Teacher Dispositions as Predictors of Classroom Technology Use

Rachel A. Vannatta
Nancy Fordham
Bowling Green State University

Abstract

This study examined various teacher dispositions that predict technology use among K–12 teachers. The Teacher Attribute Survey was administered to 177 K–12 teachers from six Northwest Ohio schools. This instrument measured a variety of teacher attributes, such as teacher self-efficacy, philosophy, openness to change, amount of professional development, and amount of technology use in the classroom. A forward multiple regression was conducted to identify the best combination of variables that predicts classroom technology use among K–12 teachers. Results indicate that the factor combination of amount of technology training, time spent beyond contractual work week, and openness to change best predicted classroom technology use. (Keywords: K–12 teacher dispositions, technology use, openness to change, and time commitment.)

INTRODUCTION

Although many preservice and inservice teacher programs have sought to improve the preparation of teachers to use technology as an effective instructional tool, many teacher educators and school administrators have realized that technology training alone does not create an effective technology-using teacher. Numerous studies have sought to better understand why some teachers use technology and others do not. However, much of the research has examined technology-specific variables (e.g., attitudes and beliefs toward computers, computer self-efficacy, technology proficiency) as predictors of technology use among teachers (Dupagne & Krendl, 1992; Marcinkiewicz, 1994; Milbrath & Kinzie, 2000). In contrast, the researchers were interested in examining how general or non-technology-specific teacher attributes work with technology training to predict classroom technology use.

Research has found that the personal beliefs and dispositions of teachers may relate to or predict successful technology integration. Honey and Moeller (1990) assert that teacher philosophy (student-centered versus teacher-centered) affected one's ability to effectively use technology in the classroom, in that student-centered teachers were more successful. MacArthur and Malouf (1991) determined in their case study that teacher beliefs and attitudes greatly influenced how computers were used in the classroom. Other personal variables, such as self-competence and willingness to change, have also been shown to be closely related to computer use among teachers (Marcinkiewicz, 1994). Albion (1999) states that teachers' beliefs, specifically self-efficacy beliefs, "are an important, and measurable, component of the beliefs that influence technology integration" (p. 2).

The researchers were also interested in how the construct of commitment to teaching improvement was a factor in predicting technology use among teachers. Although literature is limited on this proposed relationship, the researchers had observed in several teacher technology training programs that the teachers who took the time to "play" with technology and were interested in learning despite external rewards were the ones who made the greatest gains in technology use. With these observations and results in mind, the researchers sought to examine a broad array of teacher characteristics to better understand how these personal attributes work together to predict technology use in the classroom. Results from such a study could guide teacher educators and educational leaders in facilitating teacher dispositions that may improve the likelihood of technology integration in the classroom—integration that can be an awesome tool in enhancing student achievement (Schacter, 1999).

METHODOLOGY

This study sought to identify teacher dispositions as predictors of technology use in the classroom. The following research question guided the study:

Which combination of factors best predict classroom technology use among K–12 teachers: teacher self-efficacy, teacher philosophy, openness to change, amount of professional development, amount of technology training, years of teaching, hours worked beyond the contractual work week, and willingness to complete graduate courses without salary incentive?

Participants

Six northwest Ohio schools were asked to participate in the study. Four schools were elementary, two were high schools. These schools were selected because of their involvement in a Preparing Tomorrow's Teachers for Technology (PT^3) grant at Bowling Green State University that provided a great deal of technology training to teachers over a three year period. During this time, approximately eight teachers per school participated in the PT^3 training program. Because several studies have shown that teacher technology use at a typical school is quite low (PT^3, n.d.), the researchers hoped that the increased opportunities for technology training within the participating schools would help create a more normal distribution of classroom technology use within the sample. The total number of K–12 teachers employed at the six schools was 245. Teachers were asked to complete the survey during scheduled faculty meetings, held either before or after school during March/April 2002. The Teacher Attribute Survey (TAS) was completed by 177 teachers, 137 of whom were female. While nearly 100% of the elementary teachers completed the survey, many high school teachers were unable to attend the scheduled meetings due to extracurricular activity supervision duties. After data were screened a total of seven cases were eliminated as outliers, thus producing a sample of N=170.

