Educating Educators: Designing MOOCs for Professional Learning

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Introduction

We have long been engaged in providing professional learning opportunities for educators, including K-12 teachers, school and district leaders, college of education faculty, and state department of education staff. Our work over two decades has led us to continuously explore variations of face-to-face, online and blended professional learning experiences as both the available technologies and the technological fluency of our audiences advanced. The advent of MOOCs has led us to consider their potential to help education professionals advance their expertise and improve their professional practices. This chapter describes the first year of our efforts, the design principles underlying our work, lessons learned, and future directions of what we call MOOC-Eds – Massive Open Online Courses for Educators.

The Need for MOOCs for Educators (MOOC-Eds)

The need for large-scale, widely accessible, cost-effective professional development opportunities for educators is very clear. K-12 education is undergoing rapid changes driven by:

- new curriculum standards and student assessments;
- the importance of digital literacies and the 4 C’s (critical thinking, communications, collaboration and creativity) in preparing students to be college, career and citizenship ready;
- increased use of data systems to inform instructional, programmatic and policy decisions;
- teacher evaluation systems that use student learning gains to assess the value added by each teacher; and
- technologies to enhance teaching, learning, assessment, communications and school management.

In addition, schools need to address the increased diversity of student populations and the economic constraints leading to larger class sizes, fewer resources, and the need to make education more productive and cost-effective.

These changes impact a large education workforce. The National Center for Educational Statistics reports that there were 3.7 million full-time-equivalent K-12 school teachers in fall 2011. Of these 3.3 million were in public schools and 0.4 million were in private schools. The public school teachers were distributed across almost 100,000 schools in almost 18,000 districts, with more than 200,000 administrators. Private schools added an additional 50,000
To address these changes, both teachers and administrators require opportunities to update their own knowledge, skills, and practices through professional development. The Friday Institute began a program that focuses on the potential for MOOC-Eds to address these needs by bringing together expertise in several key areas:

- design of technology-enabled professional development for educators;
- technology platforms that can enhance online learning and online communities of practice;
- implementing and delivering face-to-face, online, and blended professional development programs; and
- conducting research on online teaching, learning, and professional communities.

In 2013, the Friday Institute twice offered a MOOC-Ed on Planning for the Digital Learning Transition in K-12 Schools, which is the primary basis for this chapter. We are currently deploying another MOOC-Ed for instructional coaches, instructional technology facilitators, media specialist and others who guide teachers in incorporating digital learning into their classrooms. We are also developing MOOC-Eds for teachers and teacher educators on implementing the Common Core Mathematics and English Language Arts Standards and on learning differences and personalization in K-12 education. These MOOC-Eds provide the basis for an active and growing research program. Current information about our work is always available at [http://www.mooc-ed.org](http://www.mooc-ed.org).

**Principles of Effective Professional Development for Educators**

Traditionally, K-12 professional development consists of a few days per year when districts release educators from their teaching or administrative responsibilities to attend workshops. Typically, these workshops provide information through “sit and listen” presentations that, as research repeatedly demonstrates, may increase awareness of changing expectations, but do not lead to changes in educational practices or improvements in student achievement. The National Staff Development Council/Learning Forward (Darling-Hammond, Wei, Richardson & Orphanos, 2009) reports “nearly half of all U.S. teachers are dissatisfied with their opportunities for professional development.” A significant body of research (summarized by Wei, Darling-Hammond & Adamson, 2010) has established that professional development for educators is most effective in improving teaching practices and student achievement when it:

- Fosters a deepening of subject-matter knowledge, a greater understanding of learning, and a greater appreciation of students’ needs;
- Centers around the critical activities of teaching and learning—planning lessons, evaluating student work, developing curriculum, improving classroom practices and increasing student learning;
- Builds on investigations of practice through cases that involve specific problems of practice, questions, analysis, reflection, and substantial professional discourse;
- Provides educators with opportunities to learn in the way they will be expected to teach;
- Is personalized to address the specific professional learning needs of each individual;
Values and cultivates a culture of collegiality, involving knowledge and experience sharing among educators; and,

Is sustained, intensive, and continuously woven into the everyday fabric of the profession, through modeling, coaching, and collaborations.

While the need for large scale educator professional development is clear and the principles of effective programs well established, the resources available to meet this critical need are limited and have been declining in many states and districts. Using traditional professional development approaches is far too costly, cannot provide sufficient learning opportunities when and where educators need them, and are of limited effectiveness even for those educators they can reach. New approaches are required, approaches that embody the principles of effective professional development and are scalable, accessible, and flexible to meet the needs of many educators.

