DOCUMENT RESUME

ED 444 573 IR 020 229

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TITLE Technology and Beyond: Teachers Learning through Project-Based Partnerships.
PUB DATE 2000-00-00
NOTE 6p.; In: Society for Information Technology & Teacher Education International Conference: Proceedings of SITE 2000 (11th, San Diego, California, February 8-12, 2000). Volumes 1-3; see IR 020 112.
PUB TYPE Reports - Evaluative (142) -- Speeches/Meeting Papers (150)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Computer Uses in Education; Cooperative Learning; *Educational Technology; *Faculty Development; Inservice Teacher Education; Instructional Effectiveness; Models; *Multimedia Instruction; Partnerships in Education; Student Projects; Teacher Surveys; Teaching Methods
IDENTIFIERS *Teacher Partnerships; *Technology Integration

ABSTRACT

Project-Based Teacher Partnerships is a model for teacher professional development to help teachers doing technology-supported project-based learning in the Challenge 2000 Multimedia Project. Experienced teachers team with a small number of less-experienced teachers to form a partnership. The partnership plans a project that the teachers will execute together in all the partners' classrooms. The partnership submits a project proposal to Challenge 2000, and approved proposals are eligible for equipment and software grants and stipends. The partnership model was evaluated using four data sources: a survey of participating teachers; observation of partnership meetings; teacher interviews; and classroom observations. There were three sets of findings. The first set indicated that the model was successful in helping teachers develop in their capacity to use technology and more generally as teachers; evaluation data showed that the model is effective in building technology, pedagogy, and leadership skills and collaboration practices that support teacher learning. The second set provided insight into the aspects of the model that were crucial to its success, including: the application process; focus on a project; self-selected, voluntary, local partners; flexibility; and multimedia fairs. The third set related to connections between the partnership model and other kinds of teacher professional development and support. (MES)

Technology and Beyond: Teachers Learning through Project-Based Partnerships

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Abstract: Project-Based Teacher Partnerships is a model for teacher professional development to help teachers doing technology-supported project-based learning in the Challenge 2000 Multimedia Project. Experienced teachers team with a small number of less-experienced teachers to form a partnership. The partnership plans a project that the teachers will execute together in all the partners' classrooms. The partnership submits a project proposal to Challenge 2000, and approved proposals are eligible for equipment and software grants and stipends. Evaluation data shows the model is effective in building technology, pedagogy, and leadership skills and collaboration practices that support teacher learning.

Introduction

Introducing technology into the classroom can be overwhelming for teachers. We know that training in hardware and software, even when available, only does part of the job in preparing teachers to use technology (Becker 1999). In order to teach effectively with technology, teachers need new models of pedagogy, logistics, and curriculum. The demands placed on a teacher learning all this at once are considerable.

This paper describes a model, the Project-based Partnerships Model (Partnerships), for helping in-service teachers develop expertise in the use of technology to support deep content-area learning. The paper explains the model and presents data to show that the model was effective in helping teachers develop technology skills, pedagogy and curriculum, and leadership and collaboration skills.

Teachers Learning From Other Teachers

The value of teachers learning from and with other teachers has been well established in the research literature. Teachers have explored learning together in teams as small as two, in school-to-school partnerships, and in networks of hundreds of teachers. Teachers in all configurations cite the value of other teachers' practical knowledge, but are most enthusiastic about breaking through the isolation that characterizes traditional teaching arrangements. Arrangements abound. In mentoring, a more experienced teacher advises a less experienced teacher. In collaborative projects, teachers learn by creating something together . Teachers also learn through collaborative evaluation of student work, and through collaborative study of subject matter (Ball 1996; McLaughlin and Oberman 1996; Lichtenstein, Weissglass et al. 1998; Stein, Silver et al. 1999).

The Partnerships model was designed to incorporate aspects from many of these models to help teachers acquire comfort and sophistication in their use of technology to teach core subjects. As in mentoring models, a lead teacher serves as a source of technology expertise. The other teachers in the partnership may be experts themselves in curriculum or pedagogy, so the learning is not just unidirctional. Partnerships are also like models in which teachers work together in curriculum, design, and assessment, because the partnership designs a curriculum unit together and evaluates its implementation day-to-day. Finally, as with teacher networks, partnership's activities are partially structured by an organization larger than the partnership (the Challenge 2000 Multimedia Project), which provides a curriculum model, additional technology support, equipment grants, a planning process, and stipends for participating teachers.

The purpose of the research reported here was to understand how the partnerships functioned, what kinds of support they needed, and how the model might be improved.