Two of the elementary schools were located in medium-sized, rural cities and were comprised of primarily Caucasian staff and students. One elementary school was in a suburb and served a low number of minority students. The fourth elementary school was in a small rural city that includes a small percentage of immigrants. All participating elementary schools had four computers in each classroom. One of the participating high schools was located in a small rural town and had minimal technology resources available to faculty and students. The other participating high school was located in a suburban area and provided a technology-rich environment for faculty and students that typically included a teacher station and projection system in each classroom and access to multiple computer labs in the building.

Instrumentation

To measure the targeted teacher characteristics as well as classroom technology use, the Teacher Attribute Survey (TAS) was developed by the researchers to assess teacher self-efficacy, teacher philosophy, openness to change, amount of professional development, amount of technology training, years of teaching, hours worked beyond the contractual work week, and amount of teacher and student use of technology in the classroom (see Appendix, p. 266). Although the authors were interested in measuring additional variables, such as attitudes and beliefs toward technology and technology integration, technology proficiency, personality types, and self-concept, they based the final selection of possible predictors on professional observation and literature support, previously presented. The 71-item survey consisted of items written by the researchers as well as revised items from existing instruments. Table 1 summarizes TAS as it presents the measured constructs, respective definitions, items, sources, scales, and reliability coefficients.

Items written by the researchers included: amount of professional development and technology training, years of teaching, willingness to take graduate course without incentive, hours worked beyond contractual work week, and openness to change. Items that measured years of teaching and amount of professional development and technology training were open-ended, in that respondents wrote in the appropriate number. Although technology training is certainly a part of a teacher's professional development, one's professional development does not always include technology training. Thus, the researchers were interested in examining these two variables as distinct independent variables.

The construct of commitment to teacher improvement was measured by two variables. Willingness to take graduate courses without a salary incentive was addressed in item 31 and used the six-point Likert scale ranging from strongly disagree (1) to strongly agree (6). Item 69 measured the number of hours one works beyond the contractual work week and provided six options: (1) none, (2) 1–5 hours, (3) 6–10 hours, (4) 11–15 hours, (5) 16–20 hours, and (6) 21 or more hours. Because this construct was measured with only two items, item results were treated separately and were not combined to create a factor.

The construct of openness to change was developed after a review of the literature. Five items (26–30) were created to measure one's comfort and excitement when trying new methods of instruction as well as willingness to take risks and make mistakes (Hurt, Joseph, & Cook, 1997; Marcinkiewicz, 1991, 1992). These items employed a six-point Likert scale, ranging from strongly disagree (1) to strongly agree (6).

Several reliable existing instruments were utilized in the development of TAS. Woolfolk and Hoy's (1990) Teacher Efficacy Scale was adapted to measure one's belief in affecting student performance. These items (1–16) utilized a six-point Likert scale. Items measuring teacher philosophy were adapted from Becker and Anderson's (1998) Teaching, Learning, and Computing Survey, Part J: Your

Table 1. Variable Summary of Teacher Attribute Survey

Variable	Definition	Items	Source	Scale	Cronbach α
Teacher Self-Efficacy	Beliefs of ability to affect student performance	M (1-16)	Teacher Efficacy Scale (Woolfolk & Hoy, 1990)	1-6	.7287
Teacher Philosophy 1	Teacher-centered vs. Student-centered	M (17-25)	Teaching, Learning, and Computing Survey, Part J: Your Teaching Philosophy (Becker & Anderson, 1998)	1-6	.6102
Teacher Philosophy 2	Constructivist vs. Traditionalist	M (32-36)	Teaching, Learning, and Computing Survey, Part J: Your Teaching Philosophy (Becker & Anderson, 1998)	1-5	.6914
Openness to Change	Willingness to take risks and learn from mistakes	M (26-30)		1-6	.6919
Teacher Use of Tech	Frequency of instructor use of a variety of technology tools and applications in the classroom	M (37-51)	Faculty Technology Survey (Vannatta & O'Bannon, 2002)	1-4	.8516
Student Use of Tech	Frequency of student use of a variety of technology tools and applications in the classroom	M (52-66)	Faculty Technology Survey (Vannatta & O'Bannon, 2002)	1-4	.7966
Overall Use of Tech	Frequency of instructor and student use of a variety of technology tools and applications in the classroom	M (37-66)	Faculty Technology Survey (Vannatta & O'Bannon, 2002)	1-4	.8878
Continue Grad Course Without Salary Incentive	Willingness to take graduate courses if no salary incentive was available	31		1-6	
Professional Development	# of actual hours in past two years	67		open	
Technology Training	# of actual hours in past two years	68		open	
# Hours Beyond Work Week	# of hours one typically works beyond the contractual work week to prepare for teaching	69		1-6	
Gender	Male (1) or Female (2)	70		1-2	
# of Years Teaching		71		open	

