instructor communication behaviors.

The 17-item immediacy measure used in this research included 13 items measuring nonverbal behaviors and 4 verbal behaviors all using a 5-point rating scale (see Appendix A). The immediacy measure that was used was scaled down from Gorham's (1998) original 33-item survey by selecting questions that pertained to only what participants observed in the 4-hour class session. The instrument yielded a range of average scores from 1 to 5 where 1 denoted students' perception of an instructor who demonstrated no immediate behaviors and 5 denoted many immediate behaviors. Reliability of the IBS instrument used in this study was assessed using Cronbach's coefficient alpha, with a coefficient of .77 resulting from the pilot-study data.

Learner flow experiences were measured with the Flow Experience Scale (FES; see Appendix A). The original flow scale, used as a model for the instrument in this study, was developed using descriptions from previous flow research (Chen, Wigand, & Nilan, 1999). Reliability of the original instrument using a Cronbach's coefficient alpha ranged from .90 to .92 with Internet users recruited from news groups and mailing lists ($n = 304$; Chen et al., 1999).

The items on the FES were derived from past research that gathered data through the Experience Sampling Method (ESM). With the ESM, researchers asked participants to carry pagers and signaled the participants at random times asking them to answer questions about feelings, moods, and thoughts. The ESM was used because it was found to be the most effective way to gather natural responses regarding the participants experiences. Chen et al. (1999) developed the items used in this instrument from actual statements that came from the participants responses on ESM forms. Also, Chen, Wigand, and Nilan (1998) used an open-ended question survey asking participants to describe their computer experiences and then had expert raters evaluate the consistency of these statements with past flow research and, thereby, demonstrated the questions were effective at gathering flow responses.

The flow measure used in this research contained 5 questions. For the first question, respondents read three descriptions of flow experiences. After respondents read these statements, they indicated their past experiences with the flow sensations using a 5-point rating scale. The next 4 questions measured the respondents flow experiences in the current class using a 5-point scale (see Appendix A). The instrument yielded a range of average scores from 1 to 5 where 1 denoted each students' perception of his or her own flow as not occurring and 5 denoted flow-like experiences. Reliability of the FES instrument used in this study was assessed using a Cronbach's coefficient alpha, resulting in a value of .74 for the pilot-study data.

Learner motivation was measured using the Motivation Scale (MS; see Appendix A). The original, used as a model for the instrument in this study, was a 12-item motivation scale and was developed to score items using a 7-point, semantic differential format (Christophel, 1990). Reliability of the instrument was assessed using a Cronbach's coefficient alpha of .95 in studies of college students ($n = 562$ & $n = 1,304$; Christophel, 1990).

The motivation model was used by Gorham (1988) and again by Christophel (1990). Gorham asked students about their academic behavioral intent and compared these responses with participants' liking of the course and instructors. Also, Christophel (1990) tested the motivation scale by asking students to indicate their motivation (separately) to classes in general and to the specific class in which they were enrolled. When these responses were compared, support was found for the construct. These researchers concluded that this model was an effective method for gathering motivation data.

The 20-item motivation measure used in this research included both positive and negatively scored items. This instrument used a 7-point, semantic differential format with an average range from 1 to 7, where 1 denoted no learner motivation to integrate technology into the classroom and 7 denoted high learner motivation to integrate technology (see Appendix A). This scale was divided into two sections: the first section assessed motivation to integrate technology, and the second section assessed motivation to continue learning technology. Reliability of the MS instrument used in this study was assessed using a Cronbach's coefficient alpha, with a coefficient of .94 resulting from the pilot-study data.

To support the MS scales' usefulness in the current research project, changes were made to the original motivation scale of Christophel's (1990) research. First, the motivation scale was used twice in the instrument, one scale to assess motivation to continue learning and one scale to assess motivation to integrate what was learned. The directions on one scale were "motivation to continue learning" and on the other scale were "motivation to integrate technology into the classroom." Second, two items labeled "aroused" and "stimulated" were taken out of both MS scales, because they were left blank frequently in the pilot study. Finally, language in the directions of the MS scales was changed to ask the learners to evaluate "today's" class.

Pilot Study

The pilot questionnaire using closed-ended questions was administered to 30 students attending 2 Ed Tech classes during the last week of January 2001 (see Table 11; Appendix B). The purpose of the pilot study was to test the instrument language and instructions and to assess the reliability and face validity of the scales that were used in the current project.

It was determined that the demographics section and the motivation scale needed changes. In the demographics section, the question regarding participant age was changed from beginning with "less than 20 years" to "less than 25 years," and each of the selections remaining had 10-year increments. Next, the "years using a computer" question was changed to "years using a computer in class," and the one-year interval between choices was changed to 2 years. Also, new categories were added to gather information on "years teaching" experience and "grade-level teaching."

The demographics of the pilot group are similar to those of the primary study group. The pilot group has a similar ratio of women to men as the primary group. Also in the pilot group, the majority of the participants reported their age as between 21 and 40, and in the primary group the majority of participants reported their age as 25 and 35. In both the pilot and primary groups, participants reported more than 4 years experience using a computer and using a computer in class, respectively. Further, in the pilot group and in the primary group the largest number of participants reported using computers more than 8 hours per week.

Table 11
Demographic Characteristics of the Pilot Participants

Demographic Characteristics	f	%
Gender		
Female	20	67
Male	10	33
Total	30	100
Age		
Less than 20	0	0
21 – 30	16	53
31 – 40	9	30
41 – 50	3	10
More than 50	2	7
Years using computer		
Less than 1	1	3
1 – 2	0	0
2 – 3	2	7
3 – 4	2	7
More than 4	25	83
Hours per week use computer		
Less than 2	0	0
2 – 4	1	3
4 – 6	4	13
6 – 8	8	27
More than 8	17	57

Because the motivation section in the pilot study only asked about motivation in general, it was determined that two motivation sections that were more specific to learning and integrating technology were needed. The general motivation section was changed to have the respondents provide their level of motivation to continue to learn technology. The new section, modeled after Christophel's (1990) study, asked for respondents perception of motivation to integrate technology into their classrooms. There were no changes in the IBS and FES from the pilot to the primary study.

Reliability analysis was performed on data from the pilot study to determine the reliability of the pilot instrument with (n=30) individuals using Cronbach's coefficient alpha. Cronbach's coefficient alphas of .77 (IBS), .74 (FES), and .94 (MS) denoted adequate reliability evidence for the instruments.

Data Analysis

Studying immediacy, flow, and teacher motivation to continue learning and to integrate technology into the classroom led to the following research questions:

1. To what extent do learners (teachers) in the classes perceive instructor immediate communication behaviors?

2. To what extent do learners (teachers) in the classes experience flow?

3. To what extent do learners (teachers) in the classes experience motivation to continue learning and to integrate technology into their classrooms?

4. To what extent do learners' (teachers') perception of instructor immediate behaviors correlate with learners' (teachers') flow experiences?

5. To what extent do learners' (teachers') perception of instructor immediate behaviors correlate with learners' (teachers') motivation to continue learning and to integrate technology into their classrooms?

6. To what extent do learners' (teachers') perceived flow experiences correlate with learners' (teachers') motivation to continue learning and to integrate technology into their classrooms?

To address the first research question, the IBS was used. Instructor immediate behavior was identified as scoring high on both the verbal and nonverbal measures of the IBS. Immediacy scores on the IBS could have ranged from 1 (low immediacy) to 5 (high immediacy).

The FES was used to address the second research question. Learner flow experiences were identified as scoring high on the FES. Flow scores on the FES could have ranged from 1 (low flow) to 5 (high flow).

To address the third research question, the MS was used. Learner motivation was identified as scoring high on the MS. Motivation scores on the MS could have ranged from 1 (low motivation) to 7 (high motivation).

To address the fourth research question, the results from the IBS were correlated with results from the FES. If instructor immediacy was correlated with learner flow, the result would have been statistically significant at the .05 level.

To address the fifth research question, the results from the IBS was correlated with results from the MS. If instructor immediacy was correlated with learner motivation to continue learning and to integrate technology into the classroom, the result would have been statistically significant at the .05 level.

To address the sixth research question, the results from the FES were correlated with results from the MS. If learner flow was correlated with learner motivation to continue learning and to integrate technology into the classroom, the result would have been statistically significant to the .05 level.

In both the pilot and primary studies, if participants did not answer an item, it was left blank because averages were used for analysis and missing items were not counted for these averages. If more than two items were missing, the case was not used for analysis. In this study, only one case was not included because more than two items were not completed in the FES and MS sections.

Chapter IV

Results

The purpose of this research was to investigate the relationship between instructor immediate behaviors, flow, and learner (teacher) motivation to continue learning and to integrate technology into the classroom. In this chapter, research questions, results of the data collection, additional findings, and summary of results are presented.

