

USE-IT

Uniting Science Education, Inquiry and Technology

Final Evaluation Report

May 2010

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EXECUTIVE SUMMARY

USE-IT was a teacher professional development project designed and implemented by the Northwest Ohio Center of Excellence in Science and Mathematics Education (NWO) and funded by The Martha Holden Jennings Foundation. The focus of USE-IT was on improving the quality of science and technology instruction for teachers in northwest Ohio. This was accomplished by providing professional development about the ways in which several kinds of educational technology could be used to teach science. USE-IT was developed based on five goals:

1. Expose teachers to new ways of exploring science content and effective methods of inquiry science instruction.
2. Raise teachers' comfort level in teaching science using inquiry science methods and technology software and hardware.
3. Integrate technology and science content to increase opportunities for differentiated science instruction.
4. Promote the use of research-based best practices and collaboration in science and technology teaching in northwest Ohio classrooms consistent with local, state, and national standards.
5. Increase student and teacher time with science and technology in the classroom.

USE-IT activities were evaluated regarding the success of their implementation and their impact on participating teachers. Five evaluation questions were framed around the implementation and impact of USE-IT regarding the integration of technology and reform-based science instruction:

1. How successful was the implementation of the USE-IT activities?
2. What impact did USE-IT have on teachers' self-efficacy beliefs about teaching science?
3. What impact did USE-IT have on teachers' beliefs and behaviors about reform-based science teaching strategies?
4. What impact did USE-IT have on teachers' self-efficacy beliefs about using technology in the classroom?
5. What impact did USE-IT have on teachers' beliefs and behaviors about instructional technology?

In order to answer the evaluation questions, quantitative and qualitative data were collected from the USE-IT staff and participating teachers. Detailed session descriptions, attendance sheets, and survey data were collected throughout the project.

The implementation of the USE-IT activities was found to be successful according to the session attendance records, session overviews, and session evaluations. The sessions successfully met the objectives outlined by the project staff. In addition, the teachers' responses and comments to the session evaluation surveys demonstrated that USE-IT was successful in implementing activities that were well organized, engaging, and applicable to the teachers' classrooms.

The impact of the project was measured by teachers' responses to the Teacher Beliefs Instrument (TBI) and the Technology Attitudes and Usage Survey. Due to a small number of matching sets of pre and post-project responses for the TBI, changes in the teachers' self-efficacy beliefs about teaching science and beliefs and behaviors about reform-based science teaching strategies could not be measured. However, post-project responses on the TBI illustrated that, at the end of USE-IT, most teachers felt self-efficacious about teaching science, frequently used reform-based teaching strategies, felt that reform-based teaching strategies were important, and felt prepared to use reform-based teaching strategies in their classroom. However, since a change analysis was not conducted, it could not be statistically determined that USE-IT was the source of the teachers' positive beliefs and behaviors.

The results of the Technology Attitudes and Usage Survey, which the teachers completed before and after USE-IT, demonstrated that teachers' self-efficacy beliefs about using technology in the classroom significantly increased during the teachers' participation in USE-IT. In addition, the survey results demonstrated that after their participation in USE-IT, teachers were significantly more familiar with instructional technology, spent significantly more time using instructional technology in their classroom, and felt significantly more prepared to use instructional technology in their classroom. Teachers' positive responses on the monthly session evaluation surveys provided further support for the project's successful implementation and positive impact.

The teachers' comments and survey responses can be used to guide the curriculum and instruction of future iterations of USE-IT and other similar projects. Based on the teachers' comments and survey responses, I make the following recommendations, with the understanding that in order for good projects to get better, some aspects of the project need to be "tweaked" after every iteration:

- Allow teachers to "share out" at each of the monthly sessions
- Modify the curriculum about interactive whiteboards

INTRODUCTION

This report summarizes the activities and results of the USE-IT (Uniting Science Education, Inquiry, and Technology) project that ran from October 2009 to April 2010. After a brief overview of the project, this report will describe the characteristics of the participating teachers and the findings regarding the implementation and impact of USE-IT on the participating teachers. This report will conclude with a summary of the major findings from USE-IT and recommendations for future iterations of USE-IT and similar projects.

OVERVIEW OF USE-IT

PROJECT SUMMARY

USE-IT was a teacher professional development project designed and implemented by the Northwest Ohio Center of Excellence in Science and Mathematics Education (NWO) and funded by The Martha Holden Jennings Foundation. The focus of USE-IT was on improving the quality of science and technology instruction for teachers in northwest Ohio. This was accomplished by providing professional development about the ways in which several kinds of educational technology could be used to teach science. USE-IT was developed based on five goals:

1. Expose teachers to new ways of exploring science content and effective methods of inquiry science instruction.
2. Raise teachers' comfort level in teaching science using inquiry science methods and technology software and hardware.
3. Integrate technology and science content to increase opportunities for differentiated science instruction.
4. Promote the use of research-based best practices and collaboration in science and technology teaching in northwest Ohio classrooms consistent with local, state, and national standards.
5. Increase student and teacher time with science and technology in the classroom.

The project activities included six professional development sessions that took place once a month from October to March in conjunction with the NWO Inquiry Series, a free professional development opportunity for K-12 STEM (Science, Technology, Engineering, and Mathematics) teachers, administrators, and undergraduate students in northwest Ohio. The Inquiry Series includes several sessions regarding STEM teaching and learning that participants can choose to attend (see Appendix A for the 2009-2010 Inquiry Series brochure). Teachers were recruited during September 2009 to participate in USE-IT, and

the sessions were conducted during the school year concurrently with the other sessions of the Inquiry Series.

The USE-IT sessions were facilitated by Betsy Hood and her Educational Resource Center staff from WGTE Public Media, a public television and radio broadcasting station in Toledo, Ohio. In addition to producing and broadcasting educational programs, WGTE also regularly offers professional development in technology for teachers in northwest Ohio and southeast Michigan. Throughout the duration of USE-IT, Betsy Hood also invited several guest speakers to facilitate activities about different kinds of educational technology.

EVALUATION SUMMARY

USE-IT activities were evaluated regarding the success of their implementation and their impact on participating teachers. Five evaluation questions were framed around the implementation and impact of USE-IT regarding the integration of technology and reform-based science instruction:

1. How successful was the implementation of the USE-IT activities?
2. What impact did USE-IT have on teachers' self-efficacy beliefs about teaching science?
3. What impact did USE-IT have on teachers' beliefs and behaviors about reform-based science teaching strategies?
4. What impact did USE-IT have on teachers' self-efficacy beliefs about using technology in the classroom?
5. What impact did USE-IT have on teachers' beliefs and behaviors about instructional technology?

In order to answer the evaluation questions, quantitative and qualitative data were collected from the USE-IT staff and participating teachers. Detailed session descriptions, attendance sheets, and survey data were collected throughout the project.

Three on-line surveys were administered to the participating teachers. The Teacher Beliefs Instrument (TBI) and the Technology Attitudes and Usage Survey were administered before and after USE-IT (in October and March, respectively). The Inquiry Series Evaluation Survey was administered every month after the Inquiry Series. The TBI consists of two sections that measure 1) teachers' self-efficacy and outcome expectancy beliefs regarding science teaching and 2) teachers' perceptions of their preparedness, importance and frequency regarding the use of reform-based science instruction strategies. A demographics section is also included. See Appendix B for the Teacher Beliefs Instrument. The Technology Attitudes and Usage Survey consists of two sections that measure 1) teachers' self-efficacy beliefs about using technology in the classroom and 2) teachers' beliefs and

behaviors about instructional technology. The second section lists several instructional technologies and teachers are asked to rate a) how *familiar* they are with the technology, b) how *frequently* they use the technology, c) how *useful* they feel the technology is for teaching and learning, and d) how *prepared* they feel using the technology. See Appendix C for the Technology Attitudes and Usage Survey. The Inquiry Series Evaluation Survey consists of several Likert style items (that include a box to enter comments) that measure teachers' perceived value of the Inquiry Series session they attended. See Appendix D for the Inquiry Series Evaluation Survey.

IMPLEMENTATION OF USE-IT ACTIVITIES

Twenty-four teachers from northwest Ohio were enrolled in USE-IT. The teachers represented 11 different northwest Ohio school districts from five counties, with 30% of the teachers coming from Toledo Public Schools, a local urban school district. Most of the teachers taught one or more of the middle grades (6th – 8th grade), but the full range of represented grade levels was Kindergarten to 12th grade. The teachers taught a variety of subjects including Science, Social Studies, Math, Reading, Technology, and Art. Most of the teachers (88%) taught science and/or technology.

Each month, the USE-IT sessions engaged teachers in learning about the characteristics and applications of a particular educational technology. The program provided over 40 hours of professional development including an introductory session featuring Betsy Hood at the Inquiry Blast Off in September and a follow-up session at the Inquiry Summit in April. Table 1 provides a description of each monthly session.

Several sources of information, including session attendance records, session overviews, and session evaluations were consulted in order to evaluate the overall success of the project's implementation.

The attendance objective for USE-IT was to achieve a 90% attendance rate for each of the project's sessions. The attendance objective was met for the December, January, and February sessions (95.8% for December and January and 91.6% for February), and was almost met for the November and March sessions (87.5% for both sessions). The attendance rate for the October session (70.8%) was the only one significantly below the objective.

Two objectives regarding the project's curriculum and instruction were: 1) Demonstrate best practices in science and technology teaching through hands-on, inquiry-based professional development sessions, and 2) Demonstrate alignment to state and national standards. The project was successful in meeting the first objective by giving teachers opportunities to explore several types of educational technology throughout the school year. During each of the project's sessions, teachers were engaged in hands-on explorations of technology such as Flip Cams and SMART Boards. The sessions also demonstrated best practices in science and technology teaching by modeling collaboration and group-based learning. Teachers engaged in discussions regarding the ways in which the technology could be integrated into their science (and other) lessons. Furthermore, time was allocated at the beginning of each session to allow teachers to share their successes and challenges regarding the implementation of technology from previous sessions. In addition, 21st century skills (critical thinking, teamwork, etc.) were modeled throughout the project.

USE-IT was successful in meeting the second objective – demonstrate alignment to state and national standards – by developing sessions that addressed science, math, and technology concepts described in state and national standards. For example, the activities in the December session (SMART Boards, document cameras, etc.) addressed several technology benchmarks in the Ohio standards, including “Communicate information

technologically and incorporate principles of design into the creation of messages and communication products”. Some sessions also addressed science benchmarks such as “Organize and evaluate observations, measurements and other data to formulate inferences and conclusions.” The session overviews provided by Betsy Hood outlined the outcomes and activities for each session along with the standards to which the session was aligned. See Appendix E for an example of a session overview.