Teaching Philosophy. The first set of items (17–25) measured teacher support of a teacher-centered or student-centered instructional environment and applied a six-point scale. The second set of items (32–36) addressing teacher philosophy measured teacher adoption of a constructivist or a traditionalist environment. These items were similar to a semantic differential scale in which bipolar teacher statements regarding beliefs relative to teaching and learning were presented with a five-point scale placed between opposing scenarios. Respondents were asked to check the box that best described their own beliefs. Because two different scales were applied in measuring teacher philosophy, two philosophy factors were created and utilized in the regression analysis.

The portion of the TAS that measured technology use was adapted from Vannatta and O'Bannon's (2002) Faculty Technology Survey. Items 37–51 measured teacher frequency of using a variety of tools/applications during the previous semester. Teacher use was defined as use during one's instruction (e.g., teacher demonstration, use of tool/application during presentation). A four-point scale was applied: (1) none, (2) rarely—once or twice per semester, (3) moderate—several times per semester, and (4) high—almost weekly per semester. Student technology use was addressed in items 52–66 and was defined as frequency of student use in one's classes during the previous semester. The same scale found in teacher use was applied to student use.

After the TAS was developed, administration guidelines were written. School principals were contacted to arrange survey administration. In the meantime, the TAS was piloted with 20 K–12 teachers. Several items were revised for purposes of clarity. Instrument validation was also conducted through an expert panel review. Three scholars in the field of educational technology and/or measurement were asked to review the TAS. Definitions of factor constructs and a description of the instrument purpose were provided. Reviewers suggested minor revisions and supported the TAS in its content and purpose.

Survey administration was conducted during the month of April by the two researchers and a graduate assistant. Refreshments were provided during the meeting. In addition, participants were eligible for door prizes that consisted of restaurant gift certificates. Survey completion was voluntary and required approximately 15–20 minutes. Reliability of the TAS and each subscale was calculated using Cronbach's alpha (see Table 1). TAS reliability for the studied sample was α=.9083. Such a high level of reliability is most likely due to the utilization of existing reliable instruments.

Data Analysis

Once data was collected, several items were recoded to create unidirectional variables (see Table 2). Factors were then generated by calculating the mean for the following groups of items: self-efficacy (items 1–16), philosophy 1 (items 17–25), philosophy 2 (items 32–36), openness to change (items 26–30), teacher use of technology (items 37–51), student use of technology (items 52–66), overall classroom use of technology (items 37–66). Descriptive statistics were calculated for each item and factor. Data were screened for possible outliers, linearity, and normality. One outlier was eliminated for the variable of technology training (that greater than 200 hours) and six outliers were eliminated for the variable of professional development (those greater than 400 hours). In addition, these two variables were substantially positively skewed and therefore were transformed using the logarithm. An ANOVA examined possible differences in overall technology use by school, as hardware accessibility varied by school. A forward multiple regression was conducted to identify the best combination of factors/variables that predict overall classroom technology use. Ten variables were entered into the equation: Teacher self-efficacy, Teacher philosophy 1, Teacher philosophy 2, Openness to change, Willingness to complete graduate course without salary incentive, Amount of professional development, Amount of technology training, # hours worked beyond work week, and # of years teaching. Gender was the only TAS variable excluded in this analysis for several reasons: categorical variables are not typically included in a regression analysis; gender is an innate characteristic that is unchangeable; and the researchers were aware of a possible gender difference in technology use for the sample because many of the participating males had also completed technology training with the authors.

