

A. Structured plan for professional development

The PV STEMNET proposes to deliver a professional development experience for in-service educators that will extend their knowledge and pedagogy of infusing imaging technology into core academic courses. By imaging technology we mean the use of some device to capture images, computer software to manipulate the images in some way, and some way to present the images to others as information. The program will provide the participating teachers with the camera and software, train them in the use of the software, and provide them with the knowledge needed to use imaging technology across the curriculum. Teachers will introduce the use of imaging technology to their students as a digital tool that will increase their information technology fluency.

As a result of their participation in TI³CL, teachers will:

- Increase their skills in the use of computer applications. Primarily among these will be Photoshop Elements, but also they will increase their skills in using communication, word processing, and presentation software as they learn to use digital images in them;
- Increase their fundamental knowledge of information technology in the ways in which digital images are formed and processed as information to be used in classrooms; and
- Increase their capabilities to use information technology in the classroom through the incorporation of imaging technology into their lessons. Because it has been shown repeatedly that the incorporation of new methods into teachers' practice is the most difficult outcome of professional development programs (Bransford, Brown, & Cocking, 1999), TI³CL will support teachers' implementation efforts with collaborative action research (Feldman & Capobianco, 2000).

The Teachers Implementing Imaging and Imagery for Classroom Learning (TI³CL) project is designed to help teachers meet the National Educational Technology Standards for Teachers (ISTE, 2002). Due to space limitations in this proposal it is not possible to demonstrate in detail how the program addresses each standard. Instead, TI³CL activities that support the NETS standards are labeled as NETS-1, NETS-2, and so on.

Overview of TI³CL activities

Spring 2005 – Workshop development

During the spring 2005 four lead teachers will be selected from among the participating school districts in the Pioneer Valley. Lead teachers will be classroom teachers who use imaging technology in their teaching. As "early adopters" of this technology, their classroom use will be a subset of the "promising practices" that will be used as exemplars for the summer workshop. TI³CL goal is to have a group of lead teachers whose teaching spans the range of grade levels and subject areas. During the spring the Lead Teachers will work with the Workshop Instructors to develop the summer workshop. Also during this time 26 additional teachers will be recruited to participate in the summer workshop and academic year follow-up activities.

Summer 2005 – Workshop implementation

TI³CL intends to offer the same workshop twice during the summer, once in the southern part of the region and once in the north. The workshops will run for five days with six hours of instruction time per day. In addition to the Lead Teachers there will be 13 Participating Teachers in each workshop for a total of 30 teachers. District and/or school Technology Coordinators will

be invited to participate in the workshops but will not receive stipends or equipment. However, there will be a 1/2-day Technology Coordinator meeting held during each of the workshops to gain the support of the Coordinators for the infusion of imaging technology into their schools. Lead Teachers and Participating Teachers will be required to submit, by August 24, 2005 a plan to TI³CL of how they will incorporate imaging technology into their teaching during the fall 2005 semester (NETS-1,2,3,4,5,6).

The RIPPLES Group (Department of Computer Science, UMass Amherst) will film selected sessions of the two workshops, synchronizing the video with any Power Point presentations being shown and produce a single CD containing approximately 7 hours of video with indexed slides. The captured material will be provided to the teacher participants as a reference aiding them as they move to the next step of lesson preparation and poster presentation. It will also be available for them to handout to other teachers within their school districts and for use in future workshops. By capturing the summer workshop instruction and presentations and archiving them for future reference and education, the summer workshops go beyond being one-time events.

Fall 2005 and Spring 2006– Lesson implementation and action research

Fall 2005 and spring 2006 activities are described in detail in section D below.

B. Examples of promising practices in the region and teachers who use them

Career Counseling (Gail Canon, Easthampton HS)

Digital portfolios (Mary Rogers, Easthampton HS; Mary Farrin, Michael E. Smith MS)

Documentation of student work (Susan Cagan, Converse MS; Donna Cycz, Green River School)

Early literacy education (Joy Ann Ramnarine, Milton Bradley Elementary School; Susan Wright, Warwick Community School)

Graphic Communications (Kathryn Chandler, Southwick-Tolland Regional HS; Gayle Begley and Robert Farrell, Putnam Vocational Technical HS; Bob Mullay, White Brook MS)

Literacy Education and digital photography (Susan Cagan, Converse MS; Jennifer Yellin, Mosier School)

New England history (Mary Farrin, Michael E. Smith MS; Susan Wright, Warwick Community School; Donna Cycz, Green River School)

Photovoice (Allan Feldman, UMass Amherst)

Real world mathematics with digital photographs (Paul Peelle, Easthampton HS; Donna Cycz, Green River School)

Science inquiry (Kathy Chlanda; Michael E. Smith MS; Susan Wright, Warwick Community School; Jennifer Yellin, Mosier School; Cindy Zielenski; Wilbraham MS; Donna Cycz, Green River School)