Table 1. Descriptions of the USE-IT monthly sessions

| Month | Topic | Description |
|--------------|--|--|
| October | Integrating 21 st Century Skills and Google Tools | Create your own iGoogle page and Google site to promote communication and collaboration among teachers, students, and parents. |
| November | Integrating 21 st Century Skills and Google Earth | Like a video game and a search engine rolled into one, Google Earth lets you grab, spin and zoom down into any place on Earth. Explore the content rich layers in Google earth, discover special features, and learn how students can create their own tours. |
| December | New Tech Ideas for the Classroom | Uncover a wealth of technology-based resources (SMART Boards, Airliner Wireless Slates, Document Cameras) that you can easily weave into current lessons. Find out how easy it is to add tech to your teaching! |
| January | Online Resources | Learn how to engage your students with free online learning tools. Games, interactives, lessons, etc. ... you'll uncover tons of fun, educational resources to enhance science learning in your classroom. |
| February | Movie Making | Use student-created media to support learning goals and provide a real-world connection to classroom concepts! Each attendee receives a Flip Video Cam and we will help you craft a lesson that incorporates video and some of the other resources from past sessions. |
| February | Google Earth and Maps – Optional/Special Session | WGTE offered an extra session at their site in Toledo from 4-6 pm to help teachers enrich their curriculum with 21 st Century skills. |
| March | Bringing It All Together | Showcase how you have integrated tech in your teaching. All attendees will share lessons learned and walk away with ideas, strategies and collaborative tools to continue engaging students with technology. |

TEACHER PERCEPTIONS OF SESSION IMPLEMENTATION

The teachers’ perceptions of the sessions were evaluated by analyzing the teachers’ responses to the monthly Inquiry Series Evaluation surveys. In particular, teachers’ responses to three questions from the Inquiry Series Evaluation survey (“The session met my expectations”, “The session was engaging”, “The content/information presented during

the session was valuable to me”) were analyzed to determine the extent to which teachers perceived the implementation of the sessions successful. The survey results demonstrated that USE-IT sessions consistently met teachers’ expectations, and that teachers perceived the USE-IT sessions to be highly engaging and valuable. Table 2 includes a summary of the teachers’ responses for the three questions used to determine the extent to which the sessions were successfully implemented.

Table 2. Summary of teachers’ perceptions regarding the implementation of USE-IT

| Survey Question: The [USE-IT] session met my expectations | | | | | |
|--|-----------|-------------------|----------------|------------|------------|
| Month | Responses | | | | N |
| | Disagree | Somewhat Disagree | Somewhat Agree | Agree | |
| October | 0 | 0 | 1 | 12 | 13 |
| November* | - | - | - | - | - |
| December | 0 | 3 | 4 | 13 | 20 |
| January | 0 | 0 | 2 | 23 | 25 |
| February | 0 | 0 | 0 | 21 | 21 |
| March | 0 | 0 | 2 | 13 | 15 |
| Total | 0 | 3 | 9 | 82 | 94 |
| Survey Question: The [USE-IT] session was engaging | | | | | |
| Month | Responses | | | | N |
| | Disagree | Somewhat Disagree | Somewhat Agree | Agree | |
| October | 0 | 0 | 0 | 14 | 14 |
| November | 0 | 0 | 2 | 14 | 16 |
| December | 0 | 0 | 6 | 14 | 20 |
| January | 0 | 0 | 0 | 25 | 25 |
| February | 0 | 0 | 0 | 21 | 21 |
| March | 0 | 0 | 1 | 14 | 15 |
| Total | 0 | 0 | 9 | 102 | 111 |
| Survey Question: The content/information presented during the [USE-IT] session was valuable to me | | | | | |
| Month | Responses | | | | N |
| | Disagree | Somewhat Disagree | Somewhat Agree | Agree | |
| October | 0 | 0 | 0 | 14 | 14 |
| November | 0 | 0 | 0 | 16 | 16 |
| December | 0 | 2 | 5 | 13 | 20 |
| January | 0 | 0 | 3 | 22 | 25 |
| February | 0 | 0 | 0 | 21 | 21 |
| March | 0 | 0 | 1 | 14 | 15 |
| Total | 0 | 2 | 9 | 100 | 111 |

* The November session was held at the NWO Symposium, which was evaluated with a different survey. Teachers were not asked if the sessions met their expectations.

The Inquiry Series Evaluation surveys also gave teachers opportunities to provide comments about the survey questions and their responses to the questions. The comments

that were provided by the teachers regarding the three evaluation questions above further illustrated the successful implementation of USE-IT. Throughout the project, teachers consistently commented about how well organized the sessions were. Some examples of teachers' comments include:

"Well organized, easy to understand, and interesting."
– *October 2009*

"As always, [the USE-IT session] was very well planned with informative information."
– *February 2010*

"The [USE-IT] session was well organized, engaging, and presented information that I can use in my classroom right away."
– *January 2010*

The teachers' comments regarding the sessions' engagingness validated the inquiry-based, hands-on nature of the sessions that was described in the session overviews. The teachers' comments reflected the large extent to which they were given opportunities to explore and apply the concepts they learned. Some examples of teachers' comments include:

"We ... were given lots of opportunities to try what were learning."
– *January 2010*

"Loved the fact they showed us how to do it, then gave us the opportunity to try it."
– *October 2009*

"I loved being able to use the computer as the presenter demonstrated what to do."
– *October 2009*

The teachers' comments regarding the value of the content addressed during the sessions demonstrated that USE-IT provided teachers with valuable and relevant information that could be applied to and integrated with the lessons taught in their classrooms. The teachers regularly expressed their excitement about using the information in their classrooms. Some examples of teachers' comments include:

"The information presented gave me a glimpse of exciting things I can do in my classroom."
– *December 2009*

"Looking forward to using the technology in my classroom!"
– *February 2010*

"I always enjoy attending and am eager to use [the information] in my classroom."
– *January 2010*

IMPACT OF USE-IT ON TEACHERS

The project's impact on teachers was evaluated by measuring the extent to which teachers increased their 1) self-efficacy beliefs about teaching science, 2) beliefs and behaviors about reform-based science teaching strategies, 3) self-efficacy about using technology in the classroom, and 4) beliefs and behaviors about instructional technology. The teachers' responses to the Teacher Beliefs Instrument (TBI) and the Technology Attitudes and Usage Survey were analyzed in order to determine the extent to which these outcomes were achieved. Both evaluation instruments were administered before and after the project to measure the project's effect on increasing the teacher characteristics mentioned above.

Only six USE-IT teachers completed the TBI in the fall, due a delay in the recruiting process. The original intention was to recruit teachers into USE-IT from the population of teachers that attended the Inquiry Series Blast-Off in September of 2009. However, only a few teachers from this population enrolled in USE-IT, so an e-mail invitation was sent to other teachers in northwest Ohio in order to fill the remaining positions. The recruitment process ended just before the October session, so most of the teachers were not able to complete the TBI in the fall. Therefore, due to the small number of matching response pairs (from fall to spring) on the TBI, increases in the characteristics regarding science teaching could not be measured. This report, therefore, will only describe the science teaching characteristics reported by USE-IT teachers on the spring version of the TBI.

SELF-EFFICACY BELIEFS ABOUT TEACHING SCIENCE

Teachers' self-efficacy beliefs about teaching science were determined using the TBI. The self-efficacy section of the TBI consisted of 13 items with a five-point scale (5=Strongly Agree, 4=Agree, 3=Neutral, 2=Disagree, 1=Strongly Disagree). Examples of the self-efficacy items are, "I know the steps necessary to teach science concepts effectively" and "I find it difficult to explain to students why science investigations turn out as they do". A reliability analysis was conducted with the post-survey self-efficacy scores, and the coefficient alpha value of 0.87 indicated the scale used for this report had sufficient reliability (> 0.70).

A frequency analysis was conducted to determine the number of teachers who responded positively and negatively to each item. For most items, the positive responses are Strongly Agree and Agree, and the negative responses are Strongly Disagree and Disagree. However, for the items that are negatively worded, the positive responses are Strongly Disagree and Disagree, and the negative responses are Strongly Agree and Agree. On average, 80.2% of the USE-IT teachers (n=21) responded positively to the self-efficacy items (see Table 3 for the results of the frequency analysis). This result indicates that, at the end of the USE-IT, most teachers possessed positive self-efficacy beliefs about teaching science. However, it may or may not be the case that USE-IT contributed to these positive beliefs. A change analysis could not be done due to the small number of teachers who completed the TBI in the fall.

Table 3. Results of the frequency analysis for the TBI self-efficacy scale

| Item # | % of positive responses | % of negative responses |
|--------|-------------------------|-------------------------|
| 1 | 100 | 0 |
| 2 | 52.4 | 14.3 |
| 4 | 85.7 | 0 |
| 5 | 61.9 | 0 |
| 7 | 85.7 | 4.8 |
| 10 | 85.7 | 0 |
| 15 | 76.2 | 4.8 |
| 16 | 85.7 | 0 |
| 17 | 66.7 | 14.3 |
| 19 | 95.2 | 0 |
| 20 | 85.7 | 0 |
| 21 | 95.2 | 0 |
| 22 | 66.7 | 14.3 |
| Mean | 80.2 | 4.0 |

BELIEFS AND BEHAVIORS ABOUT REFORM-BASED SCIENCE TEACHING STRATEGIES

Teachers’ beliefs and behaviors about reform-based science teaching strategies were determined using the Instructional Practices Inventory in the TBI. The Instructional Practices Inventory lists 31 reform-based teaching strategies for which teachers are asked to rate a) how frequently they use the strategy in their classroom, b) how important the strategy is for effective teaching, and c) how prepared they feel to use the strategy. Examples of reform-based strategies are, “ask students to explain concepts to one another”, “allow students to construct their own understandings”, and “take students’ prior knowledge into account when planning lessons”. All items are measured on a four-point scale, which is defined below:

| |
|---|
| <i>Frequency</i> |
| 1=Never, 2=Rarely, 3=Sometimes, 4=Frequently |
| <i>Importance</i> |
| 1=Not Important, 2= Somewhat Important, 3=Important, 4=Very Important |
| <i>Preparedness</i> |
| 1=Not Prepared, 2= Somewhat Prepared, 3=Prepared, and 4=Very Prepared |

Reliability analyses were conducted with the post-survey frequency, importance, and preparedness scores. The coefficient alpha values of 0.90 (frequency), 0.94 (importance), and 0.95 (preparedness) indicated sufficient reliability for all scales.

A frequency analysis was conducted to determine the number of teachers who responded positively and negatively to each item. For the *Frequency* scale, the positive responses are Sometimes and Frequently, and the negative responses are Never and Rarely. For the *Importance* scale, positive responses are Important and Very Important, and negative responses are Not Important and Somewhat Important. For the *Preparedness* scale, positive responses are Prepared and Very Prepared, and negative responses are Not Prepared and Somewhat Prepared. On average, 85.9% of the USE-IT teachers (n=21) responded positively to the *Frequency* items, 90.2 % responded positively to the *Importance* items, and 77.1% responded positively to the *Preparedness* items. These results indicate that, at the end of the USE-IT, most teachers frequently used reform-based teaching strategies, felt that reform-based teaching strategies were important, and felt prepared to use reform-based teaching strategies in their classroom. However, like the self-efficacy results, it may or may not be the case that USE-IT contributed to these beliefs and behaviors. Since a change analysis was not conducted, it cannot be determined that USE-IT increased teachers beliefs and behaviors about reform-based science teaching strategies.

SELF-EFFICACY BELIEFS ABOUT USING TECHNOLOGY IN THE CLASSROOM

Teachers' self-efficacy beliefs about using technology in the classroom were determined using the Technology Attitudes and Usage Survey. The self-efficacy section of the survey includes ten items with a five-point scale (5=Strongly Agree, 4=Agree, 3=Neutral, 2=Disagree, 1=Strongly Disagree). Sample items include, "I understand instructional technology well enough to be able to effectively use technology in my classroom" and "I am typically able to answer my students' questions about using technology in the classroom". Reliability analyses were conducted with both pre and post self-efficacy scores, and the coefficient alpha values indicated sufficient reliability (> 0.70) for both sets of data (see Table 4 for specific reliability values).