**MOOC-Ed Design Principles**

Our approach differs from most other MOOCs in that it is designed in accordance with the research-based principles of effective professional development ((Darling-Hammond, Wei, Richardson & Orphanos, 2009) and online learning (iNACOL, 2011), which we incorporate into four major design principles for MOOC-Eds:

- **Self-directed learning**, so that participants are encouraged to personalize their own professional learning goals and identify them at the beginning of the MOOC-Ed, select among a rich array of resources, and decide whether, when and how to engage in discussions and activities to further their own learning and meet their goals.

- **Peer supported learning**, so that educators support each other through engagement in online discussions, peer reviews of projects, ratings of posted ideas, and crowdsourcing of lessons learned; while those working in local teams also support each other by working on the MOOC-Ed activities in collaboration with local colleagues.

- **Case study and project-based approaches** to build upon examples of best practices while centering participants work on critical problems of practice and data-informed decision making in their own classrooms, schools or districts.

- **Designed for integration into blended learning programs** to maximize the potential to integrate MOOC-Eds within larger scale professional development programs that provide face-to-face and hands-on activities, individual coaching, local professional learning communities, and other professional learning experiences.

**From Design Principles to the Digital Learning Transition MOOC-Ed**

The Digital Learning Transition (DLT), offered in collaboration with the Alliance for Excellent Education (the Alliance), was our first MOOC-Ed based on these design principles. It is intended for K-12 school and district leaders and others involved in planning and implementing digital learning initiatives. We have now offered the DLT MOOC-Ed twice, and we plan to offer it during the winter semester each year moving forward. The goals for participants are:

1. Understand the impact of technology and the global information age on both what students need to learn and how learning can take place.
2. Explore best practices and lessons learned from schools and districts that have digital learning transitions well underway.
3. Develop a set of digital learning goals for your own school or district.
4. Consider the elements of a successful digital learning transition and effective strategies for addressing each element.
5. Examine processes and tools that help support planning, implementing and evaluating a digital learning transition.
6. Develop an action plan to meet your school or district digital learning transition goals.
7. Contribute to the learning of others who participate in the course.

The DLT MOOC-Ed was organized around the Digital Learning Transition Planning Framework. Based on the work of the Alliances’ Project 24 and the Friday Institute’s Digital Learning Collaborative, this framework is designed to help educators plan digital learning initiatives to meet district and school goals. As shown in Figure 1, the framework incorporates four cyclical processes—vision, plan, implement and assess—and seven key elements—curriculum and instruction, use of time, technology and instruction, data and assessment, academic supports, professional learning, and budget and resources—that must be addressed for a K-12 digital learning initiative to successfully improve student learning. The Alliance’s Project 24 provides a self-assessment to help districts and schools assess their digital learning readiness, which was incorporated into the MOOC-Ed, along with selected Project 24 webinars, blogs, and other resources.

Figure 1: Digital Learning Initiative Planning Framework
The DLT MOOC-Ed contains eight units divided into two parts, with each unit planned for one week. The course outline is shown in Figure 2.
Figure 2: Digital Learning Transition MOOC-Ed Course Outline