Table 2. Means and Standard Deviations of Teacher Attributes

Variable	Recoded items	M	SD
Teacher Self-Efficacy	3, 4, 8, 10, 11, 12	3.90	.60
Teacher Philosophy 1	17, 18, 20, 21, 22, 23, 25	3.69	.93
Teacher Philosophy 2	32, 34, 35, 36	3.23	.75
Openness to Change	28	4.60	.75
Teacher Use of Tech		2.07	.61
Student Use of Tech		1.59	.53
Overall Use of Tech		1.83	.50
Continue Grad course $		4.22	1.50
Professional Development		44.32	65.76
Technology Training		19.41	28.01
# hours beyond work week		3.74	1.38
# of years teaching		16.11	9.50

RESULTS

Descriptive statistics indicate that classroom technology use is fairly low among teachers and students (see Tables 3 and 4). In general, teacher use is higher than student use. Word processing, e-mail, and the Internet were the only applications utilized by teacher several times or more per semester. In addition, teacher use of digital cameras, database, spreadsheets, and presentation software slightly exceeded once or twice per semester. Unfortunately, students utilized only two applications—word processing and the Internet—at a frequency that exceeded once or twice per semester.

When combining student and teacher technology use to form overall classroom technology use, the researchers found a fairly normal distribution as revealed in Figure 1. Prior to conducting the regression analysis, the authors were

Table 3. Teacher Use of Technology

Item	M	SD
Computer with Projection system	1.92	1.10
Digital camera, Camcorder	2.14	1.03
Scanner	1.52	.87
Content-specific tools (e.g., digital microscope, graphing calculator)	1.52	.92
Word Processing	3.43	1.22
Database	2.15	1.17
Spreadsheet	2.15	1.17
Drawing/Graphics Programs (e.g., PhotoShop, AutoCad)	1.90	1.28
Content-Specific Software (e.g., Inspiration, Accelerated Reader, Timeliner)	1.83	1.02
Presentation Software (PowerPoint, AppleWorks Slideshow)	2.02	1.13
Multimedia (e.g., HyperStudio, KidPix, iMovie, Adobe Premier)	1.89	1.05
Email/ Discussion Groups/Listserves	3.22	1.13
Internet (web searches)	3.20	1.04
Class Website (Communicate with students and/or parents)	1.85	1.17
Other, please list:	.26	.63
Overall Teacher Use	2.07	.61

Table 4. Student Use of Technology

Item	M	SD
Computer with Projection system	1.42	.77
Digital camera, Camcorder	1.59	.86
Scanner	1.32	.71
Content-specific tools (e.g., digital microscope, graphing calculator)	1.30	.77
Word Processing	2.65	1.09
Database	1.55	1.90
Spreadsheet	1.54	1.46
Drawing/Graphics Programs (e.g., PhotoShop, AutoCad)	1.49	.86
Content-Specific Software (e.g., Inspiration, Accelerated Reader, Timeliner)	1.68	.98
Presentation Software (PowerPoint, AppleWorks Slideshow)	1.71	1.19
Multimedia (e.g., HyperStudio, KidPix, iMovie, Adobe Premier)	1.82	1.03
Email/ Discussion Groups/Listserves	1.66	1.20
Internet (web searches)	2.44	1.18
Class Website (Communicate with students and/or parents)	1.25	.75
Other, please list:	.38	.74
Overall Student Use	1.59	.53

also interested in determining if differences in overall classroom technology use differed by school, as schools had varying levels of hardware accessibility. ANOVA results indicated that the participating schools did not differ in classroom technology use: $F(5, 172) = 1.38$, $p = .233$.