The data were analyzed with a dependent t-test, meaning that pre and post-survey scores were matched and compared for each teacher. There were a total of 16 matching pre-post pairs that were included in the analysis. The results of the t-test demonstrated that, from the beginning of USE-IT to the end, teachers significantly increased their self-efficacy beliefs about using technology in the classroom. Table 4 includes the pre and post-survey means for the self-efficacy scale along with the results of the dependent t-test.

BELIEFS AND BEHAVIORS ABOUT INSTRUCTIONAL TECHNOLOGY

Teachers' beliefs and behaviors about instructional technology were determined using the Technology Attitudes and Usage Survey. The beliefs and behaviors section of the survey lists ten instructional technologies for which teachers are asked to rate a) how *familiar*

they are with the technology, b) how *frequently* they use the technology, c) how *useful* they feel the technology is for teaching and learning, and d) how *prepared* they feel using the technology. Some of the instructional technologies included in the survey are interactive whiteboards (e.g., SMARTBoard), Google sites (e.g., Google Earth), movie making, and online resources (e.g., educational games, simulations). All of the items are rated with a four-point scale, which varies depending on the specific scale (e.g. Familiarity, Frequency). The four points are defined as follows for each scale:

| |
|---|
| <p style="text-align: center;"><i>Familiarity</i></p> <p style="text-align: center;">1=Not Familiar, 2=Somewhat Familiar, 3=Familiar, 4=Very Familiar</p> <p style="text-align: center;"><i>Frequency</i></p> <p style="text-align: center;">1=Never, 2=Rarely, 3=Sometimes, 4=Frequently</p> <p style="text-align: center;"><i>Usefulness</i></p> <p style="text-align: center;">1=Not Useful, 2= Somewhat Useful, 3=Useful, 4=Very Useful</p> <p style="text-align: center;"><i>Preparedness</i></p> <p style="text-align: center;">1=Not Prepared, 2= Somewhat Prepared, 3=Prepared, and 4=Very Prepared</p> |
|---|

Reliability analyses were conducted with the pre and post scores from the familiarity, frequency, usefulness, and preparedness scales. The coefficient alpha values indicated sufficient reliability for all scales, with the exception of the post-frequency and post-usefulness scales. However, the coefficient alpha values for the non-sufficiently reliable scales were still greater than .60, which indicates reasonable reliability.

The beliefs and behavior data were analyzed with a series of dependent t-tests (one for each scale). The results of the t-tests demonstrated that teachers significantly increased 1) their familiarity with instructional technology, 2) the frequency with which they use instructional technology in the classroom, and 3) their preparedness to use instructional technology in the classroom. Teachers' beliefs about the usefulness of instructional technology did not significantly increase. Table 4 includes the pre and post-survey means for the four beliefs and behavior scales along with the results of the dependent t-tests.

Table 4. Summary of the Technology Attitudes and Usage Survey Analyses

| Scale | N | Pre-survey Mean (S.D.) | Post-survey Mean (S.D.) | t | Effect Size (Cohen's d) | Pre-survey Reliability (α) | Post-survey Reliability (α) |
|-----------------------------------|----|------------------------|-------------------------|----------|-------------------------|-------------------------------------|--------------------------------------|
| Self-efficacy | 16 | 36.9 (5.0) | 40.1 (5.7) | -5.52*** | .63 | .80 | .87 |
| Familiarity | 16 | 20.9 (5.6) | 26.7 (5.2) | -6.84*** | 1.07 | .75 | .80 |
| Frequency | 16 | 19.2 (4.6) | 23.1 (4.1) | -4.11** | .90 | .70 | .63 |
| Usefulness | 16 | 27.4 (4.1) | 29.1 (3.9) | -1.17 | .42 | .74 | .68 |
| Preparedness | 16 | 18.0 (5.2) | 23.6 (4.9) | -5.62*** | 1.11 | .79 | .76 |
| Types of Instructional Technology | 17 | 5.0 (1.8) | 5.9 (1.9) | -2.62* | .49 | - | - |

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

Note: Conventionally, effect sizes around 0.5 are considered to be “medium” while those larger than 0.8 are considered to be “large”

The Technology Attitudes and Usage Survey also asked teachers to report the types of instructional technology to which there is easy access in the teachers' classroom or school building. Ten instructional technologies are listed on the survey, including interactive whiteboard, student response system, computer, and video recording equipment. This section of the survey was used (as it was intended to be) for instructional purposes, to modify the project's curriculum to reflect the needs of the teachers. However, the results of a dependent t-test indicated that the mean number of instructional technologies reported after USE-IT was significantly greater than the mean number of instructional technologies reported before USE-IT (see Table 4). There were eight instructional technologies for which at least one teacher reported *gaining* access to over the course of the project. Gains in access to the eight instructional technologies ranged from one to ten teachers for each type of technology. A follow-up e-mail was sent to the teachers to determine the reason for the significant increase in technologies. Several of the teachers explained that their schools had purchased the technologies during USE-IT, but the purchases were not made as a result of the teachers' participation in USE-IT. Other teachers mentioned seeking out technologies in their schools that they were previously unaware of, and requesting specific technologies for their classrooms as a result of their participation in USE-IT.

Teachers' responses to the Inquiry Series Evaluation survey support the results of the Technology Attitude and Usage Survey regarding teachers' familiarity, preparedness and use of technology in the classroom. Three questions in particular ("I learned something new from the session", "I will incorporate the content/information from the session into my classroom lessons", and "Attending the session made me feel more confident about teaching science, technology, engineering, and/or math") provided evidence regarding the impact of USE-IT. The responses indicated that, throughout the project, teachers consistently learned new concepts that could be used in their classrooms (supporting the gains in familiarity and frequency), and gained confidence about using technology in the classroom (supporting gains in preparedness). Table 5 includes a summary of the teachers' responses for the three questions.

Below are some examples of teachers' comments that accompanied their responses to the three aforementioned survey questions. These comments further support the observed increases in familiarity, frequency, and preparedness.

"I always learn something new to take back to my classroom."

- *February 2010*

"This is one of the few times that I was learning from the moment I walked in."

- *October 2009*

"I am very excited to continue to explore the resources shared at this session so that I can use them in my lesson planning."

- *January 2010*

"I have implemented something from each session in my teaching."

- *March 2010*

“I have enjoyed this session and I do not believe that I have gained more information at any session in 25 years of teaching. The presenters are stupendous ... Not only do I bring home skills but I see models of superior teaching.”

– February 2010

Table 5. Summary of teachers’ perceptions regarding the impact of USE-IT

| Survey Question: I learned something new from the [USE-IT] session | | | | | |
|---|-----------|-------------------|----------------|-------|-----|
| Month | Responses | | | | N |
| | Disagree | Somewhat Disagree | Somewhat Agree | Agree | |
| October | 0 | 0 | 1 | 13 | 14 |
| November | 0 | 0 | 0 | 16 | 16 |
| December | 0 | 2 | 5 | 13 | 20 |
| January | 0 | 0 | 2 | 23 | 25 |
| February | 0 | 0 | 0 | 21 | 21 |
| March | 0 | 0 | 2 | 13 | 15 |
| Total | 0 | 2 | 10 | 99 | 111 |
| Survey Question: I will incorporate the content/information from the [USE-IT] session into my classroom lessons | | | | | |
| Month | Responses | | | | N |
| | Disagree | Somewhat Disagree | Somewhat Agree | Agree | |
| October | 0 | 0 | 4 | 10 | 14 |
| November* | - | - | - | - | - |
| December | 1 | 2 | 2 | 15 | 20 |
| January | 0 | 0 | 1 | 23 | 24 |
| February | 0 | 0 | 1 | 20 | 21 |
| March | 0 | 0 | 2 | 13 | 15 |
| Total | 1 | 2 | 10 | 81 | 94 |
| Survey Question: Attending the [USE-IT] session made me feel more confident about teaching science, technology, engineering, and/or math | | | | | |
| Month | Responses | | | | N |
| | Disagree | Somewhat Disagree | Somewhat Agree | Agree | |
| October | 0 | 1 | 7 | 6 | 14 |
| November* | - | - | - | - | - |
| December | 1 | 1 | 9 | 9 | 20 |
| January | 0 | 0 | 4 | 20 | 24 |
| February | 0 | 0 | 2 | 18 | 20 |
| March | 0 | 0 | 1 | 14 | 15 |
| Total | 1 | 2 | 23 | 67 | 93 |

* The November session was held at the NWO Symposium, which was evaluated with a different survey. Teachers were not asked about the incorporation of content or confidence about teaching.

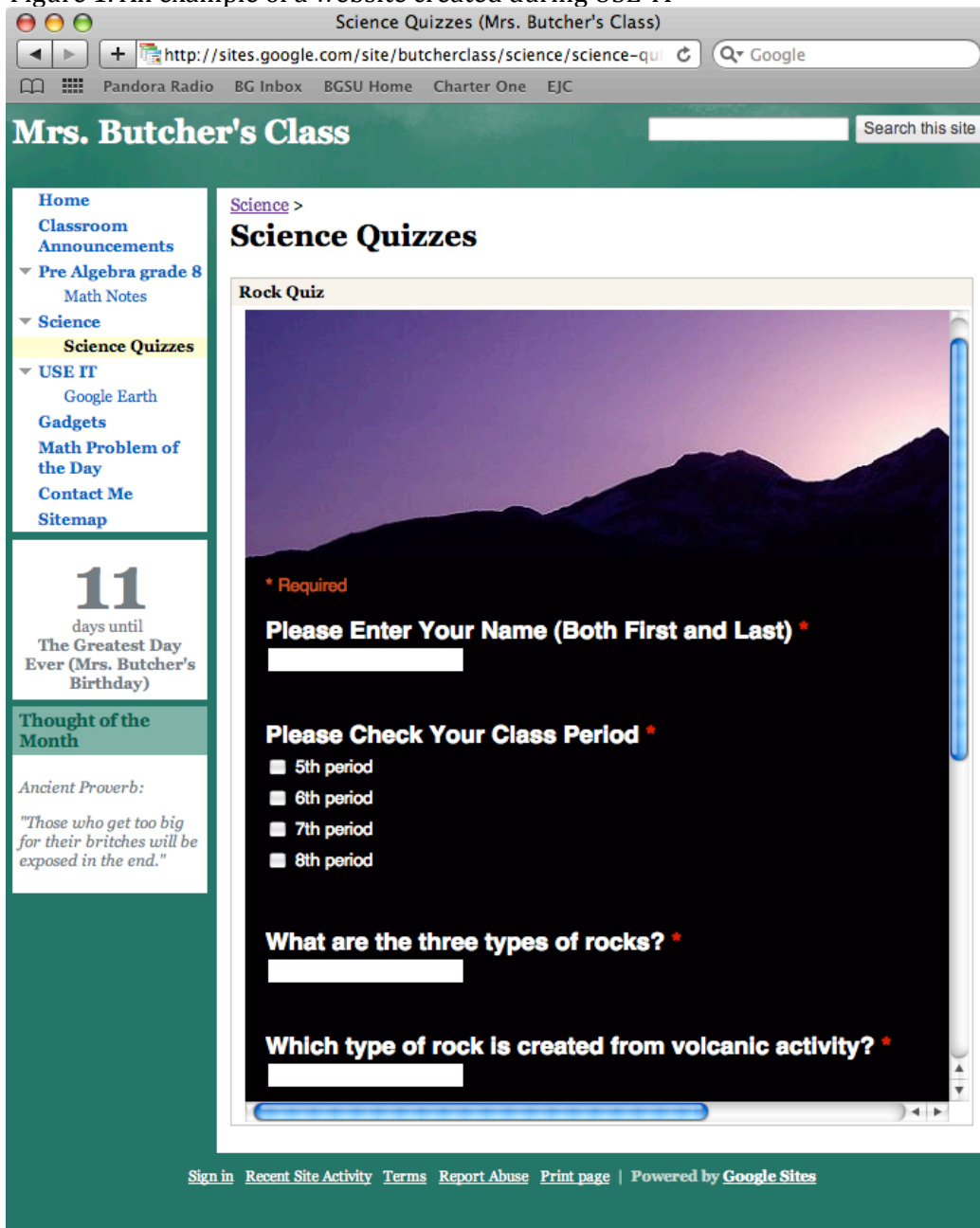
Teachers learned how to create a class website in October, to which more features were added as the teachers proceeded through the project. The websites provide evidence that demonstrates how the teachers implemented the knowledge and skills gained during USE-IT. Some of the teachers' websites can be seen at:

<http://sites.google.com/site/butcherclass/home>

<http://sites.google.com/site/horizons50/home>

Figure 1 is a screenshot from one teacher's website that demonstrates her use of Google Docs in creating online assessments for her students.

