Teacher Education In Ohio: A Regional Campus' Innovative Response To Professional Development Needs Of Inservice Teachers

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Several years ago, the Ohio State University—Mansfield (OSU–M) was approached by several local school administrators interested in upgrading the skills of their teachers and the achievement of their students. Through these ongoing discussions, three major needs of the schools emerged.

Upgrading Major Skills

One major need was to organize sustained, high–quality professional development in order to meet requirements in curricular reforms and licensure changes from the Ohio Department of Education. School improvement efforts over the last few decades require teachers not only to study, implement, and assess learner outcomes outlined in local, state, and national educational standards but also to provide meaningful and engaged learning to a very diverse student population. Many teachers are expected to understand emerging standards—such as those in mathematics and science—views of learning, and changes to their roles and practices. Teachers who were prepared for their profession prior to the reform movement were not prepared for these new practices and roles. In working toward such change, teachers need to be continually supported with professional development (Cooke, 1997).

A second, more specific need was the improvement of science and mathematics teaching and learning of regional teachers and students respectively, especially traditionally underserved and underrepresented populations. Current educational research provides compelling evidence that students learn best when they are actively engaged with ideas and materials that grow from their experiences and have meaning in their lives (Resnick, 1987; Saunders, 1992). Children enter school with an active interest in themselves and the world around them. The challenge facing elementary educators is to develop approaches that build on the curiosity and questions of children—approaches that nourish their interest and excitement, provide the foundation for further science study and build enthusiasm for science and mathematics that will extend throughout their lives (Streim, Horowitz, Pica, Abel and Parravano, 1995). Of particular concern is the fact that women and minorities, who are rapidly becoming the majority of new entrants in the labor force, are dramatically underrepresented in the fields of science and technology (National Commission on Excellence in Education, 1983). As Ohio's SchoolNet initiative begins to provide connectivity to all schools in the state, the potential for access to educational resources that may not otherwise be available in many rural and financially disadvantaged school systems could be realized.

The third area dealt with specific needs of local teachers surveyed last year. (See Appendix A.) Identified are the use of technology (82%), integrating curricular areas (51%), and using community resources for curriculum enrichment (45%) as three of their greatest needs. (The percentages refer to the portions of the total respondents who identified the three needs.) If our goal is to provide students with a *different* kind of education—structured around the provision of challenging tasks that can prepare them for a technological world—the most relevant uses of technology are as *tools* and *communication channels*. Giving students experiences in selecting appropriate technology tools and in applying technologies such as word processors, spreadsheets, hypermedia, and network searches to their work supports the performance of complex, authentic tasks and provides experiences that prepare students for the world outside of school. These technologies are called *authentic* because students are using them for the same kinds of purposes and in the same ways that adults would use technology outside the school. Technological applications that can be used as tools or as communications vehicles can support any curriculum and can be fully assimilated into a teacher's ongoing core practice (Means, et al., 1993). The fundamental concepts and skills needed for applying technology in education settings have been identified by the National Council for Accreditation of Teacher

Education in their Foundation Standards. (See Appendix B.)

Strategic Goals

The needs of the local schools seemed to relate to three specific short–term strategic goals identified by OSU–M:

1. attempt to meet the needs identified by recent educational needs assessments
2. make increased use of educational technology to enhance the quality and scope of its teaching
3. continue its strong relationship with area school districts through the North Central Ohio Consortium for Mathematics and Science Teaching (NCOCMST) and other means—the goal: to help schools accomplish their mission of producing graduates well–prepared to enter the work force or to pursue higher education