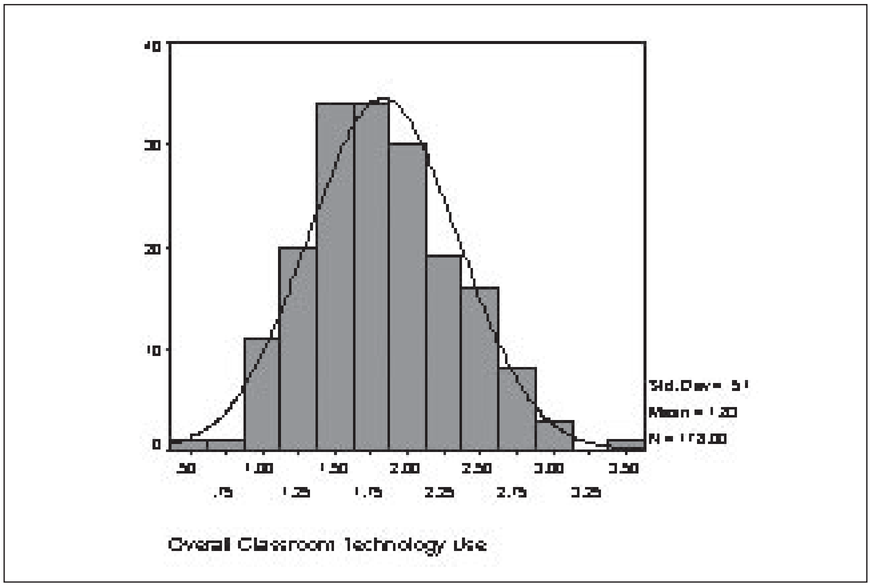

Figure 1. Histogram of Overall Classroom Technology Use

A review of the teacher attribute data revealed that the participating teachers had slightly above average self-efficacy, leaned slightly toward a student-centered and constructivist environment, and quite surprisingly were fairly open to change. In the last two years, the participating teachers averaged approximately 44 actual hours of professional development and 19 actual hours of technology training. In addition, the participants indicated they spend 6–15 hours beyond the contractual workweek for teaching preparation and had been teaching on average approximately 16 years.

A forward multiple regression produced a model of three factor/variables that best predicted overall classroom technology use: number of hours of technology training, number of hours worked beyond the contractual work week, and openness to change; R^2 =.185, R^2_{adj} =.170; F(3,166)=12.54, p<.001. This model accounted for over 18% of variance in classroom technology use. A summary of the model is presented in Table 5. In addition, bivariate and partial correlation coefficients between each predictor and the dependent variable are presented in Table 6.

Table 5. Model Summary

Step	R	R^2	R^2_{adj}	DR^2	F_{chg}	p	df_1	df_2
1. Hours worked beyond	.312	.097	.092	.097	18.12	<.001	1	168
2. Technology Training	.390	.152	.142	.055	10.83	.001	1	167
3. Openness to Change	.430	.185	.170	.032	6.59	.011	1	166

Table 6. Coefficients for Final Model

	B	b	t	Bivariate r	Partial r
Hours worked beyond	.005	.271	3.11*	.312	.285
Technology Training	.073	.199	2.99*	.264	.211
Openness to Change	.124	.185	2.64*	.257	.195

*Note: *Indicates significance at p<.01*

DISCUSSION

Findings suggest that whereas technology training is obviously important in developing technology-using educators, a willingness to commit one's time "above and beyond the call of duty" and a risk-taking attitude are also essential. Although previous research has found that technology training and openness to change/innovation independently relate to or predict technology use among teachers (Marcinkiewicz, 1994; Vannatta & O'Bannon, 2002), such studies did not examine these variables together in predicting technology use. In addition, the relationship between time commitment in teaching and technology use has not been established in previous research.

In contrast, this study suggests that the teacher attributes of time commitment to teaching and openness to change *combine with* the amount of technology training to best predict classroom technology use. The process of learning to use technology requires time—time spent in training, but also time spent playing with and exploring technology. This willingness to commit time to the technology learning process may be represented by one's willingness and commitment to spend time beyond the typical work week to prepare instructional activities. As such, this result suggests that time is essential in becoming a technology using teacher, but also that technology use may predict time commitment to teaching.

Because technology is a dynamic innovation, learning to use it as a personal or instructional tool requires a willingness to make mistakes and learn from them and an ability to take risks—this study's definition of the variable, openness to change. As a result, a teacher who approaches technology professional development with an attitude that is open to change and is committed to spending time outside of training to further explore technology may be more likely to use technology in the classroom than one who attends training with ambivalence and a lack of time.

Interestingly, the other teacher attributes examined—teacher philosophy and self-efficacy, which have been found in previous research to predict teacher technology use—were excluded from the generated regression model (Albion, 1999; Becker & Anderson, 1998; Honey & Moeller, 1990). These results indicate that higher levels of classroom technology use were best predicted not only by the amount of technology training a teacher received, but by the amount of time a teacher spends outside of class preparing for instruction and by a teacher's openness to change regardless of teaching philosophy or beliefs about one's teaching ability. Although research has shown that a constructivist teacher is more apt to utilize technology in the classroom, typically a constructivist teacher uses technology as a tool to advance constructive learning. Although the TAS measured the frequency of teacher and student technology use for a variety of applications, this instrument did not evaluate how technology was used (e.g., quality, student-centered, constructive applications) and therefore was not a focus of the study. The limitations of the TAS may also apply to the exclusion of self-efficacy from the regression model. For the purposes of this study, self-efficacy was defined as one's belief in affecting student performance. This variable was most likely eliminated from the model due to the TAS focusing on technology use and not how that use influenced student outcomes.