<table>
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<tbody>
<tr>
<td><strong>Unit 1: Envisioning Schools in the Year 2020.</strong> Participants further their thinking about the vision for the Digital Learning Transition in their schools and their ability to communicate that vision to multiple stakeholder groups.</td>
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<tr>
<td><strong>Unit 2: Changing the Culture of Teaching and Learning.</strong> This unit focuses on the impact of digital learning on classroom practices and on expanding students' opportunities to learn beyond the classroom walls.</td>
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<tr>
<td><strong>Unit 3: School and District Digital Learning Transitions.</strong> Using a case study approach, participants turn to case studies of schools and districts that have digital learning transitions well underway. Participants also complete the first part of their project on their digital learning goals for their school or district and the major challenges in reaching those goals.</td>
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<tr>
<td><strong>Unit 4: Wrap Up of Part I.</strong> Participants provide constructive feedback to each other on their recommendations of digital learning goals for their schools and districts. They also complete the Part I discussions, crowdsourcing the most important lessons learned and complete a survey about the DLT MOOC-Ed.</td>
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<tr>
<th>Part II: How Do We Get There? Planning for a Digital Learning Transition.</th>
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<tr>
<td><strong>Unit 5: Preparing and Supporting Teachers and Administrators in the Digital Learning Transition.</strong> Many digital learning initiatives have not been successful because they focused on the technology infrastructure without sufficient attention to the human infrastructure—the teachers and administrators who need to learn and update their practices. In this unit, participants focus on planning professional development, coaching and other supports for teachers and administrators.</td>
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<tr>
<td><strong>Unit 6: Planning for the DLT Elements.</strong> Prior units addressed the framework elements of curriculum and instruction (Unit 2) and professional learning (Unit 5). In this unit, participants explore the remaining elements from the planning framework into three topic areas: (1) Providing the Technology Tools; (2) Beyond the School Walls and Schedules; and (3) Making Informed Instructional Decisions. Each participant selects one of these topic areas to focus on, learning about innovative strategies, assessing the current status in their school or district and planning how to move things forward.</td>
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<tr>
<td><strong>Unit 7: Leading a Successful Digital Learning Initiative.</strong> Participants learn about effective strategies for distributed, team-based leadership, then review and consider recommendations for their local leadership structure and approach. Participants also complete and submit their projects, adding strategies and actions steps to their goals and challenges.</td>
</tr>
<tr>
<td><strong>Session 8: Wrap Up and Next Steps.</strong> Participants provide constructive feedback about each other’s strategies and action plans. They also crowdsourcing major lessons learned about professional learning, leadership and action planning that inform their planning of their local initiatives. To complete the unit, they provide feedback about the MOOC-Ed experience and recommendations for future MOOC-Eds.</td>
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</table>
Prior to the start of the MOOC-Ed, registrants completed a survey that provides information about their goals and demographics. Participants could take an optional *School and District Digital Learning Readiness Self-Assessment*, developed by the Metiri Group for the Alliance for Excellent Education’s Project 24 initiative, and receive a detailed report about their school’s or district’s digital learning readiness for each of the seven elements in the framework. The MOOC-Ed provided opportunities for participants to use the data to inform their planning.

Each unit was introduced by brief text with essential questions and a short (4-8 minute) video in which Mary Ann Wolf and Glenn Kleiman, the course developers, introduced the content and expectations for the unit. Figure 3 shows an example page from the DLT MOOC-Ed, the introductory page to Unit 2 on *Changing the Culture of Teaching and Learning*, with the unit introductory video presentation in process.

**Figure 3: DLT MOOC-Ed Example Page**
Participants were invited to select options like those along the left side of Figure 3 to move through each unit’s activities in any order they choose:

- **Review core resources** and, for some units, additional recommended resources, with both video and print resources typically provided in each.

- **Participate in discussions about the unit content.** The facilitators seeded the discussion for each unit, and participants could respond to the initial discussion topics and initiate new ones. Participants could also directly address prior comments through a “quote” option, and tag others’ postings (selecting from *agree*, *disagree* or *insightful* tags).

- **Learn from panels of national experts** from schools, districts, and other organizations, specifically selected for their expertise in the content for each unit. In recorded Google Hangout discussions that were then available throughout the remainder of the course, expert panelist(s) addressed key issues relevant to the unit.

- **Engage in planning projects and then provide and receive peer feedback** about their plans. Participants, working either individually or in teams, were invited to submit their recommended digital learning goals and challenges for their school or district in unit and then their recommended strategies and actions steps for addressing the goals in unit 7. In units 4 and 8, participants were invited to review and provide constructive feedback on each other’s plans.

- **Crowdsource the most important ideas and valuable strategies** to incorporate into school and district plans. Participants were also asked to select which resources were most valuable and recommend additional resources for their peers, which were compiled into a set of participant suggested resources.

- **Complete surveys about the DLT MOOC-Ed** at the midpoint and end of the course, and provide comments about the MOOC-Ed and recommendations for future ones.

We integrated several technology platforms to support the video presentations, resources and interactions in the MOOC-Ed. Google Course Builder running on the Google App Engine provided the overall structure for organizing the MOOC-Ed and presenting information. We integrated Vanilla Forums with Course Builder to provide the discussion forum functions, along with Survey Gizmo for crowdsourcing and other surveys. Google Hangouts was used to record the expert panels and Vimeo was used to make the course-developed videos available.

