

IMPACT OF ONLINE PROFESSIONAL DEVELOPMENT IN THE WORK ENVIRONMENT

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Abstract

Online distance education programs are populated by adult learners who try to continue or complete their education without having to leave their jobs or places of residence. Their work environment becomes not just their working place, but also the labs where they apply new knowledge. The general expectation is that after graduation they will make an impact in their work environment through their job and through interacting with peers and supervisors. This study explored the influence that K-12 teachers had in their work environment as they pursued and graduated from an online Masters program in Education. The study showed the impact that the participants have and how they become agents of change in their immediate workplace.

Introduction

Professional development for teachers is defined –by state laws, school districts, and professional organizations (such as NCTM)–, as activities that produce relevant experience to the participants and result in enhanced student learning. Educators are encouraged follow an approved plan recommended by the school districts, or to create their individual professional development plan that complies with state standards for developing in the teaching profession. Every three or five years teachers have to show proof of the activities that led to their ongoing

professional development. (New Jersey Department of Education, 2002; Chicago Public Schools, 2000; New York State Education Department Office of Teaching Initiatives, 2006). This is rewarded in different ways: salary increases (or "lane changes"), promotions or tenure. Professional development activities are in most cases also paid in full or in part by the school district or the state.

Given the option of creating their individual professional development plan, some teachers opt for going back to school and pursuing graduate program, which provide through the course credit allocation the hours needed for professional development, at the same time that they advance professionally and acquire a college degree. Such is the case of many of the teachers who enroll in the CTER Online Masters Program at the University of Illinois at Urbana Champaign.

Taking an online masters program as their choice for improvement has two relevant implications in the influence that professional development activities will have in the participants involved. One is related to the time of engagement and the other is related to method of engagement. Because this is a **masters** program it takes longer to complete compared to regular professional development activities for teachers, such as workshops, independent courses, or short-term projects. This means that teachers spend more time engaged in their professional development activities, and therefore the impact of their learning may be perceived before the program is completed and reinforced as they move on with their studies, and finalize their degree. The second implication has to do with the method of engagement, since the program is **online**, teachers are involved in their regular professional activities at the same time that they go

on with their everyday task in schools. This condition, also known as “situated learning approach” (Anderson, Reder, and Simon 1996; Lave and Wenger, 1991; Stein, 2003) favors the conditions of applying theory and research in the real world. The situation led the researchers to explore the impact of online professional development in the form of a masters program would have in the participants’ work environment.

Purpose of the Study and Research Methods

This research study aimed to analyze the facets of online professional development for teachers, and evaluate the impact that graduates from an online program make in their work environment. This study followed a multiple case study analysis approach (Stake, 2006), exploring several cases to inquire into the phenomenon of the impact that online learners have in their work environment. A purposeful sampling of teachers who have graduated from the CTER Online Master program at the University of Illinois constituted the population for this research. Data collection consisted of observation, interviews and study of documents. Data analysis included within case analysis, that is the analysis of each case in particular; and cross case analysis, or the process of comparison between cases. To insure validity the researchers used different strategies such as member checking and participant’s review for the observations and the interviews. The cross-case procedure also served as a form of validation.

Literature Review

The idea that learning and professional development has to be tied to real life environment to ensure transfer has been supported by several researchers (Bennet, Harper &

Hedberg, 2002; Herrington et al, 1987; Omrod, 2004), and their studies coincide with the concept of situated learning. According to the literature, by following a situated learning approach, knowledge is acquired and learning is transferred by “embedding subject matter in the ongoing experiences of the learners and by creating opportunities for learners to live subject matter in the context of real-world challenges” (Stein, 2003, p.1). This is true for what happens in the cases studied. In the CTER program as students take their courses, they work within a cohort model, and the working style in the different classes encourage students to communicate with another person who is either more or equally knowledgeable (such as an instructor, technical support, teaching assistant or peer) for the purpose of completing or improving a task (such as problem-solving, completing course assignments or iteratively improving a personal or professional project). At the same time, the courses are project based, which encourages application of the theory in their real work environment, or within the realms of their discipline or area of expertise. Then, learning is situated in a community of practice (Lave & Wenger, 1991), and the blending of theory and application enhances the meaningfulness of the learning process.