Research Questions

The first research question investigated the extent to which learners perceived instructor verbal and nonverbal immediacy behaviors. Simple frequency analysis on results from the Immediacy Behavior Scale (IBS) indicated that student's had a wide range of perceptions of instructor immediacy. Instructor immediate behavior was identified as scoring high on both the verbal and nonverbal measures of the IBS and the mean was just above the midpoint of 3 on a 1 to 5 scale (see Table 12). Low scores on the IBS signify that the respondents perceived few immediate behaviors, and high scores on the IBS signify that the respondents perceived many immediate behaviors (see Table 12).

The second research question investigated the extent to which learners experienced flow. Learner flow experience is identified as scoring high on the Flow Experience Scale (FES), and the mean was just above the midpoint of 3 on a 1 to 5 scale (see Table 12). Low scores on the FES signify that the respondents perceived few flow experiences, and high scores on the FES signify that the respondents perceived many flow experiences.

The third research question investigated the extent to which learners experienced motivation to continue learning and to integrate technology into the classroom. The results from the Motivation Scale (MS) indicate that students have a wide range of perceptions of motivation and that the mean was above the midpoint of 4 on a 1 to 7 scale (see Table 12). Low scores on the MS signify that the respondents perceived little motivation to continue learning and to integrate technology into their classrooms, and high scores on the IBS signify that the respondents perceived high motivation to continue learning and to integrate technology into their classrooms.

To determine if there was a difference between Spring and Fall data, means and standard deviations were calculated. There were no statistically significant differences between means for Spring and Fall. Also, independent-sample t tests were computed for Spring and Fall data, and no statistically significant differences were found for any of the variables.

Table 12
Means and Standard Deviations for Immediacy, Flow, and Motivation for 52 Teachers in Technology Courses

	Spring (n=32)		Fall (n=20)		Total (n=52)	
Variables	Mean	SD	Mean	SD	Mean	SD
Immediacy	3.58	0.44	3.51	0.46	3.55	0.44
Flow	3.04	0.77	3.50	1.03	3.44	0.87
Lmotiv	5.57	1.26	6.00	0.89	5.73	1.14
Imotiv	5.36	1.26	5.80	0.71	5.53	1.09

Lmotiv – Motivation to continue learning.
Imotiv – Motivation to integrate technology into the classroom.

Boxplot diagrams of ranges for immediacy, flow, and motivation illustrate the spread of scores for the variables (see Figure 2). The immediacy scores on the IBS in this study range from 2.12 to 4.47 with the majority of respondents reporting between 3.2 and 3.9. Flow scores from the FES indicate that students have a range of perceptions of flow from 1 to 5 with the majority of respondents reporting between 3.1 and 4.0. The flow scale has 4 outliers with low scores signifying low flow experiences. The motivation scores on the motivation to continue learning section of the MS in this study range from 1.6 to 7.0 with the majority of respondents reporting between 5.3 and 6.5. Also, the learning section of the motivation scale has 2 low score outliers signifying low motivation. The motivation scores on the motivation to integrate technology into the classroom section of the MS in this study, range from 1.4 to 7.0 with the majority of respondents reporting between 5.2 and 6.3. Also, the integrating technology section of the motivation scale has 2 low score outliers signifying low motivation.

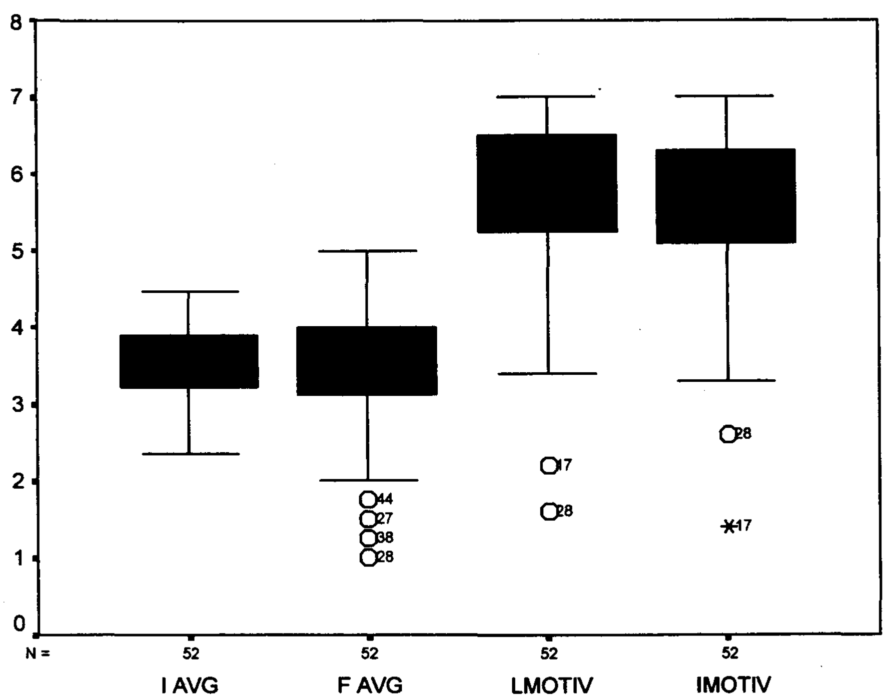

Figure 2. Boxplot configurations for Immediacy, Flow, and Motivation Scores.
Note: IAVG – Immediacy average, FAVG – Flow average, LMOTIV – Motivation to continue learning, and IMOTIV – Motivation to integrate technology into the classroom.
The ○ and * characters indicate outlier and extreme outlier, respectively, positions with case identification code numbers next to each position.

Investigating the Figure 2 outliers produced the following results (see Table 13). Case 17 had an immediacy score near average, a flow score below average for the current project, a learning motivation score below average, and an integrating motivation score below average. For Cases 27 and 28, who attended the same class, all scores were below average. Case 38 had an immediacy score below average, a flow score below average for the current project, a learning motivation score above average, and an integrating motivation score above average. Case 44 had an immediacy score near average, a flow score below average for the current project, a learning motivation score above average, and an integrating motivation score above average. No consistencies were found when the demographics were compared for these four cases.

Table 13
Outlier Case Comparisons Between Immediacy, Flow, and Learning and Integrating Motivation for Figure 2

Case	Immediacy	Flow	Lmotiv	Imotiv
17	3.53	2.50	2.20	1.40
27	2.94	1.50	3.40	3.30
28	2.94	1.00	1.60	2.60
38	2.35	1.25	5.80	5.30
44	3.24	1.75	5.95	5.10

Lmotiv – Motivation to continue learning.
Imotiv – Motivation to integrate technology into the classroom.

The fourth research question investigated the extent to which learner perceptions of instructor immediate behaviors were related to learner perceptions of flow. A Pearson product-moment correlation coefficient was computed using data from the IBS and FES. The results for this analysis show instructor immediacy is associated positively with learner flow, is statistically significant, and is moderate in magnitude (see Table 14). This result supports that there is a correlation between instructor immediacy and learner flow.

The fifth research question investigated the extent to which learner perceptions of instructor immediate behaviors were related to learner motivation to continue learning and to integrate technology into the classroom. A Pearson product-moment correlation coefficient was computed using data from the IBS and MS. Instructor immediacy is associated positively with learner motivation to continue learning and with learner motivation to integrate technology, both correlation coefficients are statistically significant, and the magnitude is moderate (see Table 14). This result supports that there is a correlation between instructor immediacy and learner motivation to continue learning and to integrate technology into the classroom.

Table 14
Pearson Product-moment Correlation Coefficients for Immediacy, Flow, and Motivation to Continue Learning and to Integrate Technology (n=52)

	Flow	Lmotiv	Imotiv
Immediacy	.52	.41	.48
Flow		.68	.62
Lmotiv			.88

All correlations statistically significant when the overall error rate was controlled at the .05 level.
Lmotiv – Motivation to continue learning.
Imotiv – Motivation to integrate technology into the classroom.

The sixth research question investigated the extent to which learner perceptions of flow were related to learner perceptions of motivation to integrate technology into the classroom. Pearson product-moment correlation coefficients were performed using data from the FES and MS. Learner flow is associated positively with learner motivation to continue learning and motivation to integrate technology, both correlation coefficients are statistically significant (see Table 14), and both are the strongest of the five coefficients. This result supports that there is a correlation between learner flow and learner motivation to continue learning and to integrate technology into the classroom.