Teacher Academy

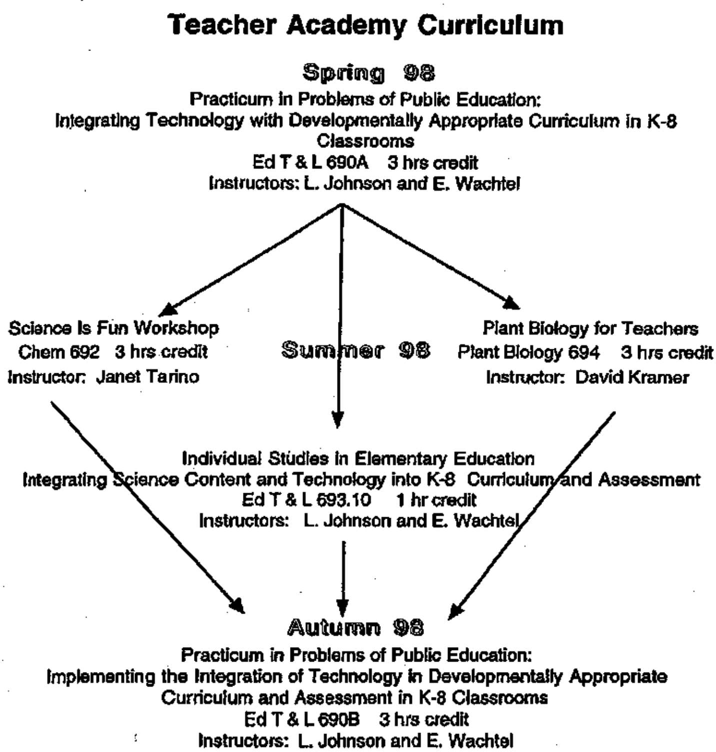
Another major impetus for initiating a program for local teachers was the desire of university faculty from diverse disciplines (education: teaching and learning, mathematics, plant biology, and chemistry) to work together to integrate strong scientific content (physical science and plant biology), the latest technology, and developmentally appropriate curriculum and assessment in a concentrated professional development package: the Teacher Academy. In summary, the main objectives of the Teacher Academy program were first to expand and improve hands–on, inquiry–based science and mathematics education through teacher training, curriculum development, science content enhancement, and development of innovative education materials; and second, to provide training and other resources to assist teachers and students in effectively integrating technology in science and math education.

Teams of at least three teachers per school were considered mandatory in order to achieve a critical mass of teachers within a building to provide ongoing support and to train other interested co–workers. Funding in excess of $250,000 for the nine month program was provided by nine regional K–8 schools, the North Central Professional Development Center (NCRPDC), NCOCMST, and OSU–M.

Forty–three teachers from the nine schools were involved in a three quarter program that initially provided training in the use of communication, productivity, and sense–extending technology (FlexCam, digital balance, dissecting microscope, connectix camera, and plant press; and multimedia, productivity, communication and educational software) to enhance developmentally appropriate science curriculum. This course was co–taught by an OSU–M education, teaching and learning faculty and the NCOCMST director. The school teams then took two summer courses in plant biology and physical and chemical sciences taught by an OSU–M botanist and chemist, respectively. These summer courses were supplemented by a one credit seminar aimed at the appropriate application of science content. Their final quarter of work involved a course that demonstrates how technology can be used to enhance the authentic assessment of K–8 science instruction, including the use of electronic portfolios, again co–taught by the same instructors as the first course. (See **Figure 1**, next page.) Technical assistance related to the implementation of the knowledge and skills developed during the program was provided by the four instructors using e–mail, connectix cameras, phone, and on–site visits. Future plans involve offering a variety of science (geology, ecology, astronomy) and mathematics content courses, and using distance learning techniques.

Currently, the Teacher Academy group is successfully implementing the science content, technology integration, and developmentally appropriate practice acquired during the first year of the Academy. The effectiveness of this professional development program is being evaluated in a variety of ways. Both teachers and their students are being assessed. Teachers have demonstrated proficiency in the actual use of the technological equipment introduced throughout the program as a final course grade requirement. Journals kept throughout the year and a final electronic portfolio were evaluated by their university instructors with regard to how well course objectives for each participant's professional development were realized. The course instructors reinforced this assessment by observing each teacher during scheduled and random

Figure 1



visits to each school. Also, the teachers' students will be evaluated using a program effectiveness criteria of a 10% increase in students passing the mathematics and science subtests of the Ohio 4th and 6th Grade Proficiency Tests after the program has been in place for three years.

Some interesting preliminary findings taken from teacher self–evaluations of their individual technology proficiency growth suggest teachers younger than 30 years of age evaluated their technology proficiency more positively than teachers 30 years of age or older. This finding occurred even though the course instructors observed many of the older teachers to be just as, or more, proficient than many younger teachers who rated themselves higher. Self–reporting journals also suggest that one of the most beneficial and enriching aspects of the program was that team support and collegiality in the school culture were heightened, resulting in a better attitude toward their profession, more collaborative unit writing, sharing of materials, and multiage, interdisciplinary activities. Journal entries also suggest that simply spending concentrated time together helped their professional development, school (team) spirit, and construction of new academic and pedagogical knowledge.