According to Ausubel’s theory of meaningful reception learning, three conditions are essential for meaningful learning: 1) the learner must employ a meaningful learning set to any learning task, 2) the material must be potentially meaningful, and 3) the material students try to learn must relate to what they already know (Driscoll, 2000).

These theories are particularly relevant to online professional development because they emphasize the situated-ness of learning and the importance of tying student learning into

professional practice. The situated learning of professional teachers in a community of practice benefits the individuals, communities –such as departments, disciplines, cohorts– and the organizations where the participants are embedded –such as the public schools and school districts in this case.

Therefore, as far as the CTER program goes, students engage in the professional development process formally and informally. While they are students, they formally engage in professional development processes by talking to instructors, support staff and fellow students. They also develop informally by learning from co-workers, friends and family outside of the online classroom setting. This situation led us to believe that students undergo a major paradigm shift as they learn in a situated learning context and that it takes time for the full effects and resolutions to be realized. This research study helped us to understand the value of situated learning in professional development and the relevance of online education in facilitating the situated-ness and meaningfulness of such professional development process.

Within-Case Analysis

Before a thorough description of the results of this study can be presented, it is important to understand each participant's individual background to truly understand the impact he has had in his own professional development and the impact he has had in his own workplace. Table 1 shows the individual cases and their areas of expertise. The analysis of the data is presented following a within-case analysis format, and then the cases are compared and contrasted, and the results are discussed in the cross-case analysis section.

Case	Pseudonym	Area	Grade level
One	Andrew	Science Teacher	Middle School
Two	Robert	Health Teacher & Coach	Middle School
Three	Steve	Science Teacher	Middle School
Four	Jason	Special Education & Technology	Middle School

Table 1: Details about participants of the study

This study presents findings of the impact, as perceived by the participants themselves. This impact is described in two ways: the impact of the CTER degree on the individual and the professional impact the individual has had in his own workplace.

Case One: Tech-Savvy Department Coordinator Leaving a Stronger Mark

Andrew, the middle school science department coordinator, has taught for 8 years. He became interested in technology in his first years teaching and was introduced to the CTER program by a colleague. Now, he has been a recipient of his M.Ed. in CTER for 4 years. Using technology in his classroom motivates him because, he says, is a great way to keeps things current and more interesting for himself and the students. He sees his role as an "interactive guide encouraging students to become involved in the learning process".

Andrew said, "I am frequently asked questions by fellow staff members for ideas and help in areas related to technology." He has been able to get more technologies into his department, such as an additional LCD projector, access to United Streaming and Bug Scope, as well as more regular use of PowerPoint in lectures. In his own classroom, he has used

technologies such as PowerPoint for lectures/discussions, “graphing calculators with probe ware, computer-based research projects, digital video projects, webquests, multimedia-based brochures, class webpages, online posting of grades, and Bug Scope.” Andrew also says that his students enjoy and have come to expect the use of technology in his classes. It also has been a time-saver, in that, by reducing the record-keeping time, he can increase learning time.

Andrew believes that his district is interested in integrating technology into the classroom, since each middle school in his district holds technology workshops in the summer and an information technology specialist that develops ways each department can use technology. Although they are interested in technology in each classroom, Andrew, himself, doesn't receive physical support. "It is often viewed as a positive thing but little time or resources are given to truly support teachers in their efforts," Andrew says. "Technology is still viewed as 'nice to have' but it is an extra." Andrew observes that in his district, technology is not viewed as a way to guide instructional practices.

Andrew, as a CTER graduate, regularly shares his ideas with his department and with others in his school. Many teachers like the ideas presented, but, he says, they often need extra time or help to actually institute it into their classrooms. Andrew is a self-starter and is motivated by current, interesting and creative ways to present knowledge. This enthusiasm has rubbed off on his colleagues because now, his co-teachers are using United Streaming and creating webpages of assignments and grades.

Case Two: Curious Coach Turning Tech-Savvy

Robert, a middle school health teacher and PE coach, never considered himself to be a technically-savvy person. Over time, he grew more and more curious about technology as he saw children and students use a variety of different technologies. He knew that using technology in classrooms was something that would be important in the future because he saw students become interested, motivated, and proficient. His curiosity kept growing, and a fellow CTER alumni encouraged him to take his first leap and try integrating technology in his classroom. They talked about integrating technology into the classroom several times, and the alumna encouraged him to pursue a M.Ed. in CTER. His curiosity motivated him; and he says, “CTER pushed me into using technology.”