When observing the instructors, this researcher made a few discoveries worth noting. Although unable to observe one instructor, the researcher noticed that all the other instructors sat behind their desks (demonstrating nonimmediate communication behavior) while demonstrating how to use the computer. After demonstrating on the computer, most of the instructors walked around the classroom to assist the learners (demonstrating immediate communication behavior) while the learners were working on their own computers and not looking at the instructor. Also, two instructors demonstrated on the computer for only a short time and then gave the learners opportunity to practice for a short time and repeated this system throughout the 4-hour class session. Analyses of the individual classes' data revealed that learners of these two instructors reported high immediacy, flow, and motivation to continue learning and to integrate technology into the classrooms (see Table 15). When comparing the means and standard deviations of the total sample, the means of students for these two instructors are more than one standard deviation away from the mean for immediacy and more than a half a standard deviation away from the other variables. The standard deviations are smaller than those in the total groups.

Table 15
Means and Standard Deviations for Immediacy, Flow, and Learning Motivation and Integrating Motivation for Two Highly Immediate Instructors

	Immediacy		Flow		Lmotiv		Imotiv	
Instructor	Mean	SD	Mean	SD	Mean	SD	Mean	SD
2	4.17	.29	3.88	.55	6.08	.70	6.10	.77
11	4.02	.18	3.83	.29	6.65	.48	6.43	.77

Lmotiv – Motivation to continue learning.
Imotiv – Motivation to integrate technology into the classroom.

Additional Findings

Additional analyses were performed on the data. Analyses of variance (ANOVA) resulted in findings of no statistically significant differences in the variables due to grade-level teaching or years teaching (see Appendix D). Also, a test of homogeneity of variance was performed on grade-level teaching and for years teaching and both met the test for homogeneity (see Appendix D).

Also, correlation analyses were run to determine the extent of interdependence of the variables. The correlation coefficients for immediacy and motivation to continue learning (.08) and to integrate technology into the classroom (.23) are lower than the zero-order correlations when flow is held constant. This reduction in the correlation shows that immediacy is independent of flow as an influence on motivation. This finding supports that immediacy is a relevant variable for motivation. The correlations for flow and motivation to continue learning (.61) and to integrate technology into the classroom (.50) are lower than the zero-order correlations when immediacy is held constant. This reduction in the correlation shows that flow is independent of immediacy as an influence on motivation. This finding supports that flow is a relevant variable for motivation. These correlation coefficients are statistically significant different from zero when the overall error rate was controlled at the .05 level. Given the two sets of partial correlation coefficients, flow resulted in a greater reduction in the relationship between flow and motivation than immediacy and motivation when held constant.

Summary of Results

This study gathered data to investigate the relationship between immediate behaviors, flow, and motivation to continue learning and to integrate technology into the classroom. The instruments provided data to support all six research questions. The first three questions measured the extent to which the learners perceived immediacy, flow, and motivation to continue learning and to integrate technology into the classroom. The next three questions assessed the relationship between learners' perception of instructor immediacy, learner flow, and learner motivation to continue learning and to integrate technology into the classroom.

The findings show that instructor immediate behaviors, flow, and motivation to continue learning and to integrate technology into the classroom are statistically significant in correlation (see Table 14). The results of the data analysis support the correlation between learner perception of instructor immediate behaviors, learner flow experiences, and learner motivation to continue learning and to integrate technology into the classroom. There are no differences in the variables due to years teaching or grade-level taught. Partial correlation coefficients support that immediacy is a relevant variable for motivation and flow is a relevant variable for motivation.

Chapter V

Discussion, Implications, and Conclusions

The purpose of this study was to investigate the relationship between instructor immediacy, flow, and motivation to continue learning and to integrate technology into the classroom. This investigation was accomplished by surveying teachers enrolled in an educational technology program and analyzing the relationship between the three variables. The results showed that there was a relationship between immediacy, flow, and motivation to continue learning and to integrate technology into the classroom.

Overview of the Study

People from all walks of life want to learn (Dewey, 1938). It is incumbent on instructors to assess and meet the needs of the students. Because instructor communication influences student performance it is essential that instructors strive to improve their communication and, therefore, help students to attain ultimate experiences in learning. As stated before, because lecture is the predominate form of teaching, knowledge of how to make this form most effective reinforces the need to understand the relationship between immediate communication, flow, and motivation.

Since 1979, instructor immediacy has been investigated to determine the most effective communication behaviors and the related effects of these behaviors. Studies have used interviews, cross-sectional surveys, and observations to determine the most effective ways to communicate with immediacy. The data from this project support the effectiveness of the instruments used to assess both verbal and nonverbal immediacy.

Researchers have found that teaching with an immediate communication style provides many benefits. These benefits include higher student motivation (Andersen, 1979; Christophel, 1990; Christophel & Gorham, 1995), more effective teaching (Andersen, 1979; Andersen, Norton, & Nussbaum, 1981; Comstock, Rowell, & Bowers, 1995), better learning (Gorham, 1988; Kelly & Gorham, 1988; Richmond, Gorham, & McCroskey, 1987), and higher motivation for students from diverse cultures (McCroskey, Richmond, Sallinen, Fayer, & Barraclough, 1995).

Investigating flow since 1965, researchers have used both traditional and unique methods to gather data including interviews, surveys, and the experience sampling method. Analyzing data gathered from these methods, researchers have listed the benefits of flow and its association to learning and motivation. These benefits include improved quality of work, increased personal learning goal strivings, enhanced exploratory behavior associated with the length and depth of computer use, and students' selected more difficult classes and the studied topics more thoroughly (Ghani & Deshpande, 1994; Larson, 1988; Moneta & Csikszentmihalyi, 1999; Tuss, 1995; Wong & Csikszentmihalyi, 1991).

Because businesses need employees with technology skills for most occupations (Galbreath, 1999), students will need to manipulate technologies to be successful in the knowledge age (Trilling & Hood, 1999). Along with business leaders, educators are touting the need for technology and asserting that in the "knowledge-age" technology is vital to education. To deter the misuse and avoidance of technology, instructors can act as role models (Rosen & Weil, 1995) by learning and integrating technology into their classrooms. Even though past practice has been to give teachers money to motivate them to learn and to integrate technology (Educational Record, 2000; School Improvement Report, 2000; Vessel, 2000; White House Press Release, 2000), giving them money is not the only answer to helping teachers (Felton, 1999; National Center for Education Statistics, 2000; Rosen & Weil, 1995; Schifter, 2000; Strudler & Wetzel, 1999).

The pursuit of answers to the research questions guided this investigation into understanding the extent learners perceived immediacy, flow, and motivation and led to the analysis of the relationship between these variables. To address the research questions, data were analyzed from 52 questionnaires that were completed by graduate-level learners (teachers) attending an Education Technology (Ed Tech) program. The data were analyzed using Pearson product-moment correlation coefficients with the level of significance set at .05 for all analyses (see Table 14).

This study differed from previous research in several ways. First, this study combined immediacy and flow—variables not correlated previously. Second, it investigated immediacy instruction and learners working on computers. Third, this study researched computer training and motivation to learn and integrate technology in the future. Fourth, it explored immediate communication and its relation to motivation of teachers who were improving their skills. Last, this study investigated graduate students in relation to instructor immediate behaviors, learner flow, and learner motivation.

Summary of Findings

Participants reported perceived instructor immediate communication behaviors, flow experiences, and motivation to continue learning and to integrate technology into the classroom. The results of the data analyses supported the Model of Immediacy, Flow, and Motivation (see Figure 1). Although the motivation values were spread out, analysis of the data resulted in statistically significant correlations between learner perception of instructor immediate behaviors and learner experiences of flow (see Table 14). Also, analysis of the data resulted in statistically significant correlations between learner perception of instructor immediate behaviors and learner motivation to continue learning and to integrate technology into the classroom (see Table 14). Further, analysis of the data resulted in statistically significant correlations between learner experiences of flow and learner motivation to continue learning and to integrate technology into the classroom (see Table 14). No differences were found for any of the variables due to years teaching or grade-level teaching. Findings from partial correlation coefficients showed that flow was more influential than immediacy in the relationship with motivation.

Limitations

The results of this study were limited by several factors. First, the participants were not selected randomly. These learners (teachers) were graduate students who paid expensive tuition to attend the classes; therefore, they may have been more interested in learning and integrating technology than other classroom teachers. It is assumed that when individuals paid for a class they were motivated to learn and apply what was learned.

Second, the number of participants was small. Only 52 cases of usable data represents a small sample and, therefore, limits the generalizability of the findings of this study. Caution, therefore, should be exercised before one generalizes the findings of this study to other populations.

A third limitation was the need for instructors to be behind the computer both while talking and while students were watching them. The computer demonstration limited the nonverbal immediacy of the instructors so they could not move around the room and use multiple gestures when they were communicating to the learners. When the instructors were walking around the room, they were assisting learners, but the learners were giving their attention to the computer and not looking at the instructor or perceiving immediacy behaviors of the instructor. The learners may have rated the instructors lower on immediacy even though the instructors were demonstrating immediate behaviors. Also, the conference-room-style configuration may have influenced the amount of immediacy reported by the participants.

