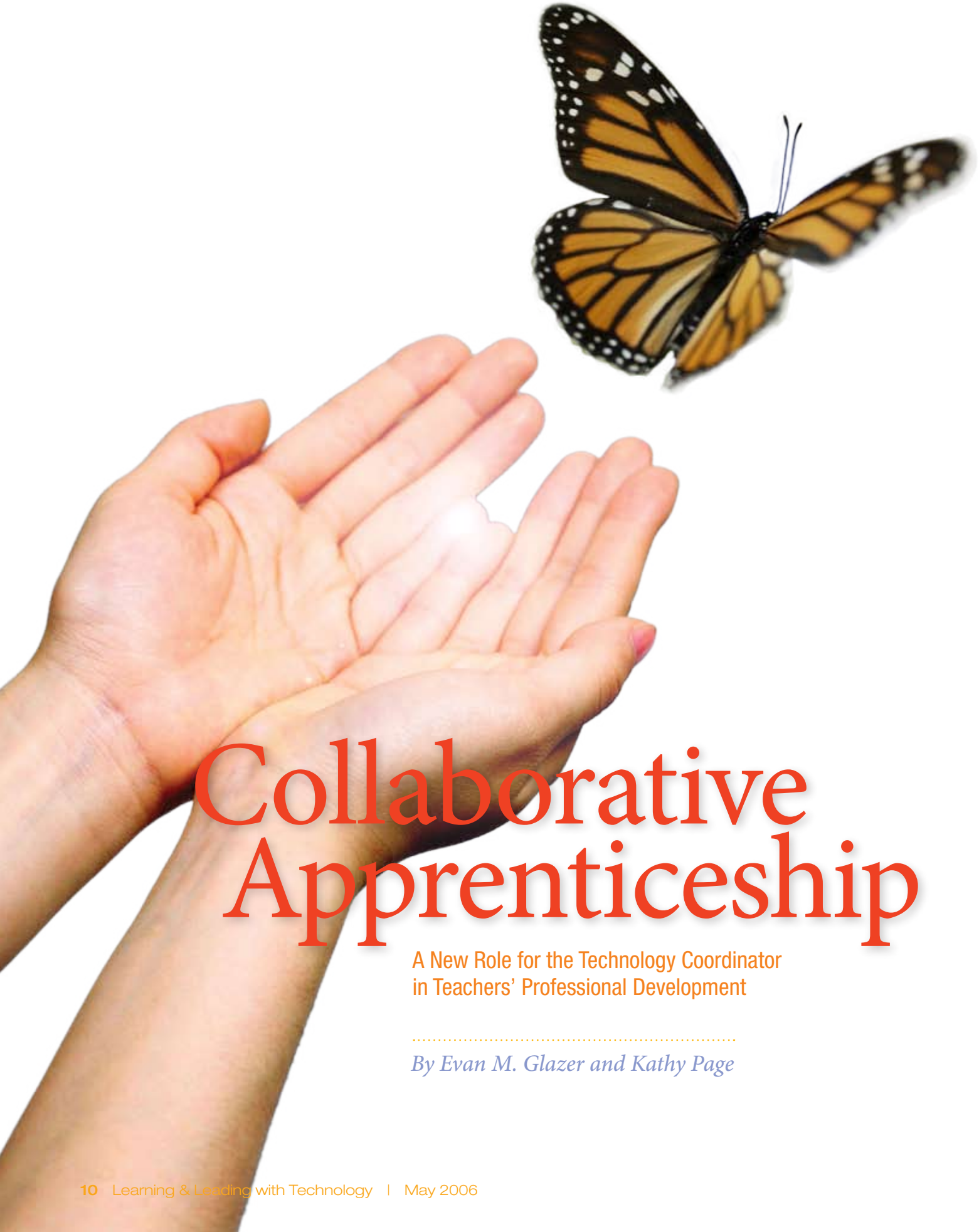


Collaborative Apprenticeship

A New Role for the Technology Coordinator in Teachers' Professional Development

By Evan M. Glazer and Kathy Page

We had been searching for ways to help teachers in our schools to integrate technology into their classrooms in a sustainable fashion. In our roles as consultant (Glazer) and technology coordinator (Page), we had found that after-school workshops and one-on-one assistance to teachers have not enabled many teachers to become self-reliant in their regular use of technology. Instead, our teachers have become dependent on the technology coordinator to assist them in the instruction and implementation of new tools in their classrooms.