RECOMMENDATIONS

Recommendations for Future Research

This research suggests that the three teacher attributes of technology training, time commitment to teaching, and openness to change work together to predict overall classroom technology use among K–12 teachers. Because research to support this finding is limited, further study should be conducted on teacher attributes as predictors of classroom technology use. In addition, several limitations of this study have implications for future research: the limited sample with respect to size and heterogeneity, the measurement of frequency of classroom technology use and not quality of such use, and a regression model that accounts for a small portion of variance in classroom technology use. The development of a skilled, reflective technology-using teacher is a complex process. As a result, research that seeks to examine this outcome should take into account this complexity by: (1) studying a variety of teacher attributes (technology and non-technology) in relation to technology use, (2) applying advanced statistical methods that analyze various combinations of independent variables, (3) utilizing random sampling methods to create a large, heterogeneous sample, and (4) creating valid and reliable instruments that measure the construct of classroom technology use as a whole, taking into account not just frequency but also quality, methods, outcomes, etc. Such research could provide a clearer and broader picture of the classroom technology use. In addition, further study should explore how administrators and teacher educators facilitate teacher attributes such as openness to change and time commitment to teaching.

Recommendations for Teacher Educators and Administrators

Teacher educators and administrators should not only provide extensive training on educational technology, but should also facilitate the dispositions of openness to change and commitment to teaching improvement. Clarke and Hollingsworth (2002) note that traditional models of professional development do not acknowledge the complexity of the growth/change process, nor do they reflect current learning theory and research. They add that the role of the environment is pivotal in motivating change behaviors: "The context in which teachers work can have a substantial impact on their professional growth" (p. 962). Hence, administrators in all settings and at all levels play key roles in establishing either "change" or "maintenance" cultures within their educational systems (Fullan, 1993; Sarason, 1990). To develop a culture that facilitates openness to change and commitment to teacher improvement among teachers and/or teacher candidates, the authors recommend that teacher educators and administrators provide teachers with the following:

- Technology training in which teachers personally experience technology's power as a learning tool (Guskey, 1986; Polonoli, 2001)
- Technology training combined with practitioner reflection and numerous demonstrations of effective technology-enhanced lessons
- Regular opportunities for collaboration and reflection with colleagues to discuss pedagogy, instructional practices, and research-based practices (Burns, 2002; Cobb, Wood, & Yackel, 1990; Johnson & Owen, 1986)
- Opportunities for discussion and reflection on one's dispositions and attributes that are brought to the teaching profession and how that affects student learning
- A positive leader who values teachers as learners, research-based practices, and informed risk-taking (Burns, 2002)
- Modeling of risk-taking behaviors with technology.

In addition, the authors recommend that school administrators attempt to hire dynamic, reflective practitioners who are committed to ongoing improvement in one's teaching and students.

As the role of technology in society and education dynamically emerges, the adequate preparation of teachers in educational technology is integral to using such a tool effectively in the teaching and learning of our children. Although past literature and research have recommended extensive training in technology skills and pedagogy as the primary components of teacher preparation, this study suggests that technology training should be provided in conjunction with activities that facilitate the teacher dispositions of openness to change and time commitment to teaching improvement. Only in the hands of innovative, informed, and committed professionals in supportive educational cultures can technology serve as a medium for helping children advance confidently into the future.

Contributors

Rachel A. Vannatta is an associate professor and Chair of Educational Foundations and Inquiry at Bowling Green State University. She teaches courses on educational statistics, research, and assessment. Her research interests focus on technology integration in teacher education programs and program evaluation. (Address: Rachel A. Vannatta, Education 550, Bowling Green State University, Bowling Green, OH 43403; rvanna@bgnet.bgsu.edu.)

Nancy Fordham is an assistant professor at Bowling Green State University in the Division of Teaching and Learning. She teaches courses in literacy and social studies and has an interest in technology use in the university and K–12 classroom. (Address: Nancy Fordham, Education 519, Bowling Green State University, Bowling Green, OH 43403; nfordha@bgnet.bgsu.edu.)