A fourth limitation is that this study did not measure the actual behavior change of the learners in the class. Because this study only asked respondents about their perceived motivation, discretion is suggested also when generalizing these results to behavior change in other settings.

Finally, in this study, computer use during the class may have provided a confounding variable. Because individuals can become involved in computer use and attain flow experiences (Chen, Wigand, & Nilan, 1999) without assistance, learners may reach flow without instructor support and without the instructor communicating at all.

Discussion

The findings of this study demonstrate the relationships between immediacy, flow, and motivation (see Table 14). These findings support the model of immediacy, flow, and motivation that demonstrates the relationships between the three variables (see Figure 1). In this study, the relationships between immediacy, flow, and motivation were consistent with findings from previous studies (Andersen, 1979; Christophel, 1990; Larson, 1988; Schiefele & Csikszentmihalyi, 1994; Wong & Csikszentmihalyi, 1991).

The practical impact of the findings of this study are significant. In the United States, terms like "customer service" and "value added" have become important. The findings of this study demonstrate that immediacy and flow are both good customer service, because the students obtain what they need, and value added, because less money and time are spent on training and teaching and individuals can learn faster and better than before. Should one spend money or time on immediacy training for faculty development? The answer is "yes," if the goal of instruction is students who are motivated to continue learning, and to integrate what is learned. For an effective method to train instructors to use immediacy see Linger (1997). The researcher developed a model of immediacy training and found support that the model was effective at training instructors to communicate with immediacy.

Instructors are paid to teach all the students in their classes, that is, not only the quick and already motivated students but also the slower and more difficult students. The findings of this research demonstrate that by communicating with immediacy and by helping students experience flow, instructors may reach the more difficult students.

In 1938, Dewey wrote about "life-long learning," and the term has been popular since then. The findings of this study show that communicating with immediacy helps students achieve flow. As past research has shown, students who reach flow while learning are moving toward life-long learning by improving work quality, increasing personal learning goals, continuing exploration of topics, and studying topics more thoroughly (Ghani & Deshpande, 1994; Larson, 1988; Moneta & Csikszentmihalyi, 1999; Tuss, 1995; Wong & Csikszentmihalyi, 1991).

The results of this research support the need for instructors to communicate using the tools they can control to sustain student motivation. One of the most important tools is their own communication style. Using these tools, instructors can help their students attain high levels of learning and motivation. Also, this project provided an example of a different genre of learning (a computer classroom), beyond the "lecture only" classroom, that can benefit from immediate communication behaviors. Further, as the learners in this study were graduate students attending a private university and they were paying a higher tuition rate to attend these classes, one would assume these learners would be motivated to continue learning and to integrate technology into their own classes. Presuming that tuition rates influence motivation, the findings of this study support the need to use immediate communication behaviors to ensure and maintain that motivation (Brophy, 1987).

It is important to remember that the findings of this study do not imply that the subject matter content is not important. On the contrary, the content is vital to development of the student and points the direction to which the instructor is leading the class. The important distinction is that instructors can deliver most any content using immediate communication behaviors and be more effective than nonimmediate lecture styles.

In this study, not everyone who perceived immediacy experienced flow, and a few factors may have contributed to the lack of flow experience. The instruments in the study did not investigate confounding variables such as the learner having a "bad day." Also, the learning content may have been difficult and, therefore, prevented the learners from experiencing flow on the survey day. The length of the class sessions may have contributed to the lack of flow because learners can be fatigued toward the end of class. Further, no discernable pattern was found, like instructor or class time, in which learners perceived immediacy and did not experience flow. The classes are more than 4 hours long; therefore, students would need some motivation to be attentive to the instructor and continue learning throughout the class period. The length of these classes may have contributed to the lack of flow experienced by some of the learners. The instructors who communicated using immediate behaviors seemed to have students who were involved actively until the end of class.

In this study, researcher observations supported findings of past research on immediate behaviors. Learners responded by showing more interest (i.e., making eye contact and asking more questions) to the instructors who used gestures, told personal stories, and walked around the room (Kelly & Gorham, 1988), thus demonstrating that these instructors were liked and were effective at helping the learners (Andersen, 1979; Gorham, 1988; Richmond, Gorham, & McCroskey, 1987).

Some observations were consistent with previous findings. Because the learners in the classes with the more immediate instructors were more involved in the subject matter, it is assumed that those instructors were more motivating as Christophel (1990) and Christophel and Gorham (1995), previously found. Also, when learners had questions or, in one case, when the learner had a confused look on her face, these instructors stopped what they were doing and made an effort to help the learners understand the material. This responsiveness to individual needs is similar to customization and personalization that Cordova and Lepper (1996) found beneficial to learning.

One evening an instructor provided an example of how an instructor helped the learners contextualize the information so they could understand the content. The instructor told a story about her difficulty helping her own high-school students learn on computers and how she overcame the obstacle. It seemed that the way the instructor told the story, using facial expressions and gestures (immediate behaviors), helped the learners understand that even though difficulties arise and they can lead to learning successes. This example of an instructor using immediacy shows that, when the instructors monitor their own behavior to attend to the learners' needs, the findings of Gorham and Zakahi (1990) were supported. After being asked a question, one of these instructors began using more appropriate language to adapt to the learners' needs demonstrating that she had learned to be more immediate, thus supporting Linger's (1997) findings.

The current project provided insight that should be useful for instructors of any field, as well as those who are teaching technology. It would benefit students to experience flow while learning, because, as Larson (1988) found, they will want to continue exploring the concepts. Building on Dewey's (1938) assertion that humans are always learning and growing, the flow experience could be described as a moment in which the student experiences accelerated growth (Csikszentmihalyi, 1990). In the classroom, every action the instructor takes has a purpose. In an optimal learning environment, every action in the classroom has a purpose of leading the student in a positive direction of learning. Accelerated learning in the direction the instructor is leading is a "moment of growth" and is beneficial for gaining knowledge, skills, and abilities. The benefits of this accelerated growth include increased time on task, increased goal orientation, increased exploratory behavior, and increased their study of the topics. Accordingly, achieving moments of growth frequently can help increase one's speed of development in the desired direction. Using immediate communication, instructors can help students increase their passion, performance, and productivity by building moments of ultimate experience.

Cordova and Lepper (1996) demonstrated the need for instructors' responsiveness to individuals by contextualizing and personalizing the learning material to meet the needs of the students. This finding is supported by the responses to the survey of the current project. These findings are similar to Gardner's (1993) theory of Multiple Intelligences (MI) where he outlined different ways individuals learn. One of the intelligences, called interpersonal learning, can be described as learning by conversing with other individuals. Not only are some of the verbal immediate behaviors beneficial to interpersonal learning but they can also provide instructors with valuable insight into understanding each individual students' MI and, therefore realizing the best approach in helping each student gain new knowledge and skills.

Will developing the skills to lead students to high levels of ultimate experience going to be easy? As with any learned skill, it can be difficult, in fact, Ericsson, Krampe, and Tesch-Römer (1993) stated that 10 years is not an unreasonable a length of time to pursue skill development actively before mastery can be approached. Conversely, as Linger (1997) asserted, immediate communication skills can be learned in a short period of time and then be used effectively to improve the learning environment for students.

Implications for Practice

Implications for practice can be organized into four areas: students may learn more with intrinsically motivated instructors, students may improve their relationships with instructors, teachers may increase their motivation to continue learning and to integrate technology, and teachers my require less financial incentive to continue learning and to integrate technology. First, students will benefit by being more motivated to learn when instructors, as Christophel (1990) found, call on students by using their names, move around the classroom, use gestures, laugh, and smile. Because instructors can monitor and improve how often they use these behaviors and the quality of these behaviors (Gorham & Zakahi, 1990; Linger, 1997), they can help students investigate topics more in depth so that the students can discover for themselves the pleasures of learning. As Cordova and Lepper (1996) asserted, when instructors give their students choices, help their students put the learning material in to relevant contexts, and allow the students to personalize their learning, the students have an increase in motivation. By asking questions, listening to students' responses, and responding to students' needs, instructors can use immediate behaviors to help their students learn. Further, students will want to take more challenging courses, because they have discovered ultimate experiences and want to continue discovering those experiences with greater challenges (Tuss, 1994). Students will have a more proactive attitude with regard to learning when they realize the benefits of the ultimate experiences of learning. As a result, students will demonstrate motivation to learn which provides support for Hidi and Harackiewicz's (2000) most important unresolved issue of motivation on the part of the student.