It was our goal to develop a new professional method model, Collaborative Apprenticeship, to address this problem where the technology coordinator serves as a mentor who helps teachers build capacity in their ability to integrate technology into the classroom. The framework stems from Alan Collins, John Seely Brown, and Susan E. Newman's 1989 cognitive apprenticeship model, which they described in L. B. Resnick's book, *Knowing, Learning, and Instruction: Essays in Honor of Robert Glaser.* In their model, ongoing mentoring involves the gradual sharing of strategies.

We also relied on Etienne Wenger's communities of practice, which focuses on key factors in the development and growth across individuals in a collective unit. Novices work closely with more experienced peers in collaborative apprenticeships until they can independently design, develop, and implement technology-rich lessons within their curriculum. Through collaborative apprenticeships, the technology coordinator and a teacher leader facilitate the learning of a group of teachers to advance and sustain their collective knowledge.

We're illustrating Collaborative Apprenticeship, describing strategies for using the model within a K–5 school setting, and reflecting on the challenges involved in providing ongoing support and development for teachers as they integrate technology into their instructional practices. The following is based on our implementation of Collaborative Apprenticeship with teachers, as well as teacher recommendations to improve this style of professional learning.

Teacher Learning and Development

Teachers progress through four developmental phases in Collaborative Apprenticeship. Throughout the process, experienced teachers serve as mentors to their peers, and the technology coordinator consults with the groups by giving advice, sharing strategies, and providing feedback. We use a three teacher to one mentor ratio to keep group size small enough for teachers to feel comfortable sharing stories and challenges, raising questions and concerns, and focusing on shared curriculum topics. Based on our experience, we believe the first three phases should be accomplished in nine-week intervals; the last phase is ongoing throughout the teachers' careers.

Introduction. The introduction phase helps teachers become comfortable with technology tools and their classroom use. In lab-based group meetings, mentors facilitate by modeling "expert" activities, discussing instructional strategies, and providing hands-on experiences to help teachers to anticipate and address student questions. Teachers apply activities in their classrooms, and when possible, receive feedback from a peer observer. In an effort to increase teacher comfort levels and to minimize problems, participants co-teach lessons with the technology coordinator when using a software program for the first time.

Developmental. Teachers learn to design a technology-rich lesson by collaborating with their mentors. The technology coordinator works closely with mentors to develop a shared understanding of key lesson components, such as objectives and standards, student strengths and weaknesses, intended outcomes, prerequisite content, technology use, pre-lab discussions, time management issues, and assessment tools. Each mentor identifies a topic based on a curriculum weakness and talks through the lesson design process with his or her peer teachers. All teachers collaborate in the process by assuming responsibility for different parts of the lesson, such as finding Web resources, writing student questions, and identifying related district standards. As the mentors organize their ideas, the technology coordinator provides advice and feedback to enhance the lesson. Teachers then implement the lesson in their classrooms, reflect on their experiences, and repeat the design process with progressively less mentor guidance. The mentors gradually coach and consult on their peers' work as teachers gain more experience.

Proficient. In this phase, teachers become more autonomous in their use of technology. They develop lessons independently, occasionally consulting with their peers, mentors, and technology coordinators. Teachers meet less often with their groups, but mentors continue to promote peer development through informal interactions or planned meetings. Teachers are expected to generate original ideas, implement them in their classrooms, and share them with their community. Teachers "mature" in this phase when they can design a lesson that fits well in their curriculum and enhances student learning beyond what is accomplished in the classroom and when they develop and implement the lesson with minimal support. We found that the duration of this phase varies considerably, from as little as four weeks to more than

a year, depending on each teacher's confidence and experience in the classroom.