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APPENDIX

Teacher Attribute Survey

Part A: Indicate how much you disagree or agree with the following statements by circling the appropriate number to the right of each statement.

1 = Strongly Disagree (SD)
2 = Moderately Disagree (MD)
3 = Slightly Disagree (SLD)
4 = Slightly Agree (SLA)
5 = Moderately Agree (MA)
6 = Strongly Agree (SA)

	Strongly Disagree SD	MD	SLD	SLA	MA	Strongly Agree SA
1 When a student does better than usual, many times it is because I exerted a little extra effort.	1	2	3	4	5	6
2 If one of my students could not do a class assignment, I would be able to accurately assess whether the assignment was at the correct level of difficulty.	1	2	3	4	5	6
3 If parents would do more with their children, I could do more.	1	2	3	4	5	6
4 If students are not disciplined at home, they aren't likely to accept any discipline.	1	2	3	4	5	6
5 If a student masters a new concept quickly, it is probably because I knew the necessary steps in teaching that concept.	1	2	3	4	5	6
6 If a student did not remember the information I gave in a previous lesson, I would know how to increase his/her retention in the next lesson.	1	2	3	4	5	6
7 The influence of a student's home experience can be overcome by good teaching.	1	2	3	4	5	6
8 The amount that a student can learn is primarily related to family background.	1	2	3	4	5	6
9 When I really try, I can get through to the most difficult students.	1	2	3	4	5	6
10 Even a teacher with good teaching abilities may not reach many students.	1	2	3	4	5	6
11 A teacher is very limited in what he/she can achieve because a student's home environment is a large influence on his/her achievement.	1	2	3	4	5	6

12 The hours in my class have little influence on students compared to the influence of their home environment.	1	2	3	4	5	6
13 If a student in my class becomes disruptive and noisy, I feel assured that I know some techniques to redirect him/her quickly.	1	2	3	4	5	6
14 When a student gets a better grade than he/she usually gets, it is probably because I found better ways of teaching that student.	1	2	3	4	5	6
15 When a student is having difficulty with an assignment, I am usually able to adjust to his/her level.	1	2	3	4	5	6
16 When the grades of my students improve it is usually because I found more effective teaching approaches.	1	2	3	4	5	6
17 Students are not ready for "meaningful" learning until they have acquired basic reading and math skills.	1	2	3	4	5	6
18 Student projects often result in students learning all sorts of wrong "knowledge."	1	2	3	4	5	6
19 Students will take more initiative to learn when they feel free to move around the room during class.	1	2	3	4	5	6
20 Instruction should be built around problems with clear, correct answers, and around ideas that most students can grasp quickly.	1	2	3	4	5	6
21 A quiet classroom is generally needed for effective learning.	1	2	3	4	5	6
22 It is better when the teacher—not the students—decides what activities are to be done.	1	2	3	4	5	6
23 Homework is a good setting for having students answer questions posed in their textbooks.	1	2	3	4	5	6
24 Students should help establish criteria on which their work will be assessed.	1	2	3	4	5	6
25 How much students learn depends on how much background knowledge they have—that is why the teaching of facts is so necessary.	1	2	3	4	5	6
26 When exploring new instructional methods, I try to find ones that require little change.	1	2	3	4	5	6

27 I am comfortable trying new things even when I will probably make mistakes.	1	2	3	4	5	6
28 The instructional methods that I currently implement need little revision.	1	2	3	4	5	6
29 I feel excited when I try new instructional techniques.	1	2	3	4	5	6
30 I don't mind making mistakes since I can learn from them.	1	2	3	4	5	6
31 I would continue to complete graduate courses even if they were not required for on-going licensure OR rewarded with salary increase.	1	2	3	4	5	6

Part B: For each of the following pairs of statements, check the circle that best shows how closely your own beliefs are to each of the statements in the give pair. The closer your beliefs to a particular statement, the closer the box you check. Please check only one box for each pair.

32 "I mainly see my role as a facilitator. I try to provide opportunities and resources for my students to discover or construct concepts for themselves."	_ _ _ _ _	"That's all nice, but students really won't learn the subject unless you go over the material in a structured way. It's my job to explain, to show students how to do the work, and to assign specific practice."
33 "The most important part of instruction is the content of the curriculum. That content is the community's judgment about what children need to be able to know and do."	_ _ _ _ _	"The most important part of instruction is that it encourage 'sense-making' or thinking among students. Content is secondary."
34 "It is useful for students to become familiar with many different ideas and skills even if their understanding, for now, is limited. Later, in college, perhaps, they will learn these things in more detail."	_ _ _ _ _	"It better for students to master a few complex ideas and skills well, and to learn what deep understanding is all about, even if the breadth of their knowledge is limited until they are older."