History: The Challenge 2000 Multimedia Project

The Partnerships model was developed as part of the Challenge 2000 Multimedia Project. The Challenge 2000 Multimedia Project (funded by a Department of Education Technology Challenge Grant) has developed a model for student project-based learning with multimedia, referred to as PBL+MM. PBL+MM involves students in learning core content by producing multi-media presentations related to that content. The PBL+MM model includes seven dimensions that define a PBL+MM activity: challenging multidisciplinary curriculum, sustained student effort over an extended time frame, student decision making, collaboration, real-world connections, ongoing assessment, and use of multimedia application programs.

The Multimedia Project sponsors a variety of professional development activities for its cadre of teachers. From the beginning, the project has adhered to a philosophy of growing grass-roots expertise in its cadre of teachers and encouraging teacher-to-teacher learning (Means and Golan 1998). By Year 4 of the project, professional development activities were planned and implemented almost entirely by teachers and Technology Learning Coordinators (TLC's), who are teachers on leave to provide technology and curriculum support to cadre teachers. These activities included teacher work days, summer institutes, dinner meetings with guest speakers, technology training days, and other activities based on needs of smaller groups of teachers.

In the fourth year of the grant Challenge 2000 staff were faced with the task of greatly expanding the number of teachers using the PBL+MM model. TLC's and project staff developed the Partnership model to take advantage of the significant expertise that had grown in the cadre by encouraging all experienced teachers spread the PBL+MM model to other teachers at their school. Thus the model served a dual function of recruitment and professional development.

Teachers who had already used the PBL+MM model with their students (called lead teachers) formed partnerships with one or more other teachers in their schools. Each partnership planned a project together that each partner implemented in her classroom. Participating teachers received a $500 stipend for completing the project in the classroom, and partnerships were eligible for mini-grants to cover hardware and software necessary for the projects. To participate in the program, teachers had to submit a detailed plan for the project-based unit they would do together.

In the 1998-1999 school year, 73 teachers participated, forming 28 partnerships. The lead teacher received an extra stipend for supporting his or her partners and helping them learn the technology necessary for their projects. At the end of the project, all teachers had to complete a survey and submit completed student multimedia projects.

Methods and Data Sources

The partnership model was evaluated using four data sources. First, all teachers who participated in a project were surveyed. Second, a researcher attended at least one meeting of each of three partnerships (a total of six meetings). Third, the same researcher interviewed five participating teachers to explore their experiences more in-depth. Fourth, researchers visited the classrooms of four participating teachers at least once while they implemented their units. The researcher visited the classrooms of two of these teachers extensively during the two months of their units' implementation. The interviews, meetings, and classroom visits were used both early on to define the issues that should be surveyed, and later to add perspective and insight to analysis of the survey data. The classroom visits were invaluable in seeing how issues that were raised in partnership meetings affected classroom practice, and how issues that arose in the classroom made their way through partnerships.

Results

There are three sets of findings. The first set indicates that the model was successful in helping teachers develop in their capacity to use technology and more generally as teachers. The second set provides insight into the aspects of the model that were crucial to its success. The third set discusses important connections between the partnership model and other kinds of teacher professional development and support.

Findings about the model's success

The Partnerships model is significant in its combination of teacher collaboration with project-based learning. Teachers' learning was structured by a classroom project they designed and then did with their students, rather than being structured around a piece of technology. This lent a sense of focus and vividness to learning technology. Teachers did not have to wonder, as they might in a stand-alone technology workshop, how they would use the new technology they were learning. Because the partnerships offered chances for experienced teachers to lead and collaborate, the model had something to offer everyone, expert or novice. Collaboration made technology use possible for teachers who would have considered it beyond their reach working alone. Finally, the project-based nature of the partnerships limited the scope of the effort, making it much more manageable to try out the PBL+MM model. When the project was over, teachers could turn their attention to other things.

Teachers found the experience valuable; 97% said they would like to continue their partnership next year. Teachers learned about technology, but they also learned much more. Teachers cited as benefits: increased skill in using particular technology applications and/or hardware (56%); how to implement project-based learning (54%); new ideas for taking a more facilitative role within the classroom (52%); and specific ideas for the curriculum (52%).

Partnerships took advantage of the expertise of both lead teachers and their partners. Partnerships seemed to have something to offer teachers of many levels of expertise. Lead teachers and new teachers alike said they learned curriculum, pedagogy, and technology from their partners, although new teachers were more likely than lead teachers to learn these. However, when asked what the most significant thing they learned was, lead teachers were far more likely to cite leadership and collaboration experience, while new teachers were more likely to say curriculum, pedagogy, or technology was most significant.

The process was effective in helping teachers complete projects. Of 28 partnerships, 24 (86%) successfully completed their projects. These 24 successful partnerships represented 95% of the 73 participating teachers.

Important aspects of the model

The model owes its success to many factors. Five of these seemed especially significant, in that their importance was supported by more than one data source and/or high percentages of respondents to survey questions.