Second, beneficial relationships could evolve from instructors and students because immediacy has been found to increase student motivation (Christophel, 1990). When students are motivated, they learn more. Because instructors are meeting the needs of their students, they are perceived as being more effective at teaching (Comstock, Rowell, & Bowers, 1995), and this effectiveness builds respect from the students that leads to higher instructor evaluations (McCroskey, Richmond, Sallinen, Fayer, & Barraclough, 1995). When students are motivated and when they respect their instructors, they become more effective at learning (Gorham, 1988; Kelly & Gorham, 1988; Richmond, Gorham, & McCroskey, 1987). Also, when instructors and students are cooperating, less time is taken with discipline and misunderstandings, and more time is spent learning. Finally, instructors and students can build an environment that is conducive to treating others in a mutually respectful manner (McCroskey et al., 1995). The benefit of this cooperation is that students might learn more than they would have learned when they had instructors who did not communicate with immediate behaviors.

Third, teachers taking technology classes will be more motivated to continue learning and to integrate technology into their own classrooms, because they will have learned about technology from an instructor who communicates, as Andersen, Norton, and Nussbaum (1981) stated, by walking around the room often, by putting the learning material into a context that is familiar to the student, and by showing excitement in facial expressions or facial gestures. Christophel (1990) also, emphasized that these teachers will help the individuals attending their classes learn more by using stories of their own personal experiences to help the students contextualize the information. This may help the teachers understand technology and integrate it more effectively based on positive reactions from the flow they experienced while learning about technology. With an increased knowledge of technology and desire to continue learning, teachers will respond with ways to help the individual attending their classes learn with technology and, therefore, meet the students' needs and help them understand the learning content to a greater extent. Also, because they will notice their students' successes, teachers should associate positive feelings when teaching their students and, therefore, respond in a more open manner to future teaching opportunities.

Last, teachers will be more motivated to continue learning without requiring as much fiscal support as in the past (Felton, 1999; Educational Record, 2000; National Center for Education Statistics, 1999; Rosen & Weil, 1995; Schifter, 2000; Strudler & Wetzel, 1999). Because they will be relying on their own intrinsic motivation to continue learning and to integrate technology that was derived from experiencing flow while learning, teachers will have higher goals for future learning, continue to study technology more thoroughly outside of class, and participate in more challenging technology integration tasks (Ghani & Deshpande, 1994; Tuss, 1994; Wong & Csikszentmihalyi, 1991).

Suggestions for Future Research

Research needs to be conducted to understand instructor communication, flow, and student motivation. The findings of the current project might be investigated with other groups (i.e., primary, secondary, business training, other countries, and other cultures) to learn if the results can be replicated and the findings generalized to those groups. As the economy becomes more global in nature, schools and businesses are having to understand, teach, and train people from diverse cultures. Research exploring individuals from different backgrounds could help instructors understand effects of cultural differences on the relationships between the variables. Findings of future research could provide further support the relationship between immediacy, flow, and motivation to continue learning and to integrate what was learned.

Future research may include longitudinal studies and actual integration of the variables. These studies could include ethnographic or qualitative research to understand more about the student's actual integration of technology into the classroom. This type of research could provide understanding for long-term motivation to continue learning and to integrate technology into the classroom. The findings of longitudinal studies might provide support for the need to make immediacy training a higher priority in teacher-education programs. An example of a longitudinal study could consist of surveying students in technology courses about their use of technology at the beginning and the end of the semester and then comparing the results of the surveys.

In this study, only one of the instructors wanted to know the results of the research. Among these instructors, this lack of curiosity about communication behavior makes one think that these individuals feel that this vital teaching tool either cannot be improved, does not need to be improved, or is not important. Often instructors are focused on the content and do not think or care about how it is delivered. An assumption throughout this study has been that instructors want to improve their own abilities to motivate their students. Future research may investigate instructors' motivation to improve their own teaching skills and the findings will help researchers and practitioners understand the relationship between motivation to develop one's communication skills and actual teaching and learning. The findings of these types of studies may help teacher educators and instructors understand that the need to improve is never ending if one wants to motivate students to continue to learn and to integrate what they learned.

Conclusions

The results of this study showed a relationship between instructor immediacy behaviors, flow experiences in the classroom, and learner motivation to continue to learn and to integrate what was learned. In the future, students and instructors in many different learning genres will benefit from the results of this study if these findings are used with discretion. If they apply the knowledge contributed by this study, teachers may be able to continue learning technology and integrating that technology into their classrooms, and the students might benefit from having a better learning environment. This contribution will support a greater understanding of how to help students achieve more moments of growth in the classroom.

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Appendices

APPENDIX A

Assessment Instrument – Primary Study

PRIMARY STUDY ASSESSMENT INSTRUMENT

Demographics Section – Primary Study

Please circle the best answer for each question.

1. How many years have you been using computers in your classroom if you are currently a teacher or trainer, or at work if you are not currently teaching?	a. less than 2 years b. between 2 and 4 years c. between 4 and 6 years d. between 6 and 8 years e. more than 8 years
2. At work, how many hours on average do you spend using a computer in class/at work in one week?	a. less than two hours b. between 2 and 4 hours c. between 4 and 6 hours d. between 6 and 8 hours e. more than 8 hours
3. Age:	a. below 25 b. 25 - 35 c. 35 - 45 d. 45 - 55 e. over 55
4. Gender:	a. female b. male
5. Highest level of education completed:	a. some college b. college degree c. teaching credential d. masters degree e. doctoral degree
6. Are you currently a teacher or trainer?	a. yes b. no
If you answered **yes** to the previous question, please answer questions 7 and 8, otherwise skip these questions.	
7. How many years have you been teaching or training?	a. less than 2 years b. between 2 and 4 years c. between 4 and 6 years d. between 6 and 8 years e. more than 8 years
8. What grade level are you teaching?	a. k-6 b. 7-12 c. higher education d. graduate e. business

Immediacy Behavior Scale – Primary Study

Below are a series of descriptions of things some teachers have been observed doing or saying in some classes. Please respond to the items in terms of behaviors you think the instructor used while presenting today's class. For each item, circle the number that indicates the instructor's behavior when presenting today's class.
Scale: Never = a Rarely = b Occasionally = c Often = d Very Often = e

1. Used personal examples or talked about personal experiences they have had outside of class.	a	b	c	d	e
2. Used humor in class.	a	b	c	d	e
3. Referred to class as "our" class or what "we" are doing.	a	b	c	d	e
4. Called on students to answer questions even if they have not indicated that they want to talk.*	a	b	c	d	e
5. Sat behind the desk while teaching.*	a	b	c	d	e
6. Gestured while talking to the class.	a	b	c	d	e
7. Used monotone/dull voice while talking to the class.*	a	b	c	d	e
8. Looked at the class while talking.	a	b	c	d	e
9. Smiled at the class while talking.	a	b	c	d	e
10. Had a very tense body position while talking to the class.*	a	b	c	d	e
11. Moved around the classroom while teaching.	a	b	c	d	e
12. Sat on a desk or in a chair while teaching.*	a	b	c	d	e
13. Looked at the board or notes while talking to the class.*	a	b	c	d	e
14. Stood behind a podium or desk while teaching.*	a	b	c	d	e
15. Had a very relaxed body position while talking to the class.	a	b	c	d	e
16. Smiled at individual students in the class.	a	b	c	d	e
17. Used a variety of vocal expressions when talking to the class.	a	b	c	d	e

* Items worded negatively and recoded before analysis.
This modified instrument was based on the instrument in Gorham (1988).

Flow Experience Scale – Primary Study

Please read the following paragraphs carefully.

Situation 1:
My mind isn't wandering. I am not thinking of anything else. I am totally involved in what I am doing. My body feels good. I don't seem to hear anything. The world seems to be cut off from me. I am less aware of myself and my problems.

Situation 2:
My concentration is like breathing. I never think of it. I am really quite oblivious to my surroundings after I really get going. When I start, I really do shut out the whole world. Once I stop, I can let it back again.

Situation 3:
I am so involved in what I am doing. I don't see myself as separate from what I am doing.

Below are a series of descriptions of things learners have experienced. For each item please circle the number which corresponds to the question in terms of your experiences.

Scale: Never = a Rarely = b Occasionally = c Often = d Very Often = e

1. Have you encountered any of the above situations indicated by any of the above paragraphs?	a	b	c	d	e
2. While learning technology in today's class, how often did you experience the feeling of "time passed quickly"?	a	b	c	d	e
3. In today's class how often did you experience the feeling of "enjoyment" while learning to use technology?	a	b	c	d	e
4. In today's class how often did you experience the feeling of "positive challenge" while learning to use technology?	a	b	c	d	e
5. In today's class how often did you experience the feeling of "being in control" while learning to use technology?	a	b	c	d	e

Used with permission of the authors, Chen, et al. (1999). Personal correspondence via email, December 22, 2000.

Motivation Scale – Primary Study

These items are concerned with how you feel after today's class about continuing to learn technology. Please check the box toward either word that best describes your feelings.

