Training, Planning, Designing: Purposeful Professional Development

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One purpose of school has always been to help students become competent readers, writers, reasoners, and calculators. Implicit in this is that teachers will be prepared to incorporate common information technologies into their lessons. For many generations of students in public schools, information technologies used for print and the written word dominated schools, but the arrival of desktop computers changed that.

The digital tools installed in schools in recent decades are the latest of the long series of electronic media that were developed in the 20th century. Despite promising rhetoric from advocates, efforts to use radio, movies, and television in education largely failed (Cuban, 1985) and they disappeared from classrooms or were used for marginal purposes. Advocates for computer-based instruction appear to have reversed that pattern as those devices and media have become important tools for all students.

Researchers associated with the Apple Classrooms of Tomorrow (ACOT) project, one the early initiatives to study computers in schools, found teachers will use computers if they are taught to use them and if they are supported in learning to teach with them (Sandholtz, Ringstaff, & Dwyer, 1997; Schofield, 1995). Following that finding, school and technology leaders have implemented professional develop to support teachers’ learning about all aspects of technology.

Organizing and presenting effective professional development continues to be a problem faced by practitioners, leaders, and scholars (Jin, Li, Meirink, and der Want, & Admiraal, 2019; Merchie, Tyytens, Geert, & Vanderlinde, 2018). The rapid evolution of technology (de Reuver, Sørensen, & Basole, 2018), the effects of technology on pedagogy (Gordy, Jones, & Bailey, 2018), the lack of a dominant theory of educational technology (Hew, Lan, Tang, Jia, and Lo, 2019), and a variety of teachers’ personal skills and beliefs (Joo, Park, & Lim, 2018) are all factors that have been found to affect teachers’ learning about computers and technology.

Meeting the professional development needs of teachers can be particularly challenging for leaders in rural schools that tend to be smaller and have fewer resources that can be dedicated to professional technology staff than suburban and urban schools. This paper describes the efforts of one rural school district to improve the professional development opportunities available to teachers in the schools they lead.

Purpose

A curriculum coordinator summarized the current situation regarding her district’s professional development related to information technology for teachers, “we offer technology workshops and different people show up expecting different things.” She continued “We need to give everyone better information so principals and teachers can make better decisions... so we [avoid] frustrating those faculty who make the effort to attend workshops, but [then] leave feeling it was a waste of their time.” In order to address this situation, the curriculum coordinator initiated a project to design a comprehensive plan for supporting teachers’ learning about
technology and its role in the classroom. The author was retained as an external consultant to support this project. Several themes emerged during the work; eventually, these were sufficiently well developed that they were used to define a typology. This paper contains a description of the project, the typology that emerged, and the some of the observations of the leaders who participated.

Setting

This project involved the leaders of a school district in the northeast United States. The district comprises six schools, one secondary school (enrolling about 480 students in grades 7-12) which is located near the geography center of the school district and five small schools enrolling students in grades PK-6 dispersed throughout the towns of the district.

A team, led by the curriculum coordinator and comprising the principals from all of the elementary schools and the assistant principal at the 7-12 school, are largely responsible for the instructional leadership decisions in the district. One member of the leadership team captured the consensus of the team when she said, “Technology is in our vision statements and the school board is supportive... but sometimes we just don’t have the needed experience... my background is literacy, I can help our teachers help struggling readers, but technology is not my field.” Pointing at another, she continued, “he can do the same for science, and I trust his judgement, but who here can we trust when we talk about technology?”

They described their existing technology support system and professional development as “ad hoc” to capture the lack of consistency and direction. In the past, the district had retained a technology coordinator who was responsible for both managing the infrastructure and organizing and presenting professional development in educational technology. The curriculum coordinator described the failed search to fill that position, “We realized [our best candidate] was really good at technology but had no education background... so we left the position open.” The leadership team concurred the technicians that remined were keeping the technology reliable and robust, but “After hiring consultants to do some technology workshops, we decided—as educators—we needed to take a more active role leading our work with educational technology,” explained the curriculum coordinator.

Data collection

Following the recommendation of the author, the leadership team decided to focus their work on the question “What can we do to improve our practices related to professional development specific to technology?” and to modify Delphi research methods (Delbeq, Van De Ven, & Gustafson, 1975) for this project. Similar methodology methodology has been used to address planning and procedural problems in situations in which new strategies are deemed necessary (Malekpour, de Haan, & Brown, 2016). This project found a panel of experts participating in focus group interviews to discuss and give feedback on a series of documents prepared by the leadership team (see figure 1).
Figure 1. Illustration of the modified Delphi process

The leadership team began by composing a collection of two-page documents in which they identified the professional development that had been held in their building in the previous year along with a reflection on how successful or effective they found the efforts to be. That collection was forwarded to a panel of experts who discussed the summaries and provided feedback in a focus group interview held via video conference.