Robert and another teacher closely collaborated through their master’s experience. They met face-to-face and discussed innovations. As time went on, they would e-mail each other and then, later, chat online about class topics or projects. Now, several years later, he has also taught industrial technologies, PE, music, art, health—all with technology-based curriculum. He says, “I use it [technology] every day; such as United Streaming, and other videos and information about health or coaching. We also have the team website up. I use it to do lesson plans, to make DVDs with learning materials on them. This year as we were choosing textbooks, we specifically chose textbooks that used technology—that had references to websites and things in it.” Robert also played a major role in convincing his school to buy a laptop and a projector, rather than more videos.

The administration's acceptance of Robert's technology usage has increased over the past

several years. "When we first started [using technology] upon graduation from CTER, the administration was not so supportive. I had to prove every single thing that I requested. Now, the current administration is more supportive of technology. For example, they went out of their way to get the bulb for my projector." However, Robert also says that "if I need to download something, I have to go through the district to have access to certain programs and to download some applications. That is a terrible delay. They track what is going on in the Internet. They don't like people using their personal computers. [There are] too many hoops to jump through now. A new technology director is coming in now; he seems more encouraging." Additionally, Robert says, "I have influenced my colleagues. Because I was older, they saw me as someone with more authority. What [the other CTER alumni] was doing with me I was doing with them. I became mentor of many teachers, and two of them became CTER students later."

Case Three: Science Teacher becomes Technology Mentor and Grant-Writer

Steve, an 8th grade science teacher with 11 years of teaching experience, described himself before pursuing his M.Ed. in CTER by saying, "I have always been one who has wanted to and willing to use technology." The CTER program was a good choice for him because CTER modeled the concept of applying technology, explained good uses of technologies in schools and expected students to integrate technologies well in their classrooms.

Now, six years after receiving his degree, Steve says, "I push myself to always expand the [science] labs that we do so that students can be exposed to the technologies we use in the real world." "The greatest impact on me, as a professional, has been when I have become more

of a mentor to other teachers in the building. I think that was one of the biggest impacts of the CTER program on me.” Steve is a valuable asset to his peers as he mentors other teachers in projects, advises others in software applications and tutors in computer uses. His professional expertise reaches even further since he has become successful as a grant-writer that seeks additional funding for his school.

Steve says that technology has been somewhat disregarded in his school, as the emphasis of content areas in No Child Left Behind (NCLB) (*No Child Left Behind Act* of 2001, 107th Cong., 1st session. Public Law 107-110) has increased. "We spend too much time preparing students for tests now; that does not give us much time for real learning and exploration." Nonetheless, Steve has received grant money and additional resources for his school; and he feels that although the district's financial support of incorporating technology into the classroom is lacking, the external support is sufficient. Seeking this additional funding has been important to him, because as he says, "I push myself to always expand the [science] labs that we do so that students can be exposed to the technologies we use in the real world."

Additionally, Steve's influence has been felt as he has collaborated and mentored others. "Working with other CTER alumni in the building [lets me share my ideas of how I can incorporate technology into my classroom more]. We share a lot. But with the three people that I have in my team, I have mentored and they use so much technology now. They feel so much comfortable using technology [in their English, history and math classes]. I feel that people have followed the leads I have given." He also has said, "I don't mind when people come to me for troubleshooting. I encourage them to go through the process of troubleshooting. The reaction in

general has been positive." Having a degree from CTER has helped Steve reinforce ideas, use technology better, start using new technologies, and mentor others. Students' reaction of the uses of technology in their classes has also been positive. "The feel motivated. They feel it is cool."

Case Four: "Mr. Technology" Becoming More Integral and Cautious

Even before he pursued his M.Ed. in CTER, Jason, a high school special education teacher and a 10-year employee of a local communications laboratory, was always helping others with computers and technology. He described himself as "Mr. Technology," so a degree in CTER was an excellent choice for him. He said that CTER "allowed me to formalize ideas that I already had in my head. I learned to reflect more and to teach others to think more of technology in terms of curriculum." In other words, Jason had two domains of knowledge: that of teaching special education courses and that of using technology. However, only after he began his work on his master's degree did it finally "click" on how to integrate those two domains of knowledge by using technology in his special education classes.