The Teacher Academy was one regional campus' innovative response to the needs of an educational segment of the area that had a long–standing history of collaboration with OSU–M. The project is a good example of how a mutually beneficial situation can be the outgrowth of identified needs of one entity that matches goals or ideas of other entities. The key initiator in this project was the confidence of local schools in expressing their needs to a regional campus and that campus' openness to respond based on the desire of an interdisciplinary faculty group to work and learn together. It would seem that such a Teacher Academy model could be replicated in many other areas of the state, maybe even becoming a trend.

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Appendix A

Professional Development Survey
School Name: ______________________________
Grade Level: ______________________________

1. Please check any of the following topics you would be interested in for professional development during the next year and a half:

_____ use of technology
_____ integrated curriculum
_____ authentic assessment
_____ developmentally appropriate practice
_____ problem–solving
_____ inquiry learning
_____ using community resources for curricular enrichment
_____ implementing state math and science standards
_____ other suggestions?

2. Please check any of the following scheduling strategies you would be interested in for professional development during the next year and a half:

_____ regular college credit courses
_____ one night per week for ten weeks during a quarter

_____ two days per week for five weeks during summer
_____ one full week in the summer
_____ on–site training with regular technical assistance
_____ concentrated inservice with quarterly follow–ups
_____ after school inservice
_____ weekend retreats
_____ other suggestions?

3. Please check the level of technological proficiency that best defines you:

_____ clueless (no experience or knowledge)
_____ novice (uses some technology to support learning)
_____ practitioner (facilitates your students' use of technology)
_____ scholar (uses all aspects of technology in integrated learning projects)
_____ expert (all of above, plus assisting other teachers in their development)

4. Please check any of the following technologies you feel comfortable using:

_____ calculators
_____ four function calculator
_____ scientific calculator
_____ graphing calculator
_____ calculator–based laboratories
_____ electronic scratch pad organizer
_____ videotape
_____ laser disk
_____ CD–ROM
_____ computer
_____ productivity tools (word processing, database, spreadsheets)
_____ connectivity tools (e–mail, Internet, online searches, CU–See–Me)
_____ multimedia (scanner, digital camera, quick–time video)
_____ distance learning, interactive video

Appendix B

NCATE Technology Standards for Teacher Certification

Effective Fall 1995

The Foundation Standards reflect professional studies in education that provide fundamental concepts skills for applying information technology in educational settings. All candidates seeking initial endorsements in teacher preparation programs should receive Foundations that prepare them to:

1. Demonstrate ability to operate a computer system in order to successfully utilize software.
2. Evaluate and use computers and related technologies to support the instructional process.
3. Apply current instructional principles, research, and appropriate assessment practices to the use of computers and related technologies.
4. Explore, evaluate, and use computer and technologically–based materials, including applications, educational software, and associated documentation.
5. Demonstrate knowledge of uses of computers for problem solving, data collection, information management, communications, presentations, and decision making.
6. Design and develop student learning activities that integrate computing and technology for a variety of student grouping strategies and for diverse student populations.
7. Evaluate, select, and integrate computer and technologically–based instruction in the curriculum of one's subject areas and grade levels.
8. Demonstrate knowledge of uses of multimedia, hypermedia, and telecommunications to support instruction.
9. Demonstrate skill in using productivity tools for professional and personal use, including word processing, database, spreadsheet, and print and graphic utilities.
10. Demonstrate knowledge of equity, ethical, legal, and human issues of computing and technology use as they relate to society and model appropriate behaviors.
11. Identify resources for staying current in applications of computing and related technologies in education.
12. Use computer–based technologies to access information to enhance personal and professional productivity.

13. Apply computers and related technologies to facilitate emerging roles of the learner and the educator.

Biographies

Lynn G. Johnson, associate professor of Education Teaching and Learning at Ohio State University—Mansfield, teaches child development, early childhood education, science education, and curriculum courses. He has authored twenty publications, produced a series of eleven videotapes on early childhood special education for the Ohio Department of Education, and made over sixty international, national, and regional presentations. He has been principal or co–investigator for sixteen research and/or training grants that total over $2,000,000. He has been honored twice with the OSU—Mansfield Outstanding Teacher of the Year Award and once with the campus' Excellence in Scholarship Award.

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