Mastery. Once teachers feel competent in their design skills and comfortable leading lessons without support, they are encouraged to mentor other teachers at their grade level. Because all teachers do not progress at the same rate, it is important that teachers who become proficient quickly support their peers. Over time, the cycle continues. The technology coordinator continues to work closely with new mentors, providing strategies to promote the ongoing development of their peers.

Criteria

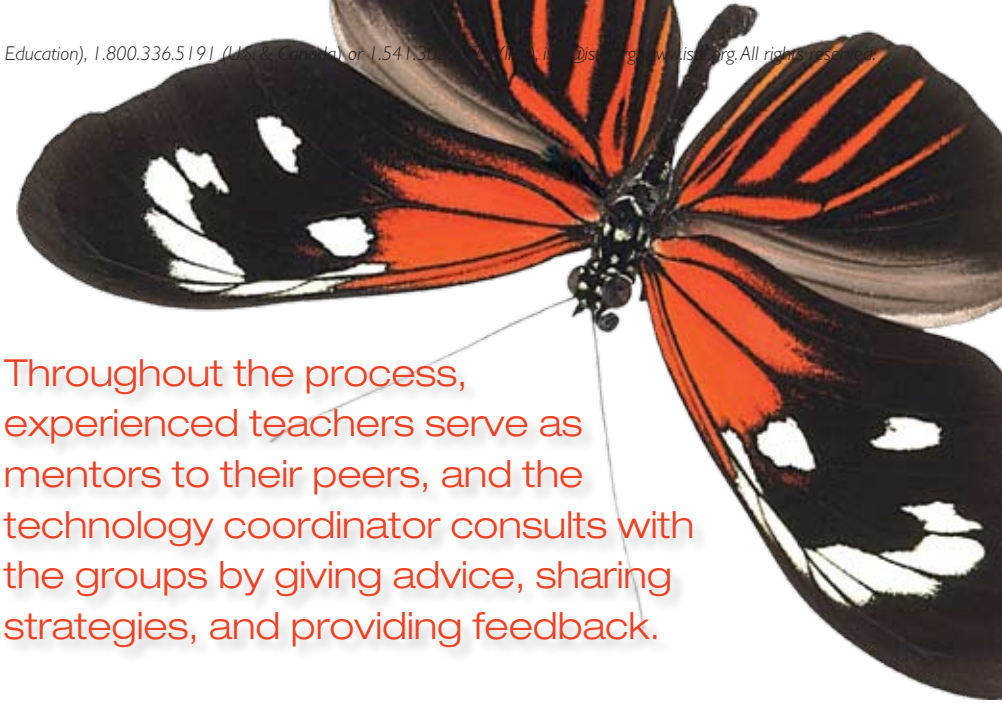
The readiness to implement Collaborative Apprenticeship relied on our ability to orchestrate several factors, including shared time, a commitment from teachers, a variety of experience levels with classroom technology use, and a structured agenda surrounding a shared curriculum topic.

Shared Time. A common planning time enables teachers to share ideas they have used in the past and to collaboratively develop new ones. Because many teachers have after-school obligations, we chose to conduct a biweekly meeting during the school day to help teachers stick with the model. We find this meeting schedule sufficient to maintain commitment and momentum without overwhelming the teachers. During the shared time, experienced technology users model past lessons, discuss anticipated challenges, and explain strategies to design a lesson. The shared time provides an opportunity to brainstorm new ideas and collectively plan lessons with the support of a more experienced peer and the technology coordinator. In addition, these shared sessions provide time to demonstrate and practice software and Internet tools already available in the building.