Jason has received professional advantages from his advanced degree. In addition to teaching high school, he also works at a local community college—"a very important part of my professional life," he says and adds:

"CTER allowed me to formalize ideas that I already had in my head. I learned to reflect more and to teach others to think more of technology in terms of curriculum. After [my] CTER [experience], I have encouraged more use of web pages, and I've helped some colleagues and my school. Some examples of these

are the projects of network expansion in my school, helping teachers make decisions about technology, and even inviting teachers to be part of CTER.”

Not all disciplines can apply technology in the same way, Jason believes, but some people have started to use his ideas in their own projects. For example, Jason helped a biology teacher make some decisions about her budget and incorporate technology in her classroom. He helped her think about her curriculum and how technology could assist. She bought a Smartboard and learned how to use it to maximize its potential in her class. Some teachers, though, "demand help and do not want to learn how to do things by themselves," a drawback to being a technologically-savvy person in a school. When some agreed to work on technology-related projects, "they expected me to deal with it instead of troubleshooting together. That became an overload and I decided to back off from several interesting projects for that reason."

Administratively, though, Jason believes everything has become more centralized; even though it is not easy to be heard or considered, his administration is receptive to more ideas of using technology in the classrooms. "Many projects were not possible to carry on because of other school demands. School will put emphasis where funding is going, so if there is funding for literacy projects, or ESL or something else, technology takes the back seat in funding--especially after NCLB." However, to indicate the administration's receptivity, they specifically listen to him and consult him for changes in technology-related issues.

Cross-Case Analysis

The results in this cross case analysis indicate that teachers who pursue professional development in the form of graduate studies online without leaving the workplace have a relevant influence in their work environment during and after the learning process. The findings from the cross case analysis are presented as general findings by type and area of influence (Table 2), followed by findings by key themes.

In general the results show that teachers have a direct influence in their immediate environment –colleagues and school, although there was no evidence of direct influence in the school districts. Table 2 displays the type and the area of influence that teachers have. One of the roles the participants agree that they play is “*as consultants*”. All cases indicated that they are consulted by colleagues and, sometimes, by the school when new decisions about technology integration are made, or when new plans or proposals need to be presented to the district. Unfortunately, in many cases new policies hinder the implementation of new ideas or plans, or produce delays in such implementation. As one of the participants said “there are too many hoops to jump” when it relates to uses of hardware and software within the school system. The second coincidence regarding their role and area of influence was “*as mentors*”. Participants said that they become mentors of their colleagues either helping them to implement changes in their curriculums, or providing guidance to application of new practices, or even advising them to pursue graduate school. Third, they participants admitted to play a “*role in new purchases*” or in determining the department or school budget including purchases of new software, hardware or equipment. Finally, some of the participants indicated that the incorporation of new technologies

in the department or in their area had led to working on new policies for the use of technology and they had some influence through their learning and experience in those new policies.

Role	Area of Influence		Evidence
	Colleagues	Department or School	
As a consultant	X	X	Colleagues and school consider them as experts regarding technology or technology integration
As a mentor	X		They fulfill a role as mentors of other teachers who want to implement changes in their curriculum or integrate new practices
In purchases or budget	X	X	Both colleagues or their school or department benefit from their involvement in grant writing. They also influence on purchase of equipment, textbooks, software or licenses.
In change or generation of new policies		X	Application of technology or new integration practices result in changes in policies that affect the use of technology mainly in their areas or schools.

Table 2: Role and influence in the work environment by the participant in online program

Cross Case Analysis by Key Theme

In the cross case analysis we could see some key themes that were present in all cases, so we grouped the results by key themes and we are presenting those results in the following narratives:

Key theme 1. Use of technology in the classroom.