C. Learning activities

Two workshops will be given to a total of 30 teachers as described in section A above. The main topics of the workshop are techniques of imaging technology, teaching with imaging technology, and action research and evaluation. Teachers will participate as students in two projects. The first is a Photovoice project (Strack, Magill, & McDonagh, 2004). In this project teachers will use photographic images of their school communities to document and reflect on schools as a way to begin the process of incorporating imaging technology into their practice. The lead teachers and the instructors will determine the second project based on the promising practices of the lead teachers. Teachers will also begin the development of the lessons that they will use to implement imaging technology into their teaching. All TI³CL teachers will be eligible for PDPs. Teachers

can elect to enroll in the summer workshop and academic year follow-up activities for 3 graduate credits. The teachers will be able to do this at a cost significantly lower than regular tuition. An outline for the workshop is provided below:

Monday	9 - 10: Welcome Session and program overview 10 - 11: Introduction to camera use: Taking pictures and using some of the camera features (NETS-1). 11 - 12: Technical Basics I. Getting Started with Adobe Photoshop Elements 3.0 Browsing, the desktop: menu bar, short cuts, options bar toolbox, palettes, quick fix (NETS-1). 1 - 3:30: Technical Basics II. Color basics and adjustment, brightness and contrast, rotating, cropping. File formats (NETS-1). 3:30 - 4: Introduction to Project 1 (NETS-2,3,6). HW: Gather Source materials for Project 1 (NETS-2,3).
Tuesday	9 - 10: Supported Work session for Project I (NETS-2,3). 10 - 11:30: Technical Basics III. Pixels and displays; printing; changing image sizes (NETS-1). 11:30 - 12: Incorporating imaging into curricula – Student use of word processing and PowerPoint as tools for projects and reports (NETS-1,2,3). 1 - 2: Introduction to action research methods and evaluation (NETS-4,5). 2 – 3: Lead Teacher Presentation of Project 1 implementation (NETS-2,3). 3 - 4: Technical Q&A, open lab (NETS-1).
Wednesday	9 - 12: Advanced Technical Topics I (with open lab period) image editing, redeye correction, selection tools, re-coloring tools, transparent backgrounds, combining image pieces, and other selected editing tools (NETS-1). 1 - 3: Introduction to Technology Topics II. Using productivity software to incorporate imaging into instructional units. Using Word Processing and presentation software to create effective instructional materials (NETS-1,2,3). 3 - 4: Introduction to Project II (NETS-2,3). HW: Gather Source materials for Project II in class work time (NETS-2,3).
Thursday	9 – 10: Work Time on Project II (NETS-2,3). 10 - 11: Pedagogical approaches for the use of imaging (NETS-2,3). 11 - 12: Advanced Technical Topics II (with open lab period) creating CD's, using Scanners, and Copyright Issues (NETS-1,6). 1 - 2: Lead Teacher Presentation of Project 2 implementation (NETS-2,3). 2 - 3: Introduction to Imaging Technology project (NETS-2,3,4,5,6). 3 - 4: Technical Q&A, open lab (NETS-1). HW: Abstract for Imaging Technology project (NETS-2,3,4,5,6).
Friday	9 - 10:30: Discussion of abstracts (NETS-2,3,4,5,6). 10:45 - 12: Advanced Technical Topics (with open lab period) Creating simple web pages for exhibition of student imaging work and an important discussion on student safety issues for images that are on the web (NETS-1). 1 - 2: Incorporating action research and evaluation into Imaging Technology project (NETS-4,5). 2 - 4: Ethical, legal, and equity issues of using imaging technology (NETS-6).

D. Academic year follow-up activities

Academic year follow-up activities will be divided into two parts. All participants in the summer workshop including the lead teachers will be involved in follow-up activities during the fall semester (September – December). There will be a joint callback session of teachers from both workshops in early September where they will present their imaging technology lesson plans in poster format. Opportunities will be available for teachers to give each other feedback about their lesson designs. All of the information on the posters will be made available on the TI³CL website

hosted by UMassK12. Teachers will be expected to implement their lessons before Thanksgiving and to evaluate their success using instruments developed by the evaluator. The teachers will then modify their lessons based on the data that they collected. These modified lessons, their data, and analysis of their data will be presented at the second callback session in early December. The modified lessons will also be made available on the TI³CL website. The teachers' implementation of imaging technology, their evaluation of it, and the modification of how they use it can be considered one cycle of action research (Feldman, 1996) (NETS-2,3,4,5,6).

A smaller, self-selected group of teachers will continue to work on their implementation of imaging technology during the remainder of the school year. They will engage in at least one more cycle of action research in a collaborative mode facilitated by the evaluator (Feldman & Capobianco, 2000). The purpose of this second round of action research is to help the teachers develop their expertise so that they can lead workshops in their districts and in other venues on the use of imaging technology in K-12 schools (NETS-2,3,4,5,6).

