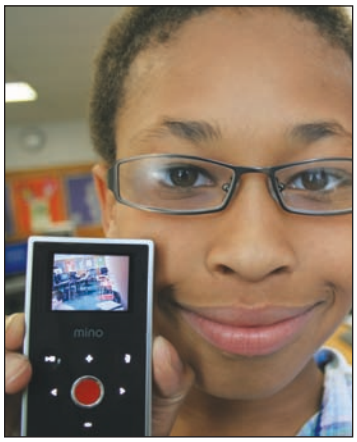

What are We Learning About Technology Integration and Professional Development?

SUMMARY

How well is technology-focused professional development helping teachers and their students in integrating technology into the educational process? A recent study by the UFT Teacher Center provides some answers.

Technology integration in today's classrooms is essential to prepare our students to compete in an increasingly digital society. As professional development providers in the field of instructional technology, how can we continue to support teachers and students in achieving the goal of seamlessly integrating technology into the educational process? What are the challenges we face? These are some of the questions that led to a recent study of the relationship between professional development practice and technology integration involving teachers, professional developers and school leaders in a group of New York City schools.

Since little research is available on the impact of technology-focused professional development on teacher learning and practice (Mouza, 2009), the UFT Teacher Center conducted a study, through an independent evaluator, to examine the impact of instructional technology professional development on teaching and learning at schools with site-based UFT Teacher Centers in New York City (Measurement Incorporated, 2010). This article presents results from this study and their implications for future professional development.

The UFT Teacher Center, now in its 32nd year, is a comprehensive professional development program operating throughout New York City's five boroughs in more than 200 school-based sites. This is a collaboration of the United Federation of Teachers, the New York State Education Department, New York City Department of Education, schools, districts, and school support organizations. In participating schools, the

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UFT Teacher Center partner schools receive the support of a full-time coach who provides a wide range of job-embedded professional development opportunities — such as one-on-one coaching, in-classroom support, demonstration lessons, co-teaching, professional study groups and work sessions.

UFT Teacher Center staff support teaching and learning by providing a wide range of job-embedded professional development opportunities such as one-on-one coaching, in-classroom support, demonstration lessons, co-teaching, professional study groups, and work sessions. Additionally, the UFT Teacher Center provides a variety of citywide networks, conferences, and seminars — open to all New York City educators.

This study analyzed data collected from surveys administered across all grade levels at 40 UFT Teacher Center partner schools that received instructional technology professional development and support. The main purposes of this study in relation to exploring teacher, Teacher Center staff, and administrator perceptions, were to:

- examine the type, amount and quality of educational technology professional development in *preparing teachers to integrate technology* into their instructional practice,
- investigate the use of technology to *differentiate instruction* for students,
- investigate the impact of technology professional development on the *instructional practices* of participating teachers, and
- investigate the *impact of technology professional development* on student learning.

Three surveys were used to gather data. One survey was administered to teachers who received a significant amount of technology-related professional development from UFT Teacher Center staff. It assessed the types of instructional technology professional development received by teachers, teacher satisfaction and changes in knowledge, skills and instructional practice as a result of UFT Teacher Center professional development. Teachers were also asked about the perceived impact of educational technology on student learning.

A second survey, administered to UFT Teacher Center staff, collected information on the instructional technology professional development provided to teachers. It also addressed the effectiveness and relevance of the

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professional development and support UFT Teacher Center staff received from the UFT Teacher Center to prepare them as providers of technology professional development.

A third survey was administered to school leaders. It assessed the impact of the program from the perspective of school leadership.

Preparing Teachers to Integrate Technology

The goal of successful technology professional development is its integration into teaching to impact student learning. Before we can begin to discuss technology integration, however, we must consider its definition. "Technology integration" can, and often does, mean different things to different people. For the purposes of this report, we will use the definition offered by the Intel Teach Program (Intel Teach Program, 2009), which defines technology integration as the process of teachers and students routinely and seamlessly using technology resources and technology-based practices to enhance learning.

For teachers to integrate technology routinely and seamlessly, they must have access to technology. As one UFT Teacher Center staff member stated, "Teachers must feel they have access to technology on a regular basis to plan it into their lessons." An overwhelming 94% of respondents who were UFT Teacher Center staff reported that access to the Internet in their school was "moderate to great." More than 80% reported that access to desktop computers and printers was "moderate to great." On the other hand, the results were less promising when asked about web-based video resources, digital recording devices and licensed copies of instructional software. Only 59% reported that access to Web-based video resources was "moderate to great." Slightly more than half indicated access to digital recording devices was "moderate to great," and 60% indicated access to licensed copies of instructional software was "moderate to great." In other words, access was reported to be greatest for basic Internet access, computers and printers, but these do not reflect the types of technologies many students actually use in their everyday lives, such as handheld devices and Web 2.0 tools. As technology evolves, we must continue to examine not only the amount of technology accessible to teachers and students, but the *type* of technology as well.