Samples:

Sad	☐	☐	☐	☐	☐	☒	☐	Happy	(Denotes fairly happy)
Sad	☐	☒	☐	☐	☐	☐	☐	Happy	(Denotes fairly sad)

1.	Motivated	☐	☐	☐	☐	☐	☐	☐	Unmotivated
2.	Interested	☐	☐	☐	☐	☐	☐	☐	Uninterested
3.*	Uninvolved	☐	☐	☐	☐	☐	☐	☐	Involved
4.*	Don't want to study	☐	☐	☐	☐	☐	☐	☐	Want to study
5.	Inspired	☐	☐	☐	☐	☐	☐	☐	Uninspired
6.*	Unchallenged	☐	☐	☐	☐	☐	☐	☐	Challenged
7.*	Uninvigorated	☐	☐	☐	☐	☐	☐	☐	Invigorated
8.*	Unenthused	☐	☐	☐	☐	☐	☐	☐	Enthused
9.	Excited	☐	☐	☐	☐	☐	☐	☐	Unexcited
10.*	Not fascinated	☐	☐	☐	☐	☐	☐	☐	Fascinated

These items are concerned with how you feel after today's class about integrating technology into your classroom. Please check the box toward either word that best describes your feelings.

11.	Motivated	☐	☐	☐	☐	☐	☐	☐	Unmotivated
12.	Interested	☐	☐	☐	☐	☐	☐	☐	Uninterested
13.	Involved	☐	☐	☐	☐	☐	☐	☐	Uninvolved
14.*	Don't want to study	☐	☐	☐	☐	☐	☐	☐	Want to study
15.	Inspired	☐	☐	☐	☐	☐	☐	☐	Uninspired
16.*	Unchallenged	☐	☐	☐	☐	☐	☐	☐	Challenged
17.*	Uninvigorated	☐	☐	☐	☐	☐	☐	☐	Invigorated
18.*	Unenthused	☐	☐	☐	☐	☐	☐	☐	Enthused
19.	Excited	☐	☐	☐	☐	☐	☐	☐	Unexcited
20.*	Not fascinated	☐	☐	☐	☐	☐	☐	☐	Fascinated

* Items worded negatively and recoded before analysis.
This modified instrument was based on the instrument in Christophel (1990).

APPENDIX B

Assessment Instrument – Pilot Study

PILOT STUDY ASSESSMENT INSTRUMENT

Demographics Section – Pilot Study

Please circle the best answer for each question.

1. How many years have you been using computers?	a. less than 1 year b. between 1 and 2 years c. between 2 and 3 years d. between 3 and 4 years e. more than 4 years
2. How many hours in average do you spend using a computer in one week?	a. less than one hour b. between 1 and 3 hours c. between 3 and 5 hours d. between 5 and 8 hours e. more than 8 hours
3. Age:	a. below 20 b. 21 - 30 c. 31 - 40 d. 41 - 50 e. over 50
4. Gender:	a. Female b. Male
5. Highest level of education:	a. some college b. college degree c. teaching credential d. masters degree e. doctoral degree

Immediacy Behavior Scale – Pilot Study

Below are a series of descriptions of things some teachers have been observed doing or saying in some classes. Please respond to the items in terms of behaviors you think the instructor used while presenting today's class. For each item, circle the number that indicates the instructor's behavior when presenting today's class.
Scale: Never = a Rarely = b Occasionally = c Often = d Very Often = e

1. Used personal examples or talked about personal experiences they have had outside of class.	a	b	c	d	e
2. Used humor in class.	a	b	c	d	e
3. Referred to class as "our" class or what "we" are doing.	a	b	c	d	e
4. Called on students to answer questions even if they have not indicated that they want to talk.*	a	b	c	d	e
5. Sat behind the desk while teaching.*	a	b	c	d	e
6. Gestured while talking to the class.	a	b	c	d	e
7. Used monotone/dull voice while talking to the class.*	a	b	c	d	e
8. Looked at the class while talking.	a	b	c	d	e
9. Smiled at the class while talking.	a	b	c	d	e
10. Had a very tense body position while talking to the class.*	a	b	c	d	e
11. Moved around the classroom while teaching.	a	b	c	d	e
12. Sat on a desk or in a chair while teaching.*	a	b	c	d	e
13. Looked at the board or notes while talking to the class.*	a	b	c	d	e
14. Stood behind a podium or desk while teaching.*	a	b	c	d	e
15. Had a very relaxed body position while talking to the class.	a	b	c	d	e
16. Smiled at individual students in the class.	a	b	c	d	e
17. Used a variety of vocal expressions when talking to the class.	a	b	c	d	e

* Items worded negatively and recoded before analysis.
This modified instrument was based on the instrument in Gorham (1988).

Flow Experience Scale – Pilot Study

Please read the following paragraphs carefully.

Situation 1:
My mind isn't wandering. I am not thinking of anything else. I am totally involved in what I am doing. My body feels good. I don't seem to hear anything. The world seems to be cut off from me. I am less aware of myself and my problems.

Situation 2:
My concentration is like breathing. I never think of it. I am really quite oblivious to my surroundings after I really get going. When I start, I really do shut out the whole world. Once I stop, I can let it back again.

Situation 3:
I am so involved in what I am doing. I don't see myself as separate from what I am doing.

Below are a series of descriptions of things learners have experienced. For each item please circle the number which corresponds to the question in terms of your experiences.

Scale: Never = a Rarely = b Occasionally = c Often = d Very Often = e

1. Have you encountered any of the above situations indicated by any of the above paragraphs?	a	b	c	d	e
2. While learning technology in today's class, how often did you experience the feeling of "time passed quickly"?	a	b	c	d	e
3. In today's class how often did you experience the feeling of "enjoyment" while learning to use technology?	a	b	c	d	e
4. In today's class how often did you experience the feeling of "positive challenge" while learning to use technology?	a	b	c	d	e
5. In today's class how often did you experience the feeling of "being in control" while learning to use technology?	a	b	c	d	e

Used with permission of the authors, Chen, et al. (1999). Personal correspondence via email, December 22, 2000.

Motivation Scale – Pilot Study

Directions: These items are concerned with how you feel in general about learning and integrating technology into your classroom. Please circle the number toward either word which best describes your feelings. Note that in some cases the positive score is "1," and in other cases it is a "7."

1.	Motivated	1	2	3	4	5	6	7	Unmotivated
2.	Interested	1	2	3	4	5	6	7	Uninterested
3.	Involved	1	2	3	4	5	6	7	Uninvolved
4.*	Not stimulated	1	2	3	4	5	6	7	Stimulated
5.*	Don't want to study	1	2	3	4	5	6	7	Want to study
6.	Inspired	1	2	3	4	5	6	7	Uninspired
7.*	Unchallenged	1	2	3	4	5	6	7	Challenged
8.*	Uninvigorated	1	2	3	4	5	6	7	Invigorated
9.*	Unenthused	1	2	3	4	5	6	7	Enthused
10.	Excited	1	2	3	4	5	6	7	Unexcited
11.	Aroused	1	2	3	4	5	6	7	Unaroused
12.*	Not fascinated	1	2	3	4	5	6	7	Fascinated

* Items worded negatively and recoded before analysis.
This modified instrument was based on the instrument in Christophel (1990).

APPENDIX C

Letters, Script, and Information Sheet for Soliciting Participation

PILOT – PERMISSION LETTER
January 26, 2001

Dear <Instructor Name>,

I am writing to ask your permission to allow me access to your Education Technology class for the purpose of having your students validate my assessment instrument this Spring 2001 semester. The study I will be conducting is on teaching and learning technology. The purpose of the study is to contribute professional knowledge to a greater understanding about teaching and learning technology.

The data collection procedure will require approximately 10 to 15 minutes of class time at the end of class to administer the instrument. Dr. xxxxxxxx has given me permission to administer the instrument to students on the days you have selected in February 2001. In case of a scheduling conflict, emergency, or if you prefer to collect the data, I will provide a packet containing the instruments with instructions to administer to students. Later the same week, at your earliest convenience, I will personally retrieve the completed packets.

It is essential to understand that participation in research is voluntary, that is, a student may initially refuse or withdraw from the study at any point. Students returning packets containing measures provide their consent, which is in compliance with the American Psychological Associations 1992 ethical guidelines. Full anonymity of participants will be assured because none of the materials administered in the instrument will contain information that could be used to identify a participant. Potential risks to the students have been minimized.

No direct benefits are provided to individuals who participated in this study. It is anticipated that indirect benefits may result from the experience of serving as a research volunteer and a better understanding of the teaching and learning technology. No costs or expenses will be passed onto participants in this study. Participants will not receive payment or reimbursement for volunteering in this study.