Figure 1. An example of a website created during USE-IT



SUMMARY

During its implementation, USE-IT successfully met most of the objectives outlined by the project staff. The USE-IT staff successfully recruited 24 teachers from 11 different school districts in northwest Ohio, and facilitated monthly professional development sessions that were attended by an average of 88% (21) of the enrolled teachers.

The monthly sessions were successfully implemented and well received by the teachers, who consistently reported learning new and valuable information that could be implemented in their classroom. Best practices teaching was modeled for the teachers by Betsy Hood from WGTE Public Media and several guest speakers. Teachers engaged in hands-on activities and learned about several instructional technologies through exploration and interaction.

Teachers who participated in USE-IT reported a significant increase (from pre to post-project) in their self-efficacy about using technology in the classroom. In addition, after their participation in USE-IT, teachers were significantly more familiar with instructional technology, spent significantly more time using instructional technology in their classroom, and felt significantly more prepared to use instructional technology in their classroom.

After participating in USE-IT, most teachers felt self-efficacious about teaching science, frequently used reform-based teaching strategies, felt that reform-based teaching strategies were important, and felt prepared to use reform-based teaching strategies in their classroom. Since a change analysis could not be conducted, these positive responses could not be attributed to USE-IT. However, it is likely that the project contributed to these positive attitudes and behavior, evidenced by the teachers' comments on the session evaluations and the teachers' application of USE-IT knowledge and skills in their science classroom (see Figure 1).

Throughout the project, teachers expressed their excitement and gratitude about the opportunities to learn about and use the instructional technologies that were explored during USE-IT. The teachers' comments and survey responses can be used to guide the curriculum and instruction of future iterations of USE-IT and other similar projects. Based on the teachers' comments and survey responses, I make the following recommendations:

- **Allow teachers to “share out” at each of the monthly sessions**

Throughout the project, teachers were given several opportunities to share with the other teacher participants how they were implementing technology in their classroom. This seemed to be a valuable aspect of the project, and would be worthwhile to ensure that teachers were given the opportunity to have these discussions at each professional development session. Teachers' comments on the session evaluations illustrated that sharing their progress and listening to other teachers' progress was an important and beneficial part of the monthly sessions. The comments for the last

monthly session (March) were particularly supportive of this recommendation. Some examples of these comments include:

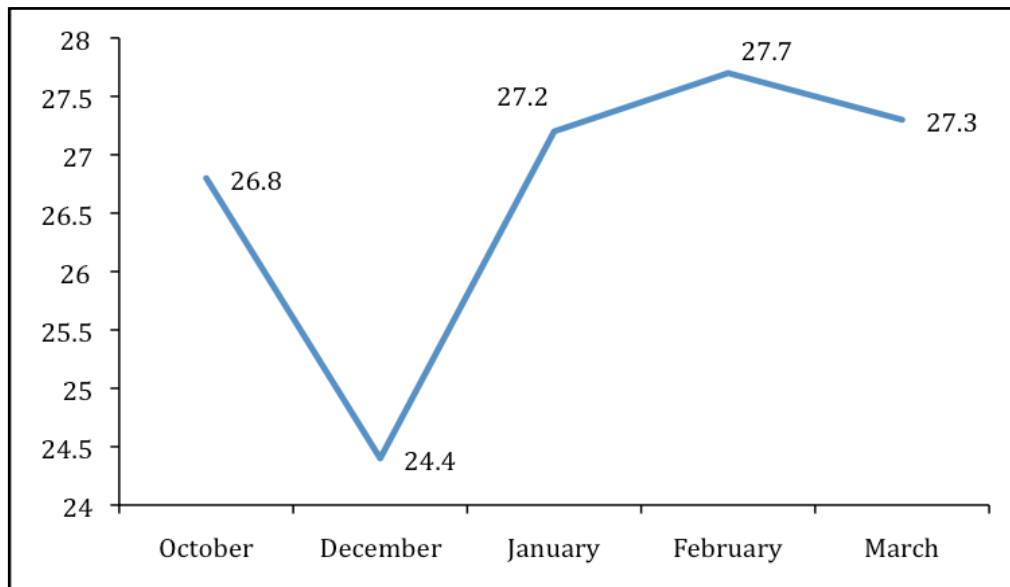
“I like to hear how other teachers are incorporating technology in their classrooms - this is very helpful.”

“Watching enthusiastic colleagues and hearing about their uses is fabulous.”

- **Modify the curriculum about interactive whiteboards**

Although the teachers consistently ranked each monthly session in a positive manner, the December session (New Tech Ideas for the Classroom, see Table 1) was ranked significantly lower than the other sessions, based on the average total session score calculated from the Inquiry Series Evaluation surveys. Figure 2 displays a plot of the average total session scores for each month.

Figure 2. Average total scores for each USE-IT session



Note: The total session score for December is significantly lower ($p < .001$) than the other sessions. All other session scores are not significantly different.

The teachers' comments for the December session demonstrate that the likely cause of the lower scores was the instruction about interactive whiteboards. The teachers perceived the session to be engaging and interesting, but would have preferred a different approach to learning about interactive whiteboards. This could possibly be due to the fact that many of the teachers had interactive whiteboards in their classrooms, and were therefore already familiar with some of the applications of interactive whiteboards. These teachers may need more advanced instruction about interactive whiteboards. For example, some teachers

stated that they would have rather discussed as a class how they all used their interactive whiteboards in order to get ideas about classroom applications.

It is important to note that the session about interactive whiteboards was still effective and had a positive impact on the teachers. The results of the Technology Attitudes and Usage Survey demonstrated that, after their participation in USE-IT, teachers were significantly more familiar with interactive whiteboards, and felt significantly more prepared to use interactive whiteboards in their classrooms. Therefore, the recommendation to modify the interactive whiteboard curriculum does not stem from the inability of USE-IT to effectively instruct about interactive whiteboards. Rather, the recommendation is given with the understanding that, in order for good projects to get better, some aspects of the project need to be “tweaked” after every iteration.



Northwest Ohio Center of Excellence
in Science and Mathematics Education

Advancing STEM Education for the 21st Century

I D E A S

NWO STEM Education Inquiry Series 2009~10

Blast-Off Keynote Speaker

21st Century Learning...It's More Than Just Technology!

Betsy Hood, Director of the Educational Resource Center at WGTE Public Media

How do these much talked about 21st century skills apply to your classroom? This informal presentation will explore current trends in tech integration as well as student outcomes and support systems that produce a framework for classroom learning in the 21st century.

Monthly Interdisciplinary Opportunities

Using Community Resources (Grades K-12) *(This section can be taken for credit.)*

Facilitators: October - Toledo Zoo; December - Toledo Museum of Art; January - Lucas County Soil and Water Conservation; February - Lourdes College Theater Vision & Life Lab; March - The Blade Newspapers in Education

Discover new resources, meet education specialists, and experience new ideas to energize your classroom science, mathematics, and technology lessons. *Because each monthly session is unique, this course is an excellent choice for teachers and pre-service teachers who cannot regularly attend.*

Monthly Engineering Opportunities

Experiencing Engineering is Elementary (EiE) (Grades K-6)

Facilitators: Cherie Pilatowski and Julie Campbell, Toledo Public Schools Science Support Specialists

Learn more by doing with the research-based, standards-driven, and classroom-tested curriculum from Engineering is Elementary (EiE). These investigations will help elementary school educators enhance their understanding of engineering concepts and pedagogy while fostering engineering and technological literacy among children.

Monthly Mathematics Opportunities

Exploring Elementary Math Topics (Grades K-6)

Facilitator: Amy Boros, Frank Elementary School, Perrysburg

Join us for lively discussions, hands-on, ready-to-use activities, and new ideas that can quickly and easily be incorporated into your elementary classroom. The sessions will focus on early elementary mathematics, but will include topics and discussions for all levels of elementary math teachers.

What Is a Number? (Grades 9-12)

Facilitator: Dr. David Meel, Mathematics & Statistics Dept., BGSU

These sessions will look at numbers and number sense from the natural to the complex and beyond. Be prepared to consider the infinite and to work through ideas that have perplexed mathematicians for years. Bring a graphing calculator and an open mind to these sessions.

Register online at: <http://nwocenter.org/inquiryseries>

Monthly Science Opportunities

Physical Sciences Modeling (Grades 9-12)

Facilitators: Nate Ash, Perrysburg High School, and Mary Kate Hafemann, Ottawa Hills High School (This section can be taken for credit.)

Physics, chemistry, and physical science teachers will learn how the modeling method gives students the opportunity to confront their misconceptions about physical science head on, analyze their data in an in-depth, consistent way in order to construct appropriate models, and develop the skills and confidence needed to interpret results in a scientifically critical way.

Exploring Inquiry in High School Biology (Grades 9-12)

Facilitator: Dr. Eileen Underwood, Biological Sciences Dept., BGSU (This section can be taken for credit.)

Expand your professional network and join area biology teachers as they explore topics of interest and investigate current knowledge about the best ways to instruct students in the life sciences.

Monthly Technology Opportunities

USE-IT (Uniting Science Education, Inquiry and Technology) (Grades 3-8)

Facilitators: Betsy Hood and Charlene Patten, WGTE Public Media

Gain strategies and classroom-ready resources that model effective applications of 21st century skills. Interact with new technology and/or sharpen your skills with the technology you already have. Walk away with learning tools (and technology!) designed for immediate adoption in the classroom and engage in best practice discussions to identify 21st century methodologies that promote active, process-oriented student learning.

USE-IT is funded by the Martha Holden Jennings Foundation. This program is limited to 24 participants; please contact NWO at nwo@bgsu.edu to register.

Technology Integration in STEM Education (Grades K-12)

Facilitator: Carrie Rathsack, Integrations Specialist, Rossford Public Schools

These sessions will focus on a number of topics in 21st century technology education. STEM integration and the latest tools and resources will be discussed to help teachers effectively meet the needs of all students.