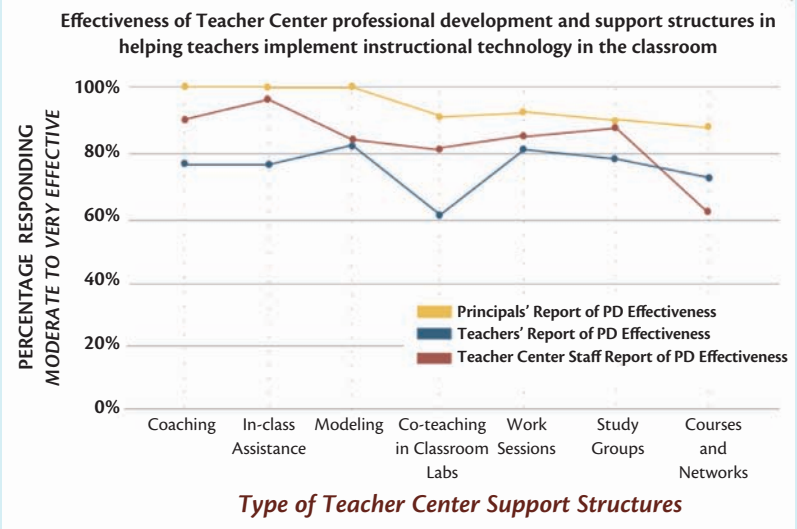
Once teachers have access to technology, such as interactive whiteboards, they need to know how to use the technology before they can begin to integrate it into their teaching. Helping teachers learn how to use specific

hardware and software tends to be the focus of short-term workshops or training sessions. While it is important to provide training sessions to help teachers learn how to use specific hardware and software, professional development must go further and provide *ongoing* support. As Fishman (2006) noted, learning how to use technology is not the same as learning how to *teach* with technology — and the findings of this study are consistent with this understanding.

Figure 1 illustrates the effectiveness of support structures in helping teachers implement instructional technology in the classroom as reported by teachers, principals and UFT Teacher Center staff. More than 80% of respondents who were teachers rated modeling as a "moderate to very effective" way to help them implement integration of instructional technology into the classroom. This was followed closely by work sessions, study groups, coaching, and in-class assistance — in terms of percentage of respondents rating the approach as "moderate to very effective." It is noteworthy that a fairly high percentage of all three groups (i.e., principals, teachers, Teacher Center staff) rated the following as "moderate to very effective": coaching, in-class assistance, modeling, work sessions, and study groups.

It should be noted that even with the support they have received, two-thirds

Figure 1



of teachers indicated they needed additional support and professional development to further implement technology practices in their classrooms. These findings confirm the need for ongoing professional development, and are especially noteworthy in tough economic times when professional development may seem like a luxury rather than a necessity.

The study's results also indicate some interesting differences in the perceptions of teachers and principals concerning the impact of professional development activities on the level of teacher preparedness to integrate technology (see Figure 2).

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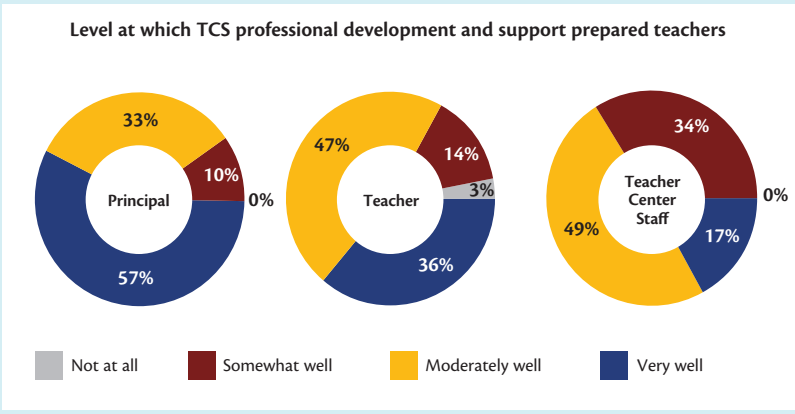
Figure 2



While 36% of the teachers surveyed believed they were "very well" prepared to integrate instructional technology into their classroom practice, 57% of the principals believed that teachers were "very well" prepared. A possible explanation for these differences might be that teachers and principals have different definitions of technology integration. Further conversations among teachers and administrators might lead to a common definition, which could help establish clear expectations and guide future professional development.

Using Technology to Differentiate Instruction

The data suggest that teachers are focused on new and improved ways of implementing differentiated instruction. More than 70% of the teachers reported that as a result of the instructional technology support and professional development provided by UFT Teacher Center staff, they are now:

- creating new and different ways for students to take in information;
- differentiating for readiness levels and creating materials that match both readiness levels and interests;
- differentiating for interest; and
- creating alternate ways students can demonstrate what they know and have learned.

Although these results indicate that the professional development provided by UFT Teacher Center staff helped teachers differentiate instruction, both teachers and UFT Teacher Center staff overwhelmingly report the need for additional professional development in this area. This makes sense since new technologies — assistive technologies in particular — are being introduced at a rapid pace.