Permission to invite students from Education Technology to serve as volunteers in this study is greatly appreciated. Please let me know of your decision within the next week. Otherwise I will follow-up with a phone call to make certain that you received this letter. I can be reached at any time by leaving a message at xxxxxxxx. If you agree to allow me access to the students please sign below, return one copy to me using the enclosed envelope, and keep a copy for your records.

Warren Linger
Doctoral Student

Signature Date

PRIMARY – PERMISSION LETTER
February 10, 2001

Dear <Instructor Name>,

I am writing to ask your permission to allow me access to your Education Technology Class for the purpose of having your students respond to a survey this Spring 2001 semester. The study I will be conducting is on teaching and learning technology. The purpose of the study is to contribute professional knowledge to a greater understanding about classroom behaviors.

The data collection procedure will require approximately 10 to 15 minutes of class time at the end of class to administer the instrument. Dr. xxxxxxxx has given me permission to administer the instrument to students on the days you have selected in February 2001. In case of a scheduling conflict, emergency, or if you prefer to collect the data, I will provide a packet containing the instruments with instructions to administer to students. Later the same week, at your earliest convenience, I will personally retrieve the completed packets.

It is essential to understand that participation in research is voluntary, that is, a student may initially refuse or withdraw from the study at any point. Students returning packets containing measures provide their consent, which is in compliance with the American Psychological Associations 1992 ethical guidelines. Full anonymity of participants will be assured because none of the materials administered in the instrument will contain information that could be used to identify a participant. Potential risks to the students have been minimized.

No direct benefits are provided to individuals who participated in this study. It is anticipated that indirect benefits may result from the experience of serving as a research volunteer and a better understanding of the teaching and learning technology. No costs or expenses will be passed onto participants in this study. Participants will not receive payment or reimbursement for volunteering in this study.

Permission to invite students from Education Technology to serve as volunteers in this study is greatly appreciated. Please let me know of your decision within the next week. Otherwise I will follow-up with a phone call to make certain that you received this letter. I can be reached at any time by leaving a message at xxxxxxxx. If you agree to allow me access to the students please sign below, return one copy to me using the enclosed envelope, and keep a copy for your records.

Warren Linger
Doctoral Student

____

Signature Date

PRIMARY – PERMISSION LETTER
September 20, 2001

Dear <Instructor Name>,

I am writing to ask your permission to allow me access to your Education Technology Class for the purpose of having your students respond to a survey this Fall 2001 semester. The study I will be conducting is on teaching and learning technology. The purpose of the study is to contribute professional knowledge to a greater understanding about classroom behaviors.

The data collection procedure will require approximately 10 to 15 minutes of class time at the end of class to administer the instrument. Dr. xxxxxxxx has given me permission to administer the instrument to students on the days you have selected in February 2001. In case of a scheduling conflict, emergency, or if you prefer to collect the data, I will provide a packet containing the instruments with instructions to administer to students. Later the same week, at your earliest convenience, I will personally retrieve the completed packets.

It is essential to understand that participation in research is voluntary, that is, a student may initially refuse or withdraw from the study at any point. Students returning packets containing measures provide their consent, which is in compliance with the American Psychological Associations 1992 ethical guidelines. Full anonymity of participants will be assured because none of the materials administered in the instrument will contain information that could be used to identify a participant. Potential risks to the students have been minimized.

No direct benefits are provided to individuals who participated in this study. It is anticipated that indirect benefits may result from the experience of serving as a research volunteer and a better understanding of the teaching and learning technology. No costs or expenses will be passed onto participants in this study. Participants will not receive payment or reimbursement for volunteering in this study.

Permission to invite students from Education Technology to serve as volunteers in this study is greatly appreciated. Please let me know of your decision within the next week. Otherwise I will follow-up with a phone call to make certain that you received this letter. I can be reached at any time by leaving a message at xxxxxxxx. If you agree to allow me access to the students please sign below, return one copy to me using the enclosed envelope, and keep a copy for your records.

Warren Linger
Doctoral Student

____

Signature Date

VERBAL SCRIPT

Verbal script to recruit volunteers:

1. Hello. My name is Warren Linger and I am a graduate student working on my dissertation in the School of Education, at the University of San Francisco. I am conducting a study on classroom behaviors, and I am interested in the impact of classroom behaviors on learning.

2. You are being asked to participate in this research study because you are attending a technology course. If you agree to be in this study, you will complete a survey that asks about today's class and your perceptions. You will complete the survey now and return it directly to me when you are finished.

3. None of the questions on the survey should make you feel uncomfortable, but you are free to decline to answer any questions you do not wish to answer or to stop participation at any time. Although you will not be asked to put your name on the survey, participation in research may mean a loss of confidentiality because you are registered in this class. Records from this study will be kept as confidential as possible. No individual identities will be used in any reports or publications resulting from the study. Study information will be coded and kept in locked files at all times away from the xxxxxxxxx. Individual results will not be shared with your instructor.

4. While there will be no direct benefit to you from participating in this study, the anticipated benefit of this study is a better understanding of the effect of instructor behaviors and learner perceptions.

5. There will be no costs to you as a result of taking part in this study, nor will you be reimbursed for your participation in this study which should take 10 to 15 minutes.

6. If you have questions about the research, you may contact me at xxxxxxxx.

7. Thank you for your attention. If you agree to participate, please complete the survey and return it directly to me. For those of you who would rather not complete the survey, we have an alternative exercise. Who has a question at this time?

INFORMATION SHEET

UNIVERSITY OF SAN FRANCISCO
INFORMATION SHEET ABOUT THE RESEARCH STUDY

Mr. Warren Linger, a doctoral student in the School of Education at the University of San Francisco is doing a study on how students learn about technology. He is interested in learning about instructor communication and technology.

You are being asked to participate in this research study because you are attending a class or seminar on technology. If you agree to be in this study, you will complete a survey that asks about your learning experience; you will return the survey to the instructor when you are finished.

Some of the questions on the survey may make you feel uncomfortable, but you are free to decline to answer any questions you do not wish to answer, or to stop participation at any time. Although you will not be asked to put your name on the survey, participation in research may mean a loss of confidentiality. Study records will be kept as confidential as possible. No individual identities will be used in any reports or publications resulting from the study. Study information will be coded and kept in locked files at all times. Only study personnel will have access to the files. Individual results will not be shared with others.

There will be no direct benefit to you from participating in this study. The anticipated benefit of this study is a better understanding of the way instructors teach technology.

There will be no costs to you as a result of taking part in this study, nor will you be reimbursed for your participation in this study.

If you have questions about the research, you may contact the researcher at USF, School of Education, Learning and Instruction. If you have further questions about the study, you may contact the IRBPHS at the University of San Francisco, which is concerned with protection of volunteers in research projects.

APPENDIX D

Additional Analyses

Table 16
Results of ANOVA for Grade-level Teaching[a]

		Sum of Squares	df	Mean Square	F	η^2
I AVG	Between Groups	0.47	2	0.23	1.11	0.02
	Within Groups	9.54	45	0.21		
	Total	10.01	47			
F AVG	Between Groups	0.47	2	0.24	0.30	0.01
	Within Groups	35.50	45	0.78		
	Total	35.98	47			
M AVG	Between Groups	0.34	2	0.17	0.13	0.00
	Within Groups	58.30	45	1.29		
	Total	58.64	47			
LMOTIV	Between Groups	0.49	2	0.24	0.17	0.00
	Within Groups	64.26	45	1.42		
	Total	64.76	47			
IMOTIV	Between Groups	0.23	2	0.11	0.08	0.00
	Within Groups	59.27	45	1.31		
	Total	59.50	47			

IAVG = Immediacy Average
FAVG = Flow Average
MAVG = Motivation Average
LMOTIV = Motivation to Continue Learning Average
IMOTIV = Motivation to Integrate Technology Average
a – Grades analyzed were primary and secondary as individual grade levels and higher ed, graduate, and business combined into one group.

Table 17
Test of Homogeneity of Variances for Grade-level Teaching[a]

	Levene Statistic	df1	df2
I AVG	1.22	2	45
F AVG	3.98	2	45
M AVG	.55	2	45
LMOTIV	.74	2	45
IMOTIV	.55	2	45

Test at the 0.01 level
IAVG = Immediacy Average
FAVG = Flow Average
MAVG = Motivation Average
LMOTIV = Motivation to Continue Learning Average
IMOTIV = Motivation to Integrate Technology Average
a – Grades analyzed were primary and secondary as individual grade levels and higher ed, graduate, and business collapsed into one group.