The annotated documents and audio recordings of the focus group interviews was used by the leadership team to compose a draft of a professional development plan for the following year. That plan was discussed by the same panel of experts who also provided feedback to the leadership team. Audio recordings and the annotated documents from the second focus group were incorporated into a second draft of the professional development plan.

Digital versions of each document created during the process along with transcripts of the focus group and the leadership team meetings at which the professional development plans were drafted were coded in a multistep process. First, the words that appeared most frequently in the documents were used as major categories to code the data (Savin-Baker & Major, 2013). The author and one other researcher negotiated the results of the first coding and reduced the codes to six and coded the data a second time in a manner consistent with the constant comparative method (Glaser, 1965). When coding the data for the second time, both researchers identified three themes that dominated the documents. In the final negotiation of the codes, the researchers concurred that “focus on technology,” “source of expertise,” and “the role of the students” were the dominant themes. The themes were presented to the leadership team who concurred with the definitions and define the typology.

Dimensions of Professional Development
Because the three themes appeared to describe independent (although connected) factors that varied in opposite ways, they were interpreted as dimensions which can be defined along continua. Benchmarks along the continua were defined so that different values of each could be useful in predicting the nature of the professional development activities offered to teachers.

Focus on Technology

While it may seem unnecessary to recognize professional development to improve teachers’ use of technology should have a focus on technology, the participants in this project developed a sophisticated understanding of technology during the project. Technology was differentiated into that which is the same regardless of the role of the teacher (labeled decontextualized technology) and that which depends on the situation in which it is used (labeled contextualized technology). These two types of technology were placed on the extremes of the Focus on Technology dimension (see figure 2).

![Focus on Technology dimension](image)

Correlated with contexts in which the technology is used in the definition of the Focus on Technology dimension was the size of the population that needs to learn about. The assistant principal from the secondary school differentiated the two extremes. “There are some things everyone needs to know,” he suggested, “our middle school art teacher does the same things to take attendance in [the SIS] as the high school chemistry teacher.” This was contrasted with “the fancy graphing tools our calculus teacher uses.” It was reasoned everyone could attend the same professional development on the SIS, but only one or two teachers would need to learn about the graphing tool.

The team decided it was not necessary to define benchmarks along the continuum representing the Focus on Technology dimension. They recognized the hardware and software that focused the professional development would vary in the contexts in which it was relevant and the groups that deemed it useful could make those decisions for themselves.

Source of Expertise

The professional development planned by the leadership team supports teachers as they become more competent in accomplishing curricular goals as well as more competent users of technology. The leadership team recognized three types of expertise are necessary to accomplish these two goals, and those three define the Source of Expertise dimension (see figure 3).
At one extreme on the dimension, the expertise comes from a technician whose “knowledge is dispensed with little concern for who is using it.” An example described by the leadership team was the representative from the publishers of their new student information who arrived to demonstrate the how to use the graphic user interface to enter data and generate reports. At the other extreme is the expertise of teachers who understand teaching and learning independent of the technology. Their expertise is in the nature of experiences necessary for students to learn the curriculum and methods for delivering those experiences.

Between the technician and the teachers, there are technology specialists. These individuals tend to be teachers who develop technology expertise. Placed between technicians and teachers, these individuals serve as a conduit for communication between the two sources of expertise. They both recommend technology solutions for teachers and recommend updates and reconfigurations of technology to meet teachers’ needs. They help troubleshoot technology with teachers and communicate with technicians to seek clarification or to communicate needed changes. While technicians are expected to contribute to professional development for specific events that would not be repeated for individual teachers, technology specialists are expected to form on-going relationships with teachers.

Role of Students

The leadership team also recognized students are an important consideration in their plans. One of the principals suggested, “this may be the biggest part of what we did, we now know how to use students’ experiences to inform professional development for teachers.” The Role of Students dimension was defined with three benchmarks (see figure 4).
benefit those students. The leadership team did differentiate those professional development activities that are conducted without real knowledge of how the technology would be experienced by the students and that professional development intended to improve future lessons by incorporating students’ and teachers’ experiences into the lessons.

Typology of Professional Development

The leadership team defined three types of professional development in terms of the three dimensions. For these leaders, these became conceptual artifacts (Bereiter, 2002) as they could agree on what would happen during professional development activities labeled as each and the team was committed to using the labels. The conceptual artifacts were expressed in a collection of planning documents and templates the leadership team developed as the project ended. The curriculum coordinator had the support of the rest of the leadership team when she concluded, “My office won’t schedule or announcement anything that isn’t classified as one of them.”

Training

When professional development activities are focused entirely on how to operate technology and the steps were appropriate for any teacher to learn without regard to the students in their classes, the team described it as Training. The individual who provided the Training needed no expertise in teaching, although teaching expertise did not preclude them from delivering Training (see figure 5).