Teacher Commitment. Teachers who are successful in designing technology-enhanced lessons prioritize their learning and development. Their effort to make space in their schedules and prepare technology-related questions and ideas expand the collective understanding of the teaching community. When teachers prepare for group meetings, their peers are exposed to new ideas, questions and answers they have never before considered, and advice on their work. The school district gives teachers two staff development units toward maintaining their teaching certificate to acknowledge their contributions.

Teacher Experience. Diverse technology experience across the community establishes fertile ground for collaborating and learning. More experienced teachers can mentor their peers, explain curriculum connections, and model successful lessons; novices can brainstorm and contribute new ideas based on their fresh perspective and enthusiasm. The technology coordinator participates in the meetings as an advisor to the teachers' work, giving feedback and advice to support development, occasionally introducing design strategies or software helpful in addressing teachers' needs, and promoting their professional growth.

Structure. An organized, goal-directed agenda provides teachers a clear purpose for attending and participating in planning meetings. Teachers need to feel that meetings are beneficial to them because they do take time from their other tasks and responsibilities. Teachers can become less motivated to participate if their learning needs are not being met in the meeting. To help focus group involvement, we recommend that mentors use a goal-driven agenda that is collectively determined by the group. Prior to meetings, mentors ask peers to brainstorm discussion topics and questions so that the



shared time addresses common needs and desired outcomes.

Challenges and Strategies

Through our implementation and revision of Collaborative Apprenticeship, we have identified four challenges, as well as strategies to help overcome them.

Overcoming the Support Role. In deference to teacher autonomy, mentors often expect teachers to seek assistance only when it is needed. However, even when teachers are not seeking support, technology coordinators and mentors should monitor and provide assistance to those who are not progressing well. The reluctance to intervene arises from concern that teachers might be intimidated, diminishing collegial and interpersonal relationships. We found some strategies that can be used to promote comfortable interactions while addressing continual peer development.

Talk about horror stories related to technology integration to convey that all teachers make mistakes—but the good ones learn from them. Invite teachers to observe lessons that exemplify successful and energetic student learning experiences.

Set up one-on-one sessions outside of the group meeting to review and reinforce strategies.

Address the complexity of the teacher's day. Teachers value available time because they are inundated with daily tasks. Many are hesitant to participate in staff development because of time constraints and unsatisfactory past experiences.

You can help teachers believe that their time in planning meetings is well spent by promoting systemic thinking by asking teachers to identify their individual goals and areas of interest before the meeting. Devise a focused agenda around teacher needs to demonstrate clear effects on their development. Promote the involvement of experienced teachers as mentors so the community will assume ownership of the teachers' development.

Throughout the process, experienced teachers serve as mentors to their peers, and the technology coordinator consults with the groups by giving advice, sharing strategies, and providing feedback.

Administrators' support can be obtained by promoting their involvement with teachers' learning and development. Invite administrators to group planning sessions to witness the collaboration and brainstorming. Encourage them to observe lessons that illustrate how technology can be used to spark students' learning.

Reflections

Professional development through Collaborative Apprenticeship has given us a fresh perspective on how teachers can obtain ongoing support in their efforts to design technology-enhanced lessons. The coordinator's role has shifted from supporting teachers in the lab to being proactive with teachers in promoting effective technology-enhanced lessons. Several unanticipated outcomes arose in the teachers' shared planning time.

First, the technology coordinator had opportunities to offer advice that could improve lessons as ideas originated, instead of solely responding to a teacher's inquiry. In addition, the teachers asked a broader range of questions than expected related to curriculum and design issues; in the past, teacher questions typically involved technical issues about using particular software. Most importantly, the technology coordinator became an instrumental member of the planning team as teachers shared their ideas, solicited input, and asked questions. This provided a fresh perspective to teachers' use of technology because previous professional development workshops focused on teachers' products instead of a more important issue—their learning. In successive stages of Collaborative Apprenticeship, we see teachers have become more comfortable developing ideas and solving problems collaboratively rather than relying on the technology coordinator as their sole source for new ideas and technology training.

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