E. Capacity of partnership

TI³CL is a project of the Pioneer Valley PreK-16 Science, Technology, Engineering and Mathematics "Pipeline" Network (PV STEMNET). This proposal was developed collaboratively among Network partners. A first Network-wide meeting was held on 12/9/04 hosted by the Springfield Public Schools. A second meeting was at the Hampshire Educational Collaborative on 12/16/04. Both meetings were announced to all partner institutions through the PV STEMNET listserv and draft documents were posted on the PV STEMNET website for review and comment. A third meeting was held on 12/28/04 by instructors to plan the summer workshop.

PV STEMNET currently consists of 17 school districts; 15 institutions of higher education, and higher education institutes and centers; and twenty-two business and industry partners. TI³CL will be headquartered at the UMass Amherst offices of PV STEMNET under the direction of Prof. Allan Feldman, lead partner of the network. Ms. Kathy Baker, PV STEMNET project manager, will assist him. The summer workshop will be co-taught by Prof. David Gosselin (Elms College), Prof. Morton Sternheim (UMass), and Mr. Doug Wilkins (Greenfield Community College), with assistance from the lead teachers. Teachers will be recruited from the PV STEMNET partner districts, which include high needs districts, e.g., Springfield, Holyoke, , Palmer, and Greenfield.

PV STEMNET believes that the innovative nature of the TI³CL project warrants a study of its implementation and classroom effects. The hope is that if TI³CL is successful it will be possible to get funds for a larger implementation of imaging technology in the region and the state. Therefore, PV STEMNET is allocating some of its resources to continue the evaluation through the 2005-06 academic year.

F. Number of schools, teachers, and students to be affected

Twenty schools, 30 teachers, 2000 students.

G. Evaluation plan

The evaluation of TI³CL will be under the direction of Dr. Tarin Weiss. During spring 2005 the evaluation will focus on the lead teachers. They will be interviewed about their knowledge of information technology and imaging technology, and how they use it in their classrooms. They will also complete a background survey. Their students will complete a survey to measure their information technology fluency. Student demographic data will be collected. Depending on the

results of the student survey it may be modified for its use with students in the fall. In summer 2005 the evaluation will focus on the workshops. Teachers will complete the background survey and an information technology survey at the beginning of the workshop. The information technology survey will be constructed based on the results of the lead teacher interviews. At the end of the workshop teachers will complete a workshop survey that provides feedback on how the workshop was viewed, how valuable the teachers found it, and how they will make use of the material presented. The evaluator will attend the summer workshop and collect field notes. The lessons that the teachers prepare will also be a source of data for the evaluation of the summer workshops. Teachers will complete the information technology survey at the fall callback to measure changes in their knowledge.

The evaluation will continue in the 2005-06 academic year using resources from PV STEMNET. The model to be used is a participatory evaluation using action research (Feldman & Minstrell, 2000; Fetterman & Wandersman, 2004; Quintanilla & Packard, 2002). As described in section D, all teachers will engage in one cycle of action research during fall 2005. The teachers will collect data using the methods described in the CITI RFP. Demographic information will be provided to the evaluator, teachers will survey their students on their reaction to the use of imaging technology and how it affected their learning of subject matter. The evaluator will help the teachers modify standard instruments for use in their classes. In addition, teachers will use the student survey on information technology knowledge developed and modified in spring 2005 as a pre- and post-test to measure their students' learning. Teachers will use this data to modify their lessons, and the data will be shared with the evaluator for use in evaluating the TI³CL project. In spring 2006 a subset of the teachers will continue to engage in action research on their implementation of imaging technology in their classrooms. They will work as a collaborative group facilitated by the evaluator. They will collect the same types of data as during the fall semester, but in addition the evaluator will observe teachers' classes and may have focus group interviews of students. An additional outcome of the spring 2006 action research will be for the teachers to prepare to present workshops on imaging technology to their colleagues using the CD-ROM prepared by the RIPPLES group.

H. Timetable

2/05	Lead teachers selected. Recruitment begins of workshop participants. Workshop instructors and lead teachers begin design of workshop.
3-6/05	Recruitment continues and participants selected by June 1. Workshop design is completed. Evaluator develops instruments and collects lead teacher data and student data.
Summer 2005	Two one-week workshops are given to a total of 30 teachers including lead teachers. Evaluator collects workshop data and background data on workshop participants. Teachers complete their imaging technology implementation plan and submit to TI ³ CL by August 24, 2005.
9/05	First callback session. CD-ROM completed.
10/05	Evaluator completes report of spring and summer activities. Final report delivered to CITI
9-12/05	All teachers participate in action research and evaluation of their implementation of imaging technology. Their lessons are published on the web.
12/05	Second callback session. Teachers submit report of action research and modification of implementation plan.
1-6/06	Collaborative action research facilitated by evaluator. Evaluator will combine results from the teachers' action research into one report. It will be disseminated on the web and at conferences