October/December – Internet Tools for Teaching STEM; January/February – SMART Board for Elementary Math;

March – Integrating 21st Century Skills and Tools into the Secondary Science Classroom

Monthly Project pi r² Opportunities

Project pi r² (Grades K-8) (This session is currently filled)

Facilitators: Aimee Mendelsohn, Summit Academy School for Alternative Learning; Dr. Rick Worch, School of Teaching & Learning, BGSU; Robyne Kramp, Bowling Green City Schools; Deb Wickerham, Findlay City Schools; and Berry Cobb, Professor Emeritus, BGSU

Project pi r², Partners in Inquiry Resources and Research, is an exciting program offering 100 contact hours of high-quality teacher professional development for teachers in grades K-8 which brings science outreach into the classroom. Please email mklinge@bgsu.edu for information on future opportunities.

2009 -10 Inquiry Series Dates

| DATE | | TIME | PLACE |
|-----------------|--|------------|---|
| Sept. 26 [Sat] | Blast-Off – Betsy Hood, WGTE Public Media | 8:30-12:30 | BGSU Student Union (Lenhart Grand Ballroom) |
| Oct. 22 [Thurs] | Monthly Evening Session | 5:00-8:00 | Rossford High School (701 Superior St., Rossford, OH) |
| Nov. 7 [Sat] | NWO Symposium | 7:45-4:00 | Penta Career Center (9301 Buck Road Perrysburg, OH) |
| Dec. 3 [Thurs] | Monthly Evening Session | 5:00-8:00 | Rossford High School (701 Superior St., Rossford, OH) |
| Jan. 21 [Thurs] | Monthly Evening Session | 5:00-8:00 | Rossford High School (701 Superior St., Rossford, OH) |
| Feb. 18 [Thurs] | Monthly Evening Session | 5:00-8:00 | Rossford High School (701 Superior St., Rossford, OH) |
| Mar. 25 [Thurs] | Monthly Evening Session | 5:00-8:00 | Rossford High School (701 Superior St., Rossford, OH) |
| Apr. 22 [Thurs] | Summit | 4:30-8:30 | Rossford High School (701 Superior St., Rossford, OH) |

The Inquiry Series is free to all educators and school administrators. Meals are provided free of charge. CEUs (Contact Hours) are available for this event. **Partial scholarships available for graduate credit. For more information contact nwo@bgsu.edu.**

Supporting grant sponsors: Martha Holden Jennings Foundation, Ohio Board of Regents, Ohio Department of Education

The Northwest Ohio Center of Excellence in Science and Mathematics Education is a partnership between Bowling Green State University, University of Toledo, Lourdes College, Owens State Community College, University of Findlay, local school districts, educational service centers, businesses and non-profit organizations.

Teacher Belief Instrument

Your Unique Code

What NWO project are you enrolled in?

DREAMS

PI R2 (squared)

I'm not enrolled in an NWO project

I'm not sure

Other (please specify)

Please use the drop-down menus to enter your unique code, which will be used to keep track of your responses during the analysis of these evaluation data.

First letter of your
mother's maiden
name

Second letter of your
mother's maiden
name

Your Birth Month

Your Birth Day

My Unique Code

Teacher Belief Instrument

Part A: Self-Efficacy Beliefs About Teaching

(Enochs & Riggs, 1990; modified Haney, 2005)

Directions: Please indicate the degree to which you agree or disagree with each statement below by checking the appropriate category for each statement.

As you can see below, science and mathematics are both included in the statements. We understand that your beliefs may differ (sometimes greatly) between science and mathematics teaching, so we ask that you answer the statements based on your beliefs about science *OR* math, not both.

If you teach only science or only mathematics, please answer the statements based on your beliefs about that subject. If you teach both science and math, please choose one or the other.

Project pi r-squared participants: Please answer based on your beliefs about science.

DREAMS participants: Please answer based on the MAT degree you are pursuing

Please indicate how you will answer the statements.

Based on my beliefs about SCIENCE teaching

Based on my beliefs about MATHEMATICS teaching

1. I am continually finding better ways to teach SCIENCE/MATHEMATICS topics.

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|--------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| MY RESPONSE TODAY: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

2. Even when I try very hard, I do not teach SCIENCE/MATHEMATICS topics as well as I do most subjects.

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|--------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| MY RESPONSE TODAY: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

3. When the grades of students improve, it is often due to their teacher having found a more effective SCIENCE/MATHEMATICS teaching approach.

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|--------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| MY RESPONSE TODAY: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Teacher Belief Instrument

4. I know the steps necessary to teach SCIENCE/MATHEMATICS concepts effectively.

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|--------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| MY RESPONSE TODAY: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

5. I am not very effective in monitoring SCIENCE/MATHEMATICS experiences.

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|--------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| MY RESPONSE TODAY: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

6. If students are underachieving in SCIENCE/MATHEMATICS, it is most likely due to ineffective teaching.

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|--------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| MY RESPONSE TODAY: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

7. I generally teach SCIENCE/MATHEMATICS topics ineffectively.

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|--------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| MY RESPONSE TODAY: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

8. The inadequacy of a student's SCIENCE/MATHEMATICS background can be overcome by good teaching.

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|--------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| MY RESPONSE TODAY: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

9. When a low-achieving child progresses when studying SCIENCE/MATHEMATICS, it is usually due to extra attention given by the teacher.

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|--------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| MY RESPONSE TODAY: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

10. I understand SCIENCE/MATHEMATICS concepts well enough to be an effective SCIENCE/MATHEMATICS teacher.

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|--------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| MY RESPONSE TODAY: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

11. Increased effort in SCIENCE/MATHEMATICS teaching produces change in students' SCIENCE/MATHEMATICS achievement.

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|--------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| MY RESPONSE TODAY: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

12. The teacher is generally responsible for the achievement of students in SCIENCE/MATHEMATICS topics.

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|--------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| MY RESPONSE TODAY: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Teacher Belief Instrument

13. Students' achievement in SCIENCE/MATHEMATICS is directly related to their teacher's effectiveness in teaching SCIENCE/MATHEMATICS.

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|--------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| MY RESPONSE TODAY: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

14. If parents comment that their child is showing more interest in SCIENCE/MATHEMATICS at school, it is probably due to the performance of the child's teacher.

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|--------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| MY RESPONSE TODAY: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

15. I find it difficult to explain to students why SCIENCE/MATHEMATICS investigations turn out as they do.

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|--------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| MY RESPONSE TODAY: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

16. I am typically able to answer students' SCIENCE/MATHEMATICS questions.

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|--------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| MY RESPONSE TODAY: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

17. I wonder if I have the necessary skills to teach SCIENCE/MATHEMATICS.

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|--------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| MY RESPONSE TODAY: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

18. Effectiveness in SCIENCE/MATHEMATICS teaching can impact the achievement of students with low motivation.

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|--------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| MY RESPONSE TODAY: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

19. Given a choice, I would not invite the principal (or other) to evaluate my SCIENCE/MATHEMATICS teaching.

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|--------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| MY RESPONSE TODAY: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

20. When a student has difficulty understanding a SCIENCE/MATHEMATICS concept, I am usually at a loss as to how to help the student understand the concept better.

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|--------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| MY RESPONSE TODAY: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Teacher Belief Instrument

21. When teaching SCIENCE/MATHEMATICS topics, I usually welcome student questions.

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|--------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| MY RESPONSE TODAY: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

22. I do not know what to do to turn students on to SCIENCE/MATHEMATICS topics.

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|--------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| MY RESPONSE TODAY: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

23. Even teachers with good SCIENCE/MATHEMATICS teaching abilities cannot help certain kids learn.

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|--------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| MY RESPONSE TODAY: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Teacher Belief Instrument

Part B: Instructional Practices Inventory

Directions: For each of the instructional strategies below, please rate from 1 to 5 how ...

FREQUENTLY you use each of the strategies

IMPORTANT you feel each strategy is to effective teaching

PREPARED you feel in using each strategy

24. Have students investigate real-world problems.

24a. Frequency

| | Never | Rarely | Sometimes | Frequently |
|--------------------|-------|--------|-----------|------------|
| MY RESPONSE TODAY: | 1 | 2 | 3 | 4 |

24b. Importance

| | Not Important | Somewhat Important | Important | Very Important |
|--------------------|---------------|--------------------|-----------|----------------|
| MY RESPONSE TODAY: | 1 | 2 | 3 | 4 |

24c. Preparedness

| | Not Prepared | Somewhat Prepared | Prepared | Very Prepared |
|--------------------|--------------|-------------------|----------|---------------|
| MY RESPONSE TODAY: | 1 | 2 | 3 | 4 |

25. Have students make connections between science/mathematics and other disciplines.

25a. Frequency

| | Never | Rarely | Sometimes | Frequently |
|--------------------|-------|--------|-----------|------------|
| MY RESPONSE TODAY: | 1 | 2 | 3 | 4 |

25b. Importance

| | Not Important | Somewhat Important | Important | Very Important |
|--------------------|---------------|--------------------|-----------|----------------|
| MY RESPONSE TODAY: | 1 | 2 | 3 | 4 |

25c. Preparedness

| | Not Prepared | Somewhat Prepared | Prepared | Very Prepared |
|--------------------|--------------|-------------------|----------|---------------|
| MY RESPONSE TODAY: | 1 | 2 | 3 | 4 |

26. Require students to supply evidence to support their claims or explain their reasoning when giving an answer.

Teacher Belief Instrument

26a. Frequency

| | Never | Rarely | Sometimes | Frequently |
|--------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| MY RESPONSE TODAY: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

26b. Importance

| | Not Important | Somewhat Important | Important | Very Important |
|--------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| MY RESPONSE TODAY: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

26c. Preparedness

| | Not Prepared | Somewhat Prepared | Prepared | Very Prepared |
|--------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| MY RESPONSE TODAY: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

27. Ask students to discuss alternative conclusions or consider alternative methods for solutions.

27a. Frequency

| | Never | Rarely | Sometimes | Frequently |
|--------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| MY RESPONSE TODAY: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

27b. Importance

| | Not Important | Somewhat Important | Important | Very Important |
|--------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| MY RESPONSE TODAY: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

27c. Preparedness

| | Not Prepared | Somewhat Prepared | Prepared | Very Prepared |
|--------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| MY RESPONSE TODAY: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

28. Have students write to learn science/mathematics.

28a. Frequency

| | Never | Rarely | Sometimes | Frequently |
|--------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| MY RESPONSE TODAY: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

28b. Importance

| | Not Important | Somewhat Important | Important | Very Important |
|--------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| MY RESPONSE TODAY: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Teacher Belief Instrument

28c. Preparedness

| | Not Prepared | Somewhat Prepared | Prepared | Very Prepared |
|-------------|--------------|-------------------|----------|---------------|
| MY RESPONSE | jq | jq | jq | jq |
| TODAY: | | | | |

29. Engage the whole class in discussions based on science/mathematics concepts.

29a. Frequency

| | Never | Rarely | Sometimes | Frequently |
|-------------|-------|--------|-----------|------------|
| MY RESPONSE | jq | jq | jq | jq |
| TODAY: | | | | |

29b. Importance

| | Not Important | Somewhat Important | Important | Very Important |
|-------------|---------------|--------------------|-----------|----------------|
| MY RESPONSE | jq | jq | jq | jq |
| TODAY: | | | | |

29c. Preparedness

| | Not Prepared | Somewhat Prepared | Prepared | Very Prepared |
|-------------|--------------|-------------------|----------|---------------|
| MY RESPONSE | jq | jq | jq | jq |
| TODAY: | | | | |

30. Ask students to explain concepts to one another.

30a. Frequency

| | Never | Rarely | Sometimes | Frequently |
|-------------|-------|--------|-----------|------------|
| MY RESPONSE | jq | jq | jq | jq |
| TODAY: | | | | |