![Figure 5. Definition of Training](image)

In addition, the previously mentioned student information system workshops, the leadership team suggested learning how to use productivity suites be subject to Training. Further, this type of professional development is appropriate for on-boarding new teachers to ensure they understand the district’s email, network, human resources, and other systems and procedures. Training is not exclusive to operational functions, however; the school librarians were asked to
provide training in using the library databases and professional staff who work in the school’s maker space. Trained teachers in using the printers and other devices located in that studio.

Planning

The leadership team summarized Planning as “professional development activities in which teachers prepare technology-based lessons but they don’t know for sure how they will turn out with students.” In terms of the three dimensions, planning is narrowly focused and contextualized. Even then they are planning in groups, teachers prepare for the students they will teach during a planned period of time. While technology specialists are often present during Planning, they usually defer to the expertise of teachers in during this type of professional development (see figure 6).

![Planning defined diagram](image)

Figure 6. Planning defined

The leadership team had intense discussions about the Role of Students in Planning, especially with the fact that plans may not actually result in the intended experiences for students. The choice of the words “prediction of needs” to define the roles of students resulted from negotiation within the team about the multifarious factors that affect student learning and the final agreement that “good plans make the outcome likely but doesn’t guarantee them.”

Design

The final type of professional development the leadership team is intended to improve the effectiveness of the planned activities. Recommendations are made to improve both make the technology more efficient and the learning experience more effective. Compared to Planning, Design finds a shift towards more broadly applied technology, a greater role for technology specialists, and decisions made in response to the experiences of the students (see figure 7).
In some cases, the technology specialists will be present when the planned activities are implemented. In the Design that follows the implementation, the technology specialist interprets their observation of the efficiency and effectiveness of the technology and recommends changes to improve it for future users. Because future users include both similar groups as well as different groups that use the same tool for similar purposes, the focus on technology is less contextualized than it is for Planning. The recommendations may focus on changes in how the technology is configured as well as practiced for how students are directed to use it.

Perhaps the most innovative aspect of this plan from the leadership team’s perspective was the active role that students would play in Design. Their intent was to encourage teachers to use this information to inform Design decisions, so the curriculum coordinators clarified she would not support Design activities unless they incorporated data regarding students’ experience. Further, to encourage Design, Planning proposals were expected to include strategies to gather student experiences.

Discussion

This project can best be described as an action research project. The participants originally intended to simply create a plan for professional development related to technology for the following year. It is only after the potential for including the expert panel that the importance of including outside participation for creating new strategies was recognized. While the leadership team did plan to gather and use the recordings and annotations of the documents for their own planning, the decision to code the data was made only after one of the experts on the panel asked permission to code the data to gain experience for their forthcoming dissertation that would analyze qualitative data. For these reasons, the project can be discussed from the perspective of the participants, but generalizations are difficult to justify.

The members of the leadership team concurred the project had been a valuable learning experience, although it had expanded to include more of their time than they originally intended.
On several instances, the team extended the hours of their regular meetings to accommodate work on this project and gave themselves tasks to complete before they next convened. One of the principals noted at the end, “I would not have agreed to this knowing how would grow, but I see we have a structure for PD into the future rather than just a plan for next year. I definitely learned about technology in my school.”

In discussing the project and the typology, the curriculum coordinator agreed with the author that the dimensions and typology were sound and had emerged from the data, but they “probably aren’t original. I’m not sure I could point you to them right now, but I bet we could find similar ideas with a quick search.” In response, she concluded, “You probably could have told us this, but I’m not sure we really would have understood it in a deep manner. Because we argued over the feedback, we all share a common understanding. That doesn’t come from being told.” For the members of this team, their participation in drafting the plans and negotiating and interpreting the feedback from the expert panel interviews was an irreplaceable part of their learning.

The project also represented a shift in operational decisions related to professional development. The team intended to schedule training sessions based on the business and data requirements of the school district, and to allow and encourage teachers to take a more active role in defining, scheduling, and leading their own professional development to plan and design curriculum and instruction. Previously, decisions related to professional development offerings and attendance were made by the leadership team. Their new understanding led to leadership team to decide that, except for Training, many professional development decisions related to Planning and Design would be made by teachers and managed by them as well. This change was instantiated in the templates and forms the team produces as part of the project as well.

The final effect on the members of the team was change in their perceived capacity to provide effective leadership. At the start of the project, they recognized that (as individuals and as a group) they lacked the expertise to provide effective leadership specific to technology. “Before this, I saw technology and workshops as a cloud. I wasn’t sure what they did and why, and I avoided it whenever I could,” noted one of the participants who continued, “now I at least have some questions I can ask to help me understand what teachers need and what workshops will entail. That makes be a better leader, as I can facilitate good decision making by my staff.”

**Conclusion**

In conclusion, this project describes how a group of rural school leaders addressed a gap in their professional knowledge. While the project did become greater than they originally intended, it produced a typology that was not part of the original intent and that increases their capacity to provide effective leadership. In reviewing the final report of the work, the curriculum coordinator observed, “The typology isn’t what we wanted when we started, but it is what we needed.”

**References**