### DLT MOOC-Ed Data Sources

MOOC-Eds are very new, and provide an opportunity to explore many questions about what professional learning purposes they can serve and how they can best be designed and implemented. For the DLT MOOC-Ed, these data include:

- user demographics, role, level of education and experience, goals for participating, and other information collecting during a require pre-registration survey;

- overall web analytics of visitors, visits, visit duration, pages viewed, from where, using what technology, and other data, for any range of days during the course;

- detailed “click logs” of each user’s access to each unit in the course site, the specific pages accessed, and time spent on each page;

- discussion forum views, discussions started, and comments within discussions for each unit by each participant;

- discussion forum content, which can be subjected to various forms of discourse analyses;
• projects submitted and reviews of projects submitted by each participant;
• total views and average time viewing for each of the videos created for the course and made available through our Vimeo site;
• user ratings of each of the course resources and suggestions for additional resources from crowdsourcing activities embedded in the course;
• mid-point and end of course survey asking participants to rate the value of the course overall and of specific elements of the course; and
• open-ended responses from participants, in both the surveys and the discussions, about what value they found in the course and how it can be improved.

We are exploring multiple analyses of these data to describe how participants engage in the DLT MOOC-Ed to validate and refine our design principles and to develop hypotheses and design experiments for further research. This work is constantly developing, so this chapter provides a status report and working ideas based on our first year of work with MOOC-Eds, not summative findings or definitive conclusions. First we present a summary of key findings, followed by general findings about the registrants in the two DLT MOOC-Eds (DLT1 and DLT2) and their participation in the course, then we examine data relevant to each of the design principles. The detailed data is from DLT2 only, since we have more analytics data available from that course.

Summary of Key Findings

• Findings from our early MOOC-Eds show that educators from around the U.S. and around the world are interested in this type of professional development, with registrants from all U.S. states and 90 countries, representing many types of schools, roles within schools, and levels of experience. The participants had a variety of goals for taking the course, such as preparing to lead change in their school or district, understanding the potential of digital learning, experiencing a MOOC, and improving their own classroom teaching. This finding highlights the need to design MOOC-Eds to address the diverse needs of large national and international groups of participants.

• A substantial number of participants actively engaged in the course, as measured by course visits, page views, video views, discussion forum postings and views, and time on the course site. However, only about 50% of those who registered participated in the first unit and there is an ongoing decline in the number of participants across units. We are more concerned about whether participants met their own professional learning goals than in whether they “completed” the courses, but in the second DLT MOOC-Ed, 12.2% of those who participated in the first unit completed the course. The data are broadly consistent with findings from other MOOCs and raise questions about how to increase ongoing engagement in MOOC-Eds. It also points to the importance of distinguishing among registrants, starting participants and ongoing participants to accurately convey the scale of impact of MOOCs.

• While the MOOC-Eds are presented in weekly units, we find that at any given week after the first, many participants are still engaged in prior units. For example, during week 5, about 50% of the clicks in the MOOC-Ed site were on units 1-4. This finding points to the need to build flexibility into MOOC-Ed course schedules, while also enabling participants to engage in peer-supported learning activities and exchanges.

• In the second Digital Learning Transition MOOC-Ed, 15.5% (n=139) of the participants completed the final survey. They reported, on average, spending 3-4 hours per unit. Survey results show that the large majority of participants report that they made good
progress on their personal goals, developed new insights and knowledge, and found the course engaging, motivating, and worth recommending to colleagues.

- With the exception of two experimental synchronous twitter chats, the majority of participants completing the survey found all the elements of the course (e.g., video resource, group discussions, expert panels, projects, etc.) to be valuable. Open-ended comments made it clear that which resources and activities were most valuable varied across participants, confirming the need to provide varied learning options and paths within MOOC-Eds to support the self-directed learning design principle.

- Many participants report that the exchanges with like-minded educators; feedback from colleagues about their goals, challenges, strategies and action steps statements; and information about digital learning transitions from the case studies and expert panel discussions were very useful parts of the course. This confirms the importance of the peer-supported learning and case-study/project-based learning design principles.

- Several types of preliminary discourse analyses show that participants were engaged in reflection, information sharing, and co-construction of ideas in the discussions. While a substantial number of participants contributed to the discussion, we continue to explore ways to increase engagement and interactions in future MOOC-Eds.

- Some participants reported that the MOOC-Ed was particularly valuable in the context of their work with local teams, and others reported it was valuable in the context of a North Carolina blended professional development program for