1. The application process: Interviewees explained that having to prepare the project proposal lent a formality to their arrangement, and encouraged the detailed planning that many of the survey respondents said was crucial to success. Many teachers mentioned the importance of planning as a lesson learned or as advice to someone planning a PBL+MM unit. Furthermore, by going through the application process, teachers were ready to go when approval came, and meetings could focus on the day-to-day planning rather than questions of what the project should be.

2. Focus on a project: All partnership meetings we attended were extremely focused and efficient. Our observations and survey data show that partnerships tended to cover a wide range of topics when they met, but the demands of the project itself structured their conversation and kept it productive. Teachers gave each other advice and problem-solved together, with the necessity of keeping a class of students productively engaged always in mind. It was also important that the teachers were operating in the context

of an ongoing unit, which served as a living laboratory for partners to test new ideas and increase their skills. Teachers would decide together what they were going to do tomorrow, and then go do it. Finally, the limited time frame of the project, and the fact that projects generally ended successfully, seemed to smooth over rough spots along the way in teachers' memories, so that remaining impressions were very positive. In interviews at the end of the school year, teachers expressed the feeling that they had accomplished something significant and difficult together, even though there were things they had to work out along the way.

3. Self-selected, voluntary, local partners: Teachers selected their own partners, and according to interviewees, tended to select teachers they had worked with before or were friendly with. Having partners be local – within the school – meant that partners were able to respond to the needs of their partners easily because they met in the halls or the teachers' lounge. In fact, 60% of teachers reported meeting daily, mostly through impromptu encounters. Many survey respondents mentioned the moral support as critical to their success.

4. Flexibility: Participants were free to decide what they needed and how to support one another. Partners most often met through impromptu encounters rather than scheduled meetings, which makes sense given teachers' busy schedules. When they met, they were most likely to discuss technology issues (83%), but at least 50% answered "every other meeting" or more for how often they looked at student work together, planned activities, or shared strategies. Interestingly, 71% said they discussed unrelated issues at least every other meeting. This finding is important, because observations and interviews confirm that the partnerships helped teachers expand the nature of their relationships with other teachers.

5. Multimedia fairs: The project held a series of multimedia fairs at the end of the year. The fairs were open to the public. As part of their agreement with Challenge 2000, partnership teachers were expected to exhibit their students' multimedia work at these fairs. This expectation did seem to be a factor in the success of the projects we watched. The approaching deadlines helped teachers give projects an ending point that also mattered to students. It led to another round of collaboration among partnership teachers as they worked to consolidate student projects from their classrooms and get everyone ready for the fair.

Connections to other development and support

Networks of support: Nearly all teachers cited some kind of support outside the partnership. This testifies to the importance of viewing any model for teacher professional development in context of other supports, barriers, and interventions. Teachers most commonly got support from Challenge 2000 TLC's (technology coaches). Other frequently mentioned sources of support were principals and other school staff, parents and other community members. A few had business or foundation grants, and some used support from the Web, including on-line communities and training.

Importance of other support: Teachers were asked in the survey to describe what kind of support they would have liked but didn't get. Teachers' most common responses fell into two categories. By far, the most common need was for more training, technical support, equipment, or computers. This was expressed as wanting additional help in the classroom as well as more one-on-one time with students. These needs are not surprising, given the complexity of software and hardware, and the continuing scarcity of equipment. Even though the situation was vastly improved over previous years, students' own needs to perfect projects they wanted to be proud of seemed to gobble time and resources. Oddly, the model itself exacerbated the problem in some places: all of a sudden three times as many teachers were vying for time in the computer lab at the same time.

The second most common set of ideas had to do with teachers' need to give individual help to students. This is a consequence of the PBL+MM model itself. The model calls for projects to incorporate student choice and design, ongoing assessment, and intensive technology learning. The great amount of student choice means that student needs quickly diverge from one another, since they are all working on unique projects. There is no longer any one-size-fits-all instruction, and teachers find themselves struggling to keep up with student needs. Likewise, ongoing assessment and technology learning all must

be tailored to student projects and require one-on-one or teacher-to-small group interaction. Learning how to manage these demands is difficult even for experienced teachers.

Conclusion

The Partnerships model provided a way for teachers to begin using technology to support student learning in core subjects. It was effective in drawing teachers in, keeping them going, and helping them finish projects successfully. It was also effective in developing a wide range of knowledge and skills simultaneously in a large number of teachers. It reduced isolation, provided opportunities for leadership, and reduced frustration with technology, and teachers seemed to have a lot of fun with their projects along with the stress they experienced.

The cadre as a whole continues to struggle with a variety of issues, including how to develop students' collaboration skills, how to design projects to insure higher-order thinking and deep learning, and how to assess hard-to-assess skills to prove that PBL+MM units are effective. Many teachers are continuing their partnerships for a second year, and project staff are using the partnership structure to develop and share solutions in its still-growing cadre.

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