35 "It is critical for students to become interested in doing academic work—interest and effort are more important than the particular subject-matter they are working on."	_ _ _ _ _	"While student motivation is certainly useful, it should not drive what students study. It is more important that students learn the history, science, math, and, language skills in their textbooks."
36 "It is a good idea to have all sorts of activities going on in the classroom. Some students might produce a scene from a play they read. Others might create a miniature version of the set. It's hard to get the logistics right, but the successes are so much more important than the failures."	_ _ _ _ _	"It is more practical to give the whole class the same assignment, one that has clear directions, and one that can be done in short intervals that match students' attention spans and the daily class schedule."

Part C: Teacher Technology Use

Indicate the frequency that you used the following tools/applications in your instruction during this last semester. Examples of teacher use are: teacher demonstration, use of tool/application during lecture/presentation, etc.

1=None
2=Rarely (once or twice per semester)
3=Moderate (several times per semester)
4=High (almost weekly per semester)

	None	Rarely	Moderate	High
37 Computer with Projection system	1	2	3	4
38 Digital camera, Camcorder	1	2	3	4
39 Scanner	1	2	3	4
40 Content-specific tools (e.g., digital microscope, graphing calculator)	1	2	3	4

41 Word Processing	1	2	3	4
42 Database	1	2	3	4
43 Spreadsheet	1	2	3	4
44 Drawing/Graphics Programs (e.g., PhotoShop, AutoCad)	1	2	3	4
45 Content-Specific Software (e.g., Inspiration, Accelerated Reader, Timeliner)	1	2	3	4
46 Presentation Software (PowerPoint, AppleWorks Slideshow)	1	2	3	4
47 Multimedia (e.g., HyperStudio, KidPix, iMovie, Adobe Premier)	1	2	3	4
48 E-mail/ Discussion Groups/Listserves	1	2	3	4
49 Internet (Web searches)	1	2	3	4
50 Class Web site (Communicate with students and/or parents)	1	2	3	4
51 Other, please list:	1	2	3	4

Part D: Student Technology Use

For the following tools/applications, indicate the frequency of **student use** (demonstration, presentation) in your classes during this past semester semester.

1=None
2=Rarely (once or twice per semester)
3=Moderate (several times per semester)
4=High (almost weekly per semester)

	None	Rarely	Moderate	High
52 Computer with Projection system	1	2	3	4
53 Digital camera, Camcorder	1	2	3	4
54 Scanner	1	2	3	4
55 Content-specific tools (e.g., digital microscope, graphing calculator)	1	2	3	4
56 Word Processing	1	2	3	4
57 Database	1	2	3	4
58 Spreadsheet	1	2	3	4
59 Drawing/Graphics Programs (e.g., PhotoShop, AutoCad)	1	2	3	4
60 Content-Specific Software (e.g., Inspiration, Accelerated Reader, Timeliner)	1	2	3	4
61 Presentation Software (PowerPoint, AppleWorks Slideshow)	1	2	3	4
62 Multimedia (e.g., HyperStudio, KidPix,				

iMovie, Adobe Premier)	1	2	3	4
63 E-mail/ Discussion Groups/Listserves	1	2	3	4
64 Internet (web searches)	1	2	3	4
64 Web site development (Frontpage, Site Central)	1	2	3	4
66 Other, please list:	1	2	3	4

Part E: Background

67. In the last two years, I have completed __________(# of actual) hours of **professional development**. Note: One (1) graduate credit is equivalent to 15 hours of contact time.

68. In the last two years, I have completed __________(# of actual) hours of **training related to technology**. Note: One (1) graduate credit is equivalent to 15 hours of contact time.

69. For an average week, how many hours do you work **beyond** the "contractual" teacher work week in order to adequately fulfill your teaching responsibilities?

a. none
b. 1-5
c. 6-10
d. 11-15
e. 16-20
f. 21 or more

70. Gender? _ Male _ Female

71. Number of years teaching? ____