All participants agreed that this professional development helped them get started or enhance their uses of technology in the classroom. The most relevant aspect of it was that they were implementing changes as they were taking courses. This means that the transfer of learning and the individual impact occurred continually: both during and after the professional development event. They indicated that they have used technology in the following ways, ranked in order of increasing occurrence:

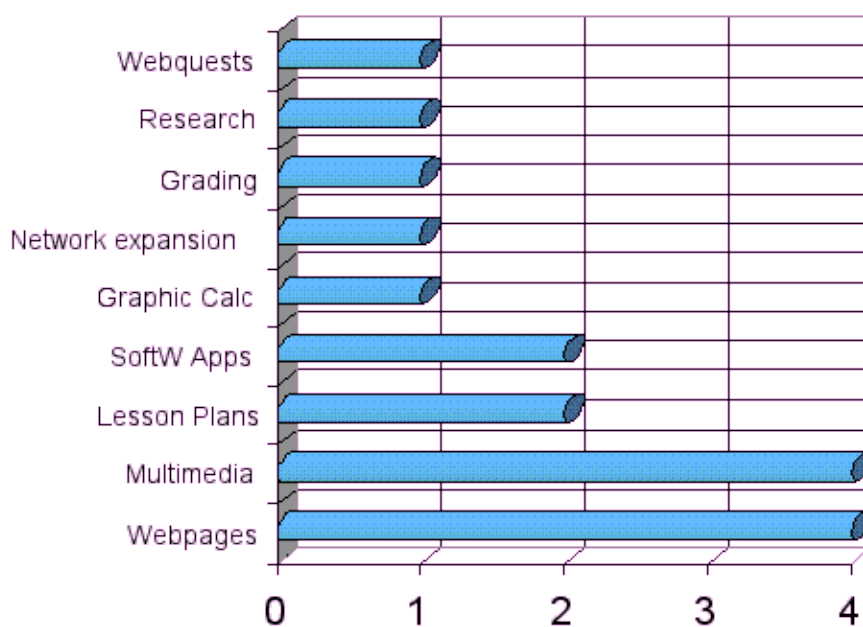


Figure 1: Uses of technology by frequency of cases

Here are some examples of those uses: "This year as we were choosing textbooks, we specifically chose textbooks that used technology, that had references to websites and things in it." Another participant said "Yes, I have used technology in my classroom. Primarily, I use

technology for PowerPoint in my lectures/discussions, graphing calculators with probe ware, computers for research projects, digital video projects, webquests, creating brochures, creating a class web page and posting grades, and BugScope."

Key theme 2. Motivation to integrate technology in the classroom.

All of the participants in this study agreed that there were internal and external factors that motivated their use of technology in the classroom. Internal factors that they mention include: an internal drive, a desire to teach better, a desire to keep things current and interesting, a desire to expose students to technologies used in the "real world." External factors include the reward of better learning, funding or grant money, better Internet connectivity, or access to better broadband connection, students expecting technology-based lessons, motivating students, using time-saving devices for record-keeping, and greater accessibility to information.

Key theme 3. Innovations of technology in the classrooms.

The participants mentioned the some practices as "innovative" in their school environment. For example selecting textbooks that are integrated with online resources as a way to keep their content updated. Another example is the use of videos from online sources such as united streaming, and having an influence on their schools to purchase the license so that other classes can replicate this innovative use of technology in the classroom. Another innovative use that was mentioned was joining other institutions in collaborative projects such as Bugscope, an educational outreach program of the University of Illinois for K-12 classrooms. Through the participation in this project, teachers have access, over the Internet, to remotely operate an

electron microscope to image "bugs" at high magnification.

Key theme 4. Knowledge sharing and collaboration.

All of the participants acknowledged one main influence they were able to have in their own school environments was due to their sharing of ideas and interest for collaboration with colleagues. Jason's earlier account of helping a biology teacher use a SmartBoard in her classroom is an example of this. In some cases sharing knowledge and new ideas led to some changes in the participant's work environment, such as access to a wider variety of multimedia or technology-related resources and software programs.

Additionally, colleagues of the CTER graduates began to use the same technologies and looked up to the CTER graduates as models. This has been motivating because this makes them keep learning. Along these lines, Robert has simply stated, "I like to try to stay ahead of the curve." And, Andrew has influenced the purchase of equipment (such as a laptop and projector) to further collaborate with and support the knowledge-sharing process.

In other cases, such as in the case of Jason, the reaction of peers was not encouraging. He said, "People come to me for consulting. I don't mind them coming to me for troubleshooting. I encourage them to go through the process of troubleshooting. The reaction in general has been positive." However, he also described his mentoring of some teachers who, instead of learning the technologies themselves, wanted him to do work for them. He said it was a negative experience, and "...they expected me to deal with it instead of troubleshooting together. That became an overload and I decided to back off from several interesting projects for that reason."