Table 18
Means, Standard Deviations, Standard Errors, Confidence Intervals, Minimum, and Maximum for Grade-level Teaching[a]

						95% Confidence Interval for Mean			
		N	Mean	SD	Std. Error	Lower Bound	Upper Bound	Minimum	Maximum
I AVG	1.00	18	3.52	0.50	0.12	3.26	3.79	2.35	4.35
	2.00	14	3.71	0.45	0.12	3.45	3.96	2.94	4.47
	3.00	16	3.46	0.37	0.09	3.26	3.66	2.88	4.12
	Total	48	3.56	0.46	0.07	3.42	3.69	2.35	4.47
F AVG	1.00	18	3.40	1.17	0.27	2.81	3.98	1.00	5.00
	2.00	14	3.51	0.48	0.12	3.23	3.79	2.50	4.00
	3.00	16	3.26	0.76	0.19	2.83	3.67	1.75	4.50
	Total	48	3.39	0.87	0.12	3.13	3.64	1.00	5.00
M AVG	1.00	18	5.50	1.20	0.28	4.90	6.10	2.10	6.90
	2.00	14	5.63	1.36	0.36	4.84	6.41	1.80	7.00
	3.00	16	5.70	0.78	0.19	5.28	6.12	4.15	7.00
	Total	48	5.60	1.11	0.16	5.28	5.93	1.80	7.00
LMOTIV	1.00	18	5.58	1.36	0.32	4.90	6.26	1.60	7.00
	2.00	14	5.71	1.31	0.35	4.95	6.47	2.20	7.00
	3.00	16	5.82	0.81	0.20	5.38	6.26	4.00	7.00
	Total	48	5.70	1.17	0.16	5.36	6.04	1.60	7.00
IMOTIV	1.00	18	5.42	1.16	0.27	4.84	6.00	2.60	6.90
	2.00	14	5.55	1.43	0.38	4.72	6.37	1.40	7.00
	3.00	16	5.57	0.79	0.19	5.15	6.00	4.30	7.00
	Total	48	5.51	1.12	0.16	5.18	5.83	1.40	7.00

IAVG = Immediacy Average
FAVG = Flow Average
MAVG = Motivation Average
LMOTIV = Motivation to Continue Learning Average
IMOTIV = Motivation to Integrate Technology Average
a – grades analyzed were primary and secondary as individual grade levels and higher ed, graduate, and business collapsed into one group.

Table 19
Results of ANOVA for Years Teaching

		Sum of Squares	df	Mean Square	F	η^2
I AVG	Between Groups	0.85	4	0.21	1.04	0.02
	Within Groups	9.39	46	0.20		
	Total	10.23	50			
F AVG	Between Groups	2.59	4	0.65	0.85	0.02
	Within Groups	34.97	46	0.76		
	Total	37.56	50			
M AVG	Between Groups	4.86	4	1.21	1.01	0.02
	Within Groups	55.22	46	1.20		
	Total	60.08	50			
LMOTIV	Between Groups	4.24	4	1.06	0.78	0.02
	Within Groups	62.20	46	1.35		
	Total	66.44	50			
IMOTIV	Between Groups	5.81	4	1.45	1.22	0.03
	Within Groups	55.04	46	1.20		
	Total	60.86	50			

IAVG = Immediacy Average
FAVG = Flow Average
MAVG = Motivation Average
LMOTIV = Motivation to Continue Learning Average
IMOTIV = Motivation to Integrate Technology Average

Table 20
Test of Homogeneity of Variances
For Years Teaching

	Levene Statistic	df1	df2
I AVG	2.98	4	46
F AVG	2.11	4	46
M AVG	2.07	4	46
LMOTIV	2.06	4	46
IMOTIV	2.43	4	46

IAVG = Immediacy Average
FAVG = Flow Average
MAVG = Motivation Average
LMOTIV = Motivation to Continue Learning Average
IMOTIV = Motivation to Integrate Technology Average

Table 21
Means, Standard Deviations, Standard Errors, Confidence Intervals,
Minimum, and Maximum for Years Teaching

						95% Confidence Interval for Mean			
		n	Mean	SD	Std. Error	Lower Bound	Upper Bound	Minimum	Maximum
I AVG	1.00	10	3.32	0.50	0.16	2.95	3.68	2.35	4.12
	2.00	7	3.69	0.55	0.21	3.18	4.21	2.94	4.35
	3.00	10	3.55	0.54	0.17	3.16	3.95	2.94	4.47
	4.00	10	3.54	0.44	0.14	3.22	3.86	3.06	4.35
	5.00	14	3.66	0.23	0.06	3.53	3.79	3.24	4.06
	Total	51	3.55	0.45	0.06	3.43	3.68	2.35	4.47
F AVG	1.00	10	3.37	1.10	0.34	2.58	4.16	1.25	5.00
	2.00	7	3.25	1.07	0.40	2.26	4.24	1.00	4.00
	3.00	10	3.12	0.80	0.25	2.55	3.69	1.50	4.00
	4.00	10	3.80	0.28	0.08	3.59	4.00	3.25	4.25
	5.00	14	3.48	0.90	0.24	2.95	4.00	1.75	4.75
	Total	51	3.42	0.86	0.12	3.17	3.66	1.00	5.00
M AVG	1.00	10	5.76	0.85	0.26	5.15	6.37	4.75	7.00
	2.00	7	5.28	1.54	0.58	3.86	6.71	2.10	6.80
	3.00	10	5.13	1.63	0.51	3.96	6.30	1.80	7.00
	4.00	10	5.87	0.64	0.20	5.40	6.33	4.90	6.80
	5.00	14	5.87	0.71	0.19	5.45	6.28	4.63	7.00
	Total	51	5.62	1.09	0.15	5.31	5.93	1.80	7.00
LMOTIV	1.00	10	5.79	0.95	0.30	5.10	6.47	4.30	7.00
	2.00	7	5.37	1.76	0.66	3.73	7.00	1.60	7.00
	3.00	10	5.31	1.59	0.50	4.16	6.45	2.20	7.00
	4.00	10	5.92	0.64	0.20	5.46	6.38	5.00	6.85
	5.00	14	6.01	0.80	0.21	5.55	6.48	4.30	7.00
	Total	51	5.72	1.15	0.16	5.40	6.05	1.60	7.00
IMOTIV	1.00	10	5.74	0.79	0.25	5.17	6.31	4.90	7.00
	2.00	7	5.20	1.33	0.50	3.97	6.43	2.60	6.60
	3.00	10	4.96	1.72	0.54	3.72	6.19	1.40	7.00
	4.00	10	5.82	0.80	0.25	5.24	6.39	4.80	6.90
	5.00	14	5.72	0.68	0.18	5.33	6.12	4.80	7.00
	Total	51	5.52	1.10	0.15	5.21	5.83	1.40	7.00

IAVG = Immediacy Average
FAVG = Flow Average
MAVG = Motivation Average
LMOTIV = Motivation to Continue Learning Average
IMOTIV = Motivation to Integrate Technology Average

THE UNIVERSITY OF SAN FRANCISCO
Dissertation Abstract

THE RELATIONSHIP BETWEEN IMMEDIATE COMMUNICATION, FLOW, AND MOTIVATION FOR TEACHERS TO CONTINUE LEARNING AND TO INTEGRATE TECHNOLOGY

This dissertation investigated the relationship between instructor immediate communication behaviors, learner flow experiences, and learner motivation to continue learning technology and to integrate technology into their classrooms.

Found to motivate learners, immediacy is characterized by the verbal and nonverbal behaviors instructors demonstrate to communicate the message they want the students to learn. Described as the ultimate experience, flow is characterized by merging of action and awareness, the centering of attention, time passing quickly, feeling positive challenge, and being in control.

Fifty-two teachers attending classes on learning how to integrate technology into their classrooms completed surveys that asked about their perception of their instructors' communication behaviors, their flow experiences, and their motivation to continue learning and to integrate what they learned into their classrooms.

Analysis of the data showed that there was a correlation between learner (teacher) perception of instructor immediacy, learner (teacher) reports of flow experiences, and learner (teacher) reports of motivation to continue learning technology and motivation to integrate technology into their classrooms. The correlations were statistically significant and moderate in magnitude.

The results of this study showed a relationship between instructor immediacy behaviors, learners achieving flow in the classroom, and learner motivation to continue to learn and to integrate technology into the classroom.

Instructing with an immediate communication style provides many benefits including higher student motivation, reports of more effective teachers, better learning, and higher motivation for students from diverse cultures. Past research found the benefits of flow include improved quality of work, increased personal learning goal strivings, enhanced exploratory behavior associated with the length and depth of computer use, and students' selected more difficult classes and they studied topics more thoroughly.

The Practical significance of this study is that when teachers are taught with immediate communication they may be motivated to continue learning technology effectively and integrate technology into their classrooms, and their the students might benefit from having a better learning environment. This contribution will support greater understanding of how the action of teaching can help the purpose of learning achieve more moments of growth in the classroom.

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