30b. Importance

| | Not Important | Somewhat Important | Important | Very Important |
|-------------|---------------|--------------------|-----------|----------------|
| MY RESPONSE | jq | jq | jq | jq |
| TODAY: | | | | |

30c. Preparedness

| | Not Prepared | Somewhat Prepared | Prepared | Very Prepared |
|-------------|--------------|-------------------|----------|---------------|
| MY RESPONSE | jq | jq | jq | jq |
| TODAY: | | | | |

31. Use reflections written by students to guide instruction.

31a. Frequency

| | Never | Rarely | Sometimes | Frequently |
|-------------|-------|--------|-----------|------------|
| MY RESPONSE | jq | jq | jq | jq |
| TODAY: | | | | |

Teacher Belief Instrument

31b. Importance

| | Not Important | Somewhat Important | Important | Very Important |
|--------------------|---------------|--------------------|-----------|----------------|
| MY RESPONSE TODAY: | jq | jq | jq | jq |

31c. Preparedness

| | Not Prepared | Somewhat Prepared | Prepared | Very Prepared |
|--------------------|--------------|-------------------|----------|---------------|
| MY RESPONSE TODAY: | jq | jq | jq | jq |

32. Differentiate classroom instruction to meet students' learning needs.

32a. Frequency

| | Never | Rarely | Sometimes | Frequently |
|--------------------|-------|--------|-----------|------------|
| MY RESPONSE TODAY: | jq | jq | jq | jq |

32b. Importance

| | Not Important | Somewhat Important | Important | Very Important |
|--------------------|---------------|--------------------|-----------|----------------|
| MY RESPONSE TODAY: | jq | jq | jq | jq |

32c. Preparedness

| | Not Prepared | Somewhat Prepared | Prepared | Very Prepared |
|--------------------|--------------|-------------------|----------|---------------|
| MY RESPONSE TODAY: | jq | jq | jq | jq |

33. Allow students to work at their own pace.

33a. Frequency

| | Never | Rarely | Sometimes | Frequently |
|--------------------|-------|--------|-----------|------------|
| MY RESPONSE TODAY: | jq | jq | jq | jq |

33b. Importance

| | Not Important | Somewhat Important | Important | Very Important |
|--------------------|---------------|--------------------|-----------|----------------|
| MY RESPONSE TODAY: | jq | jq | jq | jq |

33c. Preparedness

| | Not Prepared | Somewhat Prepared | Prepared | Very Prepared |
|--------------------|--------------|-------------------|----------|---------------|
| MY RESPONSE TODAY: | jq | jq | jq | jq |

34. Ask students to use multiple representations (e.g. numeric, graphic, symbolic).

Teacher Belief Instrument

34a. Frequency

| | Never | Rarely | Sometimes | Frequently |
|-------------|-------|--------|-----------|------------|
| MY RESPONSE | jq | jq | jq | jq |
| TODAY: | | | | |

34b. Importance

| | Not Important | Somewhat Important | Important | Very Important |
|-------------|---------------|--------------------|-----------|----------------|
| MY RESPONSE | jq | jq | jq | jq |
| TODAY: | | | | |

34c. Preparedness

| | Not Prepared | Somewhat Prepared | Prepared | Very Prepared |
|-------------|--------------|-------------------|----------|---------------|
| MY RESPONSE | jq | jq | jq | jq |
| TODAY: | | | | |

35. Work collaboratively with other teachers to plan or teach a unit.

35a. Frequency

| | Never | Rarely | Sometimes | Frequently |
|-------------|-------|--------|-----------|------------|
| MY RESPONSE | jq | jq | jq | jq |
| TODAY: | | | | |

35b. Importance

| | Not Important | Somewhat Important | Important | Very Important |
|-------------|---------------|--------------------|-----------|----------------|
| MY RESPONSE | jq | jq | jq | jq |
| TODAY: | | | | |

35c. Preparedness

| | Not Prepared | Somewhat Prepared | Prepared | Very Prepared |
|-------------|--------------|-------------------|----------|---------------|
| MY RESPONSE | jq | jq | jq | jq |
| TODAY: | | | | |

36. Provide opportunities for students to pursue issues/ideas/topics of personal interest.

36a. Frequency

| | Never | Rarely | Sometimes | Frequently |
|-------------|-------|--------|-----------|------------|
| MY RESPONSE | jq | jq | jq | jq |
| TODAY: | | | | |

36b. Importance

| | Not Important | Somewhat Important | Important | Very Important |
|-------------|---------------|--------------------|-----------|----------------|
| MY RESPONSE | jq | jq | jq | jq |
| TODAY: | | | | |

Teacher Belief Instrument

36c. Preparedness

| | Not Prepared | Somewhat Prepared | Prepared | Very Prepared |
|-------------|--------------|-------------------|----------|---------------|
| MY RESPONSE | jq | jq | jq | jq |
| TODAY: | | | | |

37. Assess student learning via performances and projects (performance-based assessments).

37a. Frequency

| | Never | Rarely | Sometimes | Frequently |
|-------------|-------|--------|-----------|------------|
| MY RESPONSE | jq | jq | jq | jq |
| TODAY: | | | | |

37b. Importance

| | Not Important | Somewhat Important | Important | Very Important |
|-------------|---------------|--------------------|-----------|----------------|
| MY RESPONSE | jq | jq | jq | jq |
| TODAY: | | | | |

37c. Preparedness

| | Not Prepared | Somewhat Prepared | Prepared | Very Prepared |
|-------------|--------------|-------------------|----------|---------------|
| MY RESPONSE | jq | jq | jq | jq |
| TODAY: | | | | |

38. Assess student learning via writing.

38a. Frequency

| | Never | Rarely | Sometimes | Frequently |
|-------------|-------|--------|-----------|------------|
| MY RESPONSE | jq | jq | jq | jq |
| TODAY: | | | | |

38b. Importance

| | Not Important | Somewhat Important | Important | Very Important |
|-------------|---------------|--------------------|-----------|----------------|
| MY RESPONSE | jq | jq | jq | jq |
| TODAY: | | | | |

38c. Preparedness

| | Not Prepared | Somewhat Prepared | Prepared | Very Prepared |
|-------------|--------------|-------------------|----------|---------------|
| MY RESPONSE | jq | jq | jq | jq |
| TODAY: | | | | |

Teacher Belief Instrument

Part B: Instructional Practices Inventory (continued)

Directions: For each of the instructional strategies below, please choose the response that best represents how ...

FREQUENTLY you use each of the strategies

IMPORTANT you feel each strategy is to effective teaching

PREPARED you feel in using each strategy

39. Use the community setting, or local environment, as a context for learning.

39a. Frequency

| | Never | Rarely | Sometimes | Frequently |
|--------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| MY RESPONSE TODAY: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

39b. Importance

| | Not Important | Somewhat Important | Important | Very Important |
|--------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| MY RESPONSE TODAY: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

39c. Preparedness

| | Not Prepared | Somewhat Prepared | Prepared | Very Prepared |
|--------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| MY RESPONSE TODAY: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

40. Allow students to construct their own understandings.

40a. Frequency

| | Never | Rarely | Sometimes | Frequently |
|--------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| MY RESPONSE TODAY: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

40b. Importance

| | Not Important | Somewhat Important | Important | Very Important |
|--------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| MY RESPONSE TODAY: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

40c. Preparedness

| | Not Prepared | Somewhat Prepared | Prepared | Very Prepared |
|--------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| MY RESPONSE TODAY: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

41. Provide students with concrete experience before abstract concepts.

Teacher Belief Instrument

41a. Frequency

| | Never | Rarely | Sometimes | Frequently |
|-------------|-------|--------|-----------|------------|
| MY RESPONSE | jñ | jñ | jñ | jñ |
| TODAY: | | | | |

41b. Importance

| | Not Important | Somewhat Important | Important | Very Important |
|-------------|---------------|--------------------|-----------|----------------|
| MY RESPONSE | jñ | jñ | jñ | jñ |
| TODAY: | | | | |

41c. Preparedness

| | Not Prepared | Somewhat Prepared | Prepared | Very Prepared |
|-------------|--------------|-------------------|----------|---------------|
| MY RESPONSE | jñ | jñ | jñ | jñ |
| TODAY: | | | | |

42. Develop students' conceptual understanding vs. memorization of facts.

42a. Frequency

| | Never | Rarely | Sometimes | Frequently |
|-------------|-------|--------|-----------|------------|
| MY RESPONSE | jñ | jñ | jñ | jñ |
| TODAY: | | | | |

42b. Importance

| | Not Important | Somewhat Important | Important | Very Important |
|-------------|---------------|--------------------|-----------|----------------|
| MY RESPONSE | jñ | jñ | jñ | jñ |
| TODAY: | | | | |

42c. Preparedness

| | Not Prepared | Somewhat Prepared | Prepared | Very Prepared |
|-------------|--------------|-------------------|----------|---------------|
| MY RESPONSE | jñ | jñ | jñ | jñ |
| TODAY: | | | | |

43. Take students' prior knowledge into account when planning lessons.

43a. Frequency

| | Never | Rarely | Sometimes | Frequently |
|-------------|-------|--------|-----------|------------|
| MY RESPONSE | jñ | jñ | jñ | jñ |
| TODAY: | | | | |

43b. Importance

| | Not Important | Somewhat Important | Important | Very Important |
|-------------|---------------|--------------------|-----------|----------------|
| MY RESPONSE | jñ | jñ | jñ | jñ |
| TODAY: | | | | |

Teacher Belief Instrument

43c. Preparedness

| | Not Prepared | Somewhat Prepared | Prepared | Very Prepared |
|-------------|--------------|-------------------|----------|---------------|
| MY RESPONSE | jq | jq | jq | jq |
| TODAY: | | | | |

44. Have students work in cooperate/collaborative learning groups.

44a. Frequency

| | Never | Rarely | Sometimes | Frequently |
|-------------|-------|--------|-----------|------------|
| MY RESPONSE | jq | jq | jq | jq |
| TODAY: | | | | |

44b. Importance

| | Not Important | Somewhat Important | Important | Very Important |
|-------------|---------------|--------------------|-----------|----------------|
| MY RESPONSE | jq | jq | jq | jq |
| TODAY: | | | | |

44c. Preparedness

| | Not Prepared | Somewhat Prepared | Prepared | Very Prepared |
|-------------|--------------|-------------------|----------|---------------|
| MY RESPONSE | jq | jq | jq | jq |
| TODAY: | | | | |

45. Have students develop, implement and revise a design process.

45a. Frequency

| | Never | Rarely | Sometimes | Frequently |
|-------------|-------|--------|-----------|------------|
| MY RESPONSE | jq | jq | jq | jq |
| TODAY: | | | | |

45b. Importance

| | Not Important | Somewhat Important | Important | Very Important |
|-------------|---------------|--------------------|-----------|----------------|
| MY RESPONSE | jq | jq | jq | jq |
| TODAY: | | | | |

45c. Preparedness

| | Not Prepared | Somewhat Prepared | Prepared | Very Prepared |
|-------------|--------------|-------------------|----------|---------------|
| MY RESPONSE | jq | jq | jq | jq |
| TODAY: | | | | |

46. Engage students in inquiry and/or problem-solving activities.

46a. Frequency

| | Never | Rarely | Sometimes | Frequently |
|-------------|-------|--------|-----------|------------|
| MY RESPONSE | jq | jq | jq | jq |
| TODAY: | | | | |

Teacher Belief Instrument

46b. Importance

| | Not Important | Somewhat Important | Important | Very Important |
|-------------|---------------|--------------------|-----------|----------------|
| MY RESPONSE | jq | jq | jq | jq |
| TODAY: | | | | |

46c. Preparedness

| | Not Prepared | Somewhat Prepared | Prepared | Very Prepared |
|-------------|--------------|-------------------|----------|---------------|
| MY RESPONSE | jq | jq | jq | jq |
| TODAY: | | | | |

47. Have students prepare project/lab/research reports.

47a. Frequency

| | Never | Rarely | Sometimes | Frequently |
|-------------|-------|--------|-----------|------------|
| MY RESPONSE | jq | jq | jq | jq |
| TODAY: | | | | |

47b. Importance

| | Not Important | Somewhat Important | Important | Very Important |
|-------------|---------------|--------------------|-----------|----------------|
| MY RESPONSE | jq | jq | jq | jq |
| TODAY: | | | | |

47c. Preparedness

| | Not Prepared | Somewhat Prepared | Prepared | Very Prepared |
|-------------|--------------|-------------------|----------|---------------|
| MY RESPONSE | jq | jq | jq | jq |
| TODAY: | | | | |

48. Have students use appropriate educational technology (e.g., calculators, computers, electronic probes, Internet-based scientific data sets).