Key theme 5. Hindrance or inability to apply new skills or innovative uses of technology

Three of the four participants also expressed situations that have prevented them from applying the skills that they had gained in the masters program. The top three hindrances to using innovations in their classrooms as freely as they would like include: a) various school demands; b) priorities within the NCLB Act; and c) change to a more centralized district administration. Incorporating several of these ideas, Jason said, "many projects were not possible to carry on because of other school demands. School will put emphasis where funding is going, so if there is funding for literacy projects, or ESL or other, technology takes the back seat in funding, especially after NCLB." He continued to indicate that another drawback is when colleagues expect that he will deal with all aspects of projects related to technology integration, "they expected me to deal with it instead of working together. That became an overload and I decided to back off from several interesting projects for that reason." The third aspect that was mentioned as a problem was a new district policy that centralized the schools network. One of the participants summarized what others had expressed in these words:

Centralized networking is discouraging. If I need to download something I have to go through the district to have access to certain programs and to download some applications. That is a terrible delay. They track what is going on in the net. They don't like people using their personal computer. A new tech director is coming in now; he seems more encouraging.

Although a lot is said about the importance of the use of technology in the classroom, the participants said that the changes that the school or department want to see in the classroom are not quite related to the incorporation of technology. Steve's explanation is a good example of

this:

Now I see more support to content areas disregarding technology (NCLB). I am afraid these demands will move us away from exploring and using technology. I feel that this may be quite discouraging. Also the physical environment has prevented us from working as real scientists do, so I would like to work more to have our lab set up. Another thing is the quarter time assessment, we spend too much time preparing students for tests now... that does not give us much time to real learning and exploration.

Key theme 6. Institutional receptivity of technology usage

Administrators' support of technology usage in their schools, our participants said, varies: some are receptive, but not monetarily supportive; some are receptive and provide training for their teachers; some are hesitant; and some were supportive, but now are less supportive. Jason said, "They are receptive, but now everything has become more centralized so it is not as easy to be heard or considered. There are many decisions that are no longer taken at the school level." Steve said, "[My administration is] very encouraging till now. But, unfortunately, NCLB is pushing other priorities in the school administration." Robert said, "When we first started (as I graduated from CTER) the administration was not so supportive... I had to prove every single thing that I requested. Now the current administration is more supportive of technology." Andrew agreed and added that the best evidence of the support can be seen in "each middle school having an Information Technology Specialist whose job is to work with teachers in all curricular areas developing technology use in those classes. The district also has summer

workshops for teachers to train them on technology use in the classroom."

Key theme 7. Perceived support from integrating technology in classrooms.

Although the receptivity of technology usage varies widely, the support that administrators have given to these four participants is somewhat similar. Administrators ask for their input and respect their opinion about technologies. Administrators are supportive of grant-writing and of grant monies awarded. And some administrators are allowed flexibility to choose textbooks and additional supporting materials for their classrooms or departments. Andrew's description encapsulates Jason's, Steve's, and Robert's experiences. He said,

Unfortunately I receive not tangible or physical support. It [technology integration] is often viewed as a positive thing but little time or resources are given to truly support teachers in their effort. This is improving with the purchasing of equipment and maintaining the network. Most time and energy is still put into the basics. Technology is still viewed as nice to have but it is an extra. It has not gotten to the level of full support or viewed as a way to truly guide instructional practices.

Conclusion

The findings in this study lead us to believe that one of the unexpected results of the implementation of online education courses and programs for professional development has been the opportunity of providing situated learning experiences to the participants. Taking graduate courses at the same time that teachers stay in their workplace produces an impact that changes the participants' working habits, as they acquire and apply new practices and blend research and

practice in their everyday job. The changes and new ideas that they bring to their jobs not only influence their classroom practice but also have an impact on colleagues and bring in innovations to their school environment. For those who are still skeptical about the advantages of online courses for adult professional development, this study indicates that not only adults benefit (because they improve their formal education without leaving their workplace or city of residence), but schools also benefit because they host the motivated individuals that become the agents of change in their work environment. The impact of online programs as professional development is doubled: learning and the blending of both theory and practice influence participants, make an impact in the participants' work environment, and finally result in enhancing K-12 students' learning.

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