Impact on Instructional Practices

The study asked teachers, principals and UFT Teacher Center staff to consider technology implementation across six skill levels from beginning to more advanced stages (see Table 1). Most teachers reported that they were in the early to middle levels of technology implementation; others reported a

Table 1

Skill level in implementing instructional technology in the classroom

Skill Level	Level of Implementation	%
Level 1	Teachers are still learning about ways of using technology for instruction; they have not yet used it.	8
Level 2	Teachers have begun using technology for instruction, but usage is uneven as they have not yet mastered all components.	28
Level 3	Teachers are using technology for instruction routinely and have encountered minimal implementation problems.	25
Level 4	Teachers' technology knowledge is fully integrated in the instructional program. It is a normal, ongoing part of the way teachers teach.	18
Level 5	Teachers are now exploring ways of refining their use of technology to increase impact on students (e.g., differentiate instruction).	14
Level 6	Teachers are collaborating with other teachers to expand the impact of technology on all of our students.	7

higher level of implementation. This outcome has implications that are important for the design of professional development. Clearly, professional development needs to be differentiated to accommodate teachers at the beginning stages of implementation as well as those at the more advanced stages.

When Teacher Center staff were asked to reflect upon the extent to which technology-related professional development appeared to affect the way teachers instruct, assess and think about their teaching, the results were surprising. More than 70% of Teacher Center staff reported that, as a result of technology professional development, teachers appear to have altered the way they assess and monitor student progress, have changed the way they group students for instruction and have altered the content of their instruction — to a "moderate or great extent." Also, 77% of Teacher Center staff reported that the way teachers feel about professional growth opportunities was affected (in a positive way) to a "moderate or great extent." These results imply that instruction will be influenced when sufficient support is given.

Nearly 60% of teacher respondents reported an increase in grouping for differentiated activities. Fifty-four

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A successful professional development program must consider not only how to facilitate change in teachers' knowledge and skills but also how to facilitate change in teachers' beliefs and preconceptions.

percent of teachers reported an increase in the use of project-based learning to monitor student progress. In fact, the only teacher-led activity that did not show an increase was using lecture (which many would argue is overused).

While these findings are promising, even more promising are the results indicating that a high percentage of teachers are implementing more student-led instructional activities. More than half of teachers reported an increase in having students teach or help other students. Close to half reported an increase in having students work on long-term projects and work in collaborative teams. This shift is aligned with the National Educational Technology Standards (NETS) as well as the Common Core State Standards that require students to use a variety of digital media and environments to communicate and work collaboratively.

Impact on Student Learning

This study examined perceptions related to the impact of the uses of technology on student learning. While this is a difficult variable to consider separately, close to 40 % of teachers would attribute technology use to higher student engagement and excitement about learning. Approximately 30% believe that students appeared better able to relate their learning to real-world applications. These outcomes are important to follow and increase, since these areas are directly related to effective teaching in general, as well as attaining Common Core State Standards — that is, to better prepare students for college and careers.

The study also considered the amount of technology-related professional development and support teachers received to assess the role it had played in reported student benefits. The data indicate that the more instructional technology professional development and support a teacher receives, the more the teacher incorporates technology in the classroom. Teachers who use technology to a greater degree observe and report greater benefits to students. Clearly, increasing the amount of professional development and support to teachers is key to increased benefits to students.

Implications

As Joellen Killion (2003) points out, it is widely believed that if teachers attend a workshop they can begin to immediately implement new strategies in their classrooms. It may be thought that increasing the teacher's knowledge and skills related to technology integration will lead automatically to a change in behavior. However, as Killion notes, professional development is

most successful in increasing student learning when it targets changes over time — not only in knowledge and skill, but also in attitude, aspiration, and behavior. Therefore, a successful professional development program must consider how to facilitate change in teachers' knowledge, as well as teachers' beliefs and preconceptions. It is difficult, if not impossible, to impact teacher beliefs in a one-time workshop. That is why ongoing professional development is essential. The overarching goal of technology professional development should be to provide teachers with opportunities to observe, practice and reflect on new technologies and it should be conducted over extended periods of time.

Because of the rapid rate of technological change, instructional technology professional development should focus on helping teachers develop skills that enable them to continually explore new and unfamiliar tools instead of concentrating only on specific hardware and software. It must be focused not only on the equipment but also on the strategies that support student learning — strategies that enable teachers to teach differently and support inquiry and collaboration.

As this study indicates, teachers are at varying levels of expertise in technology implementation. Professional development must be designed to meet the needs of these various levels. Just as teachers need to differentiate instruction for students, professional learning needs to be differentiated to meet the needs of teachers.

Technology can make a difference in supporting student learning, however, this cannot happen by merely providing classrooms with the latest equipment. Instructional technology integration will occur across all grade levels and in all content areas when it is supported by professional development that is differentiated and sustained over time.

Just as teachers need to differentiate instruction for students, professional learning needs to be differentiated to meet the needs of teachers.

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