48a. Frequency

| | Never | Rarely | Sometimes | Frequently |
|-------------|-------|--------|-----------|------------|
| MY RESPONSE | jq | jq | jq | jq |
| TODAY: | | | | |

48b. Importance

| | Not Important | Somewhat Important | Important | Very Important |
|-------------|---------------|--------------------|-----------|----------------|
| MY RESPONSE | jq | jq | jq | jq |
| TODAY: | | | | |

48c. Preparedness

| | Not Prepared | Somewhat Prepared | Prepared | Very Prepared |
|-------------|--------------|-------------------|----------|---------------|
| MY RESPONSE | jq | jq | jq | jq |
| TODAY: | | | | |

49. Have students use science/mathematics instructional manipulatives, supplies and/or equipment.

Teacher Belief Instrument

49a. Frequency

| | Never | Rarely | Sometimes | Frequently |
|-------------|-----------------------|-----------------------|-----------------------|-----------------------|
| MY RESPONSE | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| TODAY: | | | | |

49b. Importance

| | Not Important | Somewhat Important | Important | Very Important |
|-------------|-----------------------|-----------------------|-----------------------|-----------------------|
| MY RESPONSE | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| TODAY: | | | | |

49c. Preparedness

| | Not Prepared | Somewhat Prepared | Prepared | Very Prepared |
|-------------|-----------------------|-----------------------|-----------------------|-----------------------|
| MY RESPONSE | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| TODAY: | | | | |

50. Ask students to apply science/mathematics in a variety of contexts.

50a. Frequency

| | Never | Rarely | Sometimes | Frequently |
|-------------|-----------------------|-----------------------|-----------------------|-----------------------|
| MY RESPONSE | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| TODAY: | | | | |

50b. Importance

| | Not Important | Somewhat Important | Important | Very Important |
|-------------|-----------------------|-----------------------|-----------------------|-----------------------|
| MY RESPONSE | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| TODAY: | | | | |

50c. Preparedness

| | Not Prepared | Somewhat Prepared | Prepared | Very Prepared |
|-------------|-----------------------|-----------------------|-----------------------|-----------------------|
| MY RESPONSE | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| TODAY: | | | | |

51. Use informal questioning to assess student understanding.

51a. Frequency

| | Never | Rarely | Sometimes | Frequently |
|-------------|-----------------------|-----------------------|-----------------------|-----------------------|
| MY RESPONSE | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| TODAY: | | | | |

51b. Importance

| | Not Important | Somewhat Important | Important | Very Important |
|-------------|-----------------------|-----------------------|-----------------------|-----------------------|
| MY RESPONSE | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| TODAY: | | | | |

Teacher Belief Instrument

51c. Preparedness

| | Not Prepared | Somewhat Prepared | Prepared | Very Prepared |
|-------------|--------------|-------------------|----------|---------------|
| MY RESPONSE | jq | jq | jq | jq |
| TODAY: | | | | |

52. Have students use feedback to revise their work.

52a. Frequency

| | Never | Rarely | Sometimes | Frequently |
|-------------|-------|--------|-----------|------------|
| MY RESPONSE | jq | jq | jq | jq |
| TODAY: | | | | |

52b. Importance

| | Not Important | Somewhat Important | Important | Very Important |
|-------------|---------------|--------------------|-----------|----------------|
| MY RESPONSE | jq | jq | jq | jq |
| TODAY: | | | | |

52c. Preparedness

| | Not Prepared | Somewhat Prepared | Prepared | Very Prepared |
|-------------|--------------|-------------------|----------|---------------|
| MY RESPONSE | jq | jq | jq | jq |
| TODAY: | | | | |

53. Have students keep a notebook to organize their learning (summarize main ideas, record/analyze data, etc.).

53a. Frequency

| | Never | Rarely | Sometimes | Frequently |
|-------------|-------|--------|-----------|------------|
| MY RESPONSE | jq | jq | jq | jq |
| TODAY: | | | | |

53b. Importance

| | Not Important | Somewhat Important | Important | Very Important |
|-------------|---------------|--------------------|-----------|----------------|
| MY RESPONSE | jq | jq | jq | jq |
| TODAY: | | | | |

53c. Preparedness

| | Not Prepared | Somewhat Prepared | Prepared | Very Prepared |
|-------------|--------------|-------------------|----------|---------------|
| MY RESPONSE | jq | jq | jq | jq |
| TODAY: | | | | |

54. Plan classroom instruction and/or assessment using the state or national standards for science/mathematics.

54a. Frequency

| | Never | Rarely | Sometimes | Frequently |
|-------------|-------|--------|-----------|------------|
| MY RESPONSE | jq | jq | jq | jq |
| TODAY: | | | | |

Teacher Belief Instrument

54b. Importance

| | Not Important | Somewhat Important | Important | Very Important |
|--------------------------|---------------|--------------------|-----------|----------------|
| MY RESPONSE TODAY: | jq | jq | jq | jq |

54c. Preparedness

| | Not Prepared | Somewhat Prepared | Prepared | Very Prepared |
|--------------------------|--------------|-------------------|----------|---------------|
| MY RESPONSE TODAY: | jq | jq | jq | jq |

Teacher Belief Instrument

Demographic Information

Please indicate your gender.

Male

Female

Which of the following best describes your teaching status?

In-service teacher

Pre-service teacher

Substitute teacher

School administrator

What subjects do you teach?

Science

Mathematics

Both

What grade level(s) do you teach?

Kindergarten

7

1

8

2

9

3

10

4

11

5

12

6

N/A

Please enter the name of your:

School Building

School District

How many years have you taught?

Approximately how many students are you teaching this year?

Teacher Belief Instrument

Approximately how many hours per week do you spend teaching:

Science?

Mathematics?

What is the highest degree you have earned?

Bachelor's

Specialist's

Master's

Doctorate

Other (please specify)

What was your undergraduate degree major?

Early Childhood/Elementary Education

Middle Childhood Education

AYA/Secondary Education

Special Education

Other (please specify)

What was your concentration for your undergraduate degree?

Science

Mathematics

Social Studies

Language Arts/Reading

Other (please specify)

Teacher Belief Instrument

How many NWO/COSMOS events have you attended this year?

This is the first

Two to three

Four to six

Seven or more

What NWO/COSMOS events did you attend?

How many years have you attended NWO/COSMOS events?

This is my first year

Two years

Three years

Four or more years

Please indicate OTHER professional development in which you've participated.

Technology Attitudes and Usage Survey

Your Unique Code

Hello USE-IT teachers!

Thank you for taking the time to complete this survey. Your cooperation is very much appreciated, and your honest input is absolutely invaluable for the continuation of NWO projects like USE-IT.

Please use the drop-down menus to enter your unique code, which will be used to keep track of your responses during the evaluation of this project.

| | First letter of your mother's maiden name | Second letter of your mother's maiden name | Your birth month | Your birth day |
|----------------|---|--|----------------------|----------------------|
| My Unique Code | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |

Which types of instructional technology do you have easy access to in your classroom or school building?

Check all that apply.

- Interactive Whiteboard (e.g., SMARTBoard)
- Document Camera
- Wireless Slate (e.g., Airliner)
- Student Response System (e.g., Senteo, TurningPoint, CPS)
- Computer
- Internet
- Podcasting equipment (e.g., microphone, voice recording software)
- Digital Camera
- DVD player
- Video recording equipment (e.g., video camera)

Technology Attitudes and Usage Survey

Self-Efficacy Beliefs About Technology Integration

Directions: Please indicate the degree to which you agree or disagree with each statement below by checking the appropriate category for each statement.

1. I am continually finding better ways to use technology in my classroom.

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|--------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| MY RESPONSE: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

2. I know the steps that are necessary to effectively integrate technology into my classroom lessons.

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|--------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| MY RESPONSE: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

3. I am not very effective at monitoring my students' use of technology in the classroom.

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|--------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| MY RESPONSE: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

4. I understand instructional technology well enough to be able to effectively use technology in my classroom.

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|--------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| MY RESPONSE: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

5. I find it difficult to help students who have trouble using technology in my classroom.

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|--------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| MY RESPONSE: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

6. I do not know what to do to get students excited about using technology.

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|--------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| MY RESPONSE: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

7. I know how to use technology to enhance my classroom lessons.

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|--------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| MY RESPONSE: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

8. I wonder if I have the necessary skills to integrate technology into my classroom lessons.

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|--------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| MY RESPONSE: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

9. I am typically able to answer my students' questions about using technology in the classroom.

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|--------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| MY RESPONSE: | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Technology Attitudes and Usage Survey

10. I know how to use technology to get my students more excited to learn.

Strongly Disagree

Disagree

Neutral

Agree

Strongly Agree

MY RESPONSE:

ja

ja

ja

ja

ja

Technology Attitudes and Usage Survey

Instructional Technology Integration Scale

Directions: For each type of instructional technology listed below, please rate how ...

FAMILIAR you are with the technology (what it is, how it is used, etc.)

FREQUENTLY you use the technology in your classroom

USEFUL you feel the technology is for teaching and learning

PREPARED you feel to use the technology in your classroom

11. Interactive Whiteboard (e.g., SMARTBoard)

11A) FAMILIARITY

| | Not Familiar | Somewhat Familiar | Familiar | Very Familiar |
|--------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Please choose a category | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

11B) FREQUENCY

| | Never | Rarely | Sometimes | Frequently |
|--------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Please choose a category | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

11C) USEFULNESS

| | Not Useful | Somewhat Useful | Useful | Very Useful |
|--------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Please choose a category | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

11D) PREPAREDNESS

| | Not Prepared | Somewhat Prepared | Prepared | Very Prepared |
|--------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Please choose a category | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

12. Document Camera

12A) FAMILIARITY

| | Not Familiar | Somewhat Familiar | Familiar | Very Familiar |
|--------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Please choose a category | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

12B) FREQUENCY

| | Never | Rarely | Sometimes | Frequently |
|--------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Please choose a category | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

12C) USEFULNESS

| | Not Useful | Somewhat Useful | Useful | Very Useful |
|--------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Please choose a category | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Technology Attitudes and Usage Survey

12D) PREPAREDNESS

| | Not Prepared | Somewhat Prepared | Prepared | Very Prepared |
|--------------------------|--------------|-------------------|----------|---------------|
| Please choose a category | jq | jq | jq | jq |

13. Website Building/Management

13A) FAMILIARITY

| | Not Familiar | Somewhat Familiar | Familiar | Very Familiar |
|--------------------------|--------------|-------------------|----------|---------------|
| Please choose a category | jq | jq | jq | jq |

13B) FREQUENCY

| | Never | Rarely | Sometimes | Frequently |
|--------------------------|-------|--------|-----------|------------|
| Please choose a category | jq | jq | jq | jq |

13C) USEFULNESS

| | Not Useful | Somewhat Useful | Useful | Very Useful |
|--------------------------|------------|-----------------|--------|-------------|
| Please choose a category | jq | jq | jq | jq |

13D) PREPAREDNESS

| | Not Prepared | Somewhat Prepared | Prepared | Very Prepared |
|--------------------------|--------------|-------------------|----------|---------------|
| Please choose a category | jq | jq | jq | jq |

14. Podcasting

14A) FAMILIARITY

| | Not Familiar | Somewhat Familiar | Familiar | Very Familiar |
|--------------------------|--------------|-------------------|----------|---------------|
| Please choose a category | jq | jq | jq | jq |

14B) FREQUENCY

| | Never | Rarely | Sometimes | Frequently |
|--------------------------|-------|--------|-----------|------------|
| Please choose a category | jq | jq | jq | jq |

14C) USEFULNESS

| | Not Useful | Somewhat Useful | Useful | Very Useful |
|--------------------------|------------|-----------------|--------|-------------|
| Please choose a category | jq | jq | jq | jq |

14D) PREPAREDNESS

| | Not Prepared | Somewhat Prepared | Prepared | Very Prepared |
|--------------------------|--------------|-------------------|----------|---------------|
| Please choose a category | jq | jq | jq | jq |

15. Google Sites (e.g., Google Earth, Google Maps, iGoogle)

15A) FAMILIARITY

| | Not Familiar | Somewhat Familiar | Familiar | Very Familiar |
|--------------------------|--------------|-------------------|----------|---------------|
| Please choose a category | jq | jq | jq | jq |

Technology Attitudes and Usage Survey

15B) FREQUENCY

| | Never | Rarely | Sometimes | Frequently |
|--------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Please choose a category | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

15C) USEFULNESS

| | Not Useful | Somewhat Useful | Useful | Very Useful |
|--------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Please choose a category | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

15D) PREPAREDNESS

| | Not Prepared | Somewhat Prepared | Prepared | Very Prepared |
|--------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Please choose a category | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

16. Blogs/wikis

16A) FAMILIARITY

| | Not Familiar | Somewhat Familiar | Familiar | Very Familiar |
|--------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Please choose a category | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

16B) FREQUENCY

| | Never | Rarely | Sometimes | Frequently |
|--------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Please choose a category | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

16C) USEFULNESS

| | Not Useful | Somewhat Useful | Useful | Very Useful |
|--------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Please choose a category | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

16D) PREPAREDNESS

| | Not Prepared | Somewhat Prepared | Prepared | Very Prepared |
|--------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Please choose a category | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

17. Social networking tools (e.g., Facebook, Twitter)

17A) FAMILIARITY

| | Not Familiar | Somewhat Familiar | Familiar | Very Familiar |
|--------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Please choose a category | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

17B) FREQUENCY

| | Never | Rarely | Sometimes | Frequently |
|--------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Please choose a category | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

17C) USEFULNESS

| | Not Useful | Somewhat Useful | Useful | Very Useful |
|--------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Please choose a category | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Technology Attitudes and Usage Survey

17D) PREPAREDNESS

| | Not Prepared | Somewhat Prepared | Prepared | Very Prepared |
|--------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Please choose a category | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

18. Movie Making

18A) FAMILIARITY

| | Not Familiar | Somewhat Familiar | Familiar | Very Familiar |
|--------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Please choose a category | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

18B) FREQUENCY

| | Never | Rarely | Sometimes | Frequently |
|--------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Please choose a category | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

18C) USEFULNESS

| | Not Useful | Somewhat Useful | Useful | Very Useful |
|--------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Please choose a category | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

18D) PREPAREDNESS

| | Not Prepared | Somewhat Prepared | Prepared | Very Prepared |
|--------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Please choose a category | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

19. Online Resources (e.g., educational games, simulations)

19A) FAMILIARITY

| | Not Familiar | Somewhat Familiar | Familiar | Very Familiar |
|--------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Please choose a category | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

19B) FREQUENCY

| | Never | Rarely | Sometimes | Frequently |
|--------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Please choose a category | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

19C) USEFULNESS

| | Not Useful | Somewhat Useful | Useful | Very Useful |
|--------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Please choose a category | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

19D) PREPAREDNESS

| | Not Prepared | Somewhat Prepared | Prepared | Very Prepared |
|--------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Please choose a category | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

20. Student Response System (e.g., Senteo, TurningPoint, CPS)

20A) FAMILIARITY

| | Not Familiar | Somewhat Familiar | Familiar | Very Familiar |
|--------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Please choose a category | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Technology Attitudes and Usage Survey

20B) FREQUENCY

| | Never | Rarely | Sometimes | Frequently |
|--------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Please choose a category | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

20C) USEFULNESS

| | Not Useful | Somewhat Useful | Useful | Very Useful |
|--------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Please choose a category | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

20D) PREPAREDNESS

| | Not Prepared | Somewhat Prepared | Prepared | Very Prepared |
|--------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Please choose a category | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

February 18 Inquiry Series Evaluation

Default Section

In order to plan better for future NWO activities, we would be grateful to receive your comments on the February 18 NWO Inquiry Series. Kindly complete this short questionnaire to share your views with us. At the end of the survey, you can provide your name and email address to enter the drawing for a DOOR PRIZE! You can also request a contact hour (CEU) certificate. Your information is required if you want to enter the drawing and/or receive a certificate.



Northwest Ohio Center of Excellence
in Science and Mathematics Education



1. What NWO project are you enrolled in?

Please note: the Inquiry Series is not considered an "NWO project".

DREAMS

Project Pi r2(squared)

USE-IT

I'm not enrolled in an NWO project

Other (please specify)

2. Which of the following best describes your current status?

Undergraduate student

PreK-12 teacher

University/College faculty

School administrator

Other (please specify)

February 18 Inquiry Series Evaluation

3. If you are a student, please tell us your major and concentration.

What is your major?

What is your concentration?

4. What STEM subjects do you teach? Choose all that apply.

- Science
- Math
- Technology
- None of these

5. Do you teach special education?

Yes

No

6. How many years have you been teaching?

If you are a student, you can enter "0".

Please enter numbers only.

7. Please choose the category that best represents the grade level(s) you teach.

If you cannot fit yourself into one of the categories, please choose "other" and tell us the grade levels you teach.

If you currently do not teach, please choose N/A.

Pre-Kindergarten to 4th grade

5th grade to 8th grade

9th grade to 12th grade

N/A

Other (please specify)

February 18 Inquiry Series Evaluation

8. Which session did you attend?

USE-IT (3-8) [Presenters: Betsy Hood; Charlene Patten]

Technology Integration in STEM Education (K-12) [Presenter: Carrie Rathsack] Technology Integration in STEM Education (K-12) [Presenter: Carrie Rathsack]

Using Community Resources (K-12) [Presenters: Varies by month]

Physical Sciences Modeling (9-12) [Presenters: Ash; Hafemann]

Exploring Inquiry in High School Biology (9-12) [Presenter: Underwood]

Exploring Elementary Math Topics (K-6) [Presenter: Amy Boros]

What is a Number? (9-12) [Presenter: David Meel]

Experiencing Engineering is Elementary (K-6) [Presenters: Cherie Pilatowski; Julie Campbell]

Project pi r2 (K-8)

February 18 Inquiry Series Evaluation

For each of the statements below regarding the session you attended, please choose the category that best describes your level of agreement/disagreement with the statement.

9. The session met my expectations.

Disagree Somewhat Disagree Somewhat Agree Agree

Comments:

10. The session was engaging.

Disagree Somewhat Disagree Somewhat Agree Agree

Comments:

11. The content/information presented during the session was valuable to me.

Disagree Somewhat Disagree Somewhat Agree Agree

Comments:

12. I learned something new from the session.

Disagree Somewhat Disagree Somewhat Agree Agree

Comments:

13. I will incorporate the content/information from the session into my classroom lessons. If you do not teach, please choose N/A.

Disagree Somewhat Disagree Somewhat Agree Agree N/A

Comments:

February 18 Inquiry Series Evaluation

14. Attending the session made me feel more confident about teaching science, technology, engineering, and/or math. If you do not teach, please choose N/A.

Disagree

Somewhat
Disagree

Somewhat Agree

Agree

N/A

Comments:

15. Attending the session made me feel more excited about teaching science, technology, engineering, and/or math. If you do not teach, please choose N/A.

Disagree

Somewhat
Disagree

Somewhat Agree

Agree

N/A

Comments:

16. If you would like to be entered into the door prize raffle AND/OR receive a contact hour (CEU) certificate, please provide the following information.

First name:

Last name:

Email Address:

17. Would you like to be entered in the door prize raffle?
Please remember, you must enter your information above if you choose "yes".

Yes

No

18. Would you like to receive a contact hour (CEU) certificate?
Please remember, you must enter your information above if you choose "yes".

Yes

No

Thank you! Your responses will help NWO continue to provide valuable resources to the educational community!

BGSU USE-IT Professional Development Series
Session 2 November 7, 2009
Integrating 21st Century Skills and Google Earth

Session Outcomes:

Teachers will:

- Increase understanding of 21st century learning concepts and how these skills/themes can be integrated within classroom instruction.
- Continue development of classroom website to support communication and collaborative classroom learning via hands-on interaction with the technology.
- Identify implementation strategies for effectively utilizing web sites in the classroom through exploration and best practice sharing
- Increase comfort level and ability to creatively use classroom web sites to promote communication and collaboration among teachers, students and parents.
- Gain an understanding of Google Earth including where to find the free download, manipulating the interface, and Google Earth's use in the classroom
- Participate in a real time collaboration using Google Earth and Google Maps
- Explore curricular integration ideas, including teacher discussions and an exploration of the content rich Google Layers application of Google Earth

Session Agenda:

- Review 21st Century Skills...What are they and what does it mean to me as a teacher?
- Partnership for 21st Century Skills – The Framework
- Google Sites Review
- Google Earth & Maps
- Classroom Applications and Integration Strategies for Google Earth

OACS Alignment:

- Technology

Grades 3-5 Standard 3: Technology for Productivity Applications

Benchmark C: Use productivity tools to produce creative works and prepare publications.

Grades 3-5 Standard 4: Technology and Communication Applications

Benchmark A: Identify the concepts and operations of communication systems.

Benchmark B: Develop, publish and present information in print and digital formats.

- Technology

Grades 6-8: Standard 3: Technology for Productivity Applications

Benchmark C: Use productivity tools to produce creative works, to prepare publications and to construct technology-enhanced models.

Grades 6-8: Standard 4: Technology and Communication Applications

Benchmark A. Communicate information technologically and incorporate principles of design into the creation of messages and communication products.

- Science

Grades 3-5: Scientific Inquiry

Benchmark B: Organize and evaluate observations, measurements and other data to formulate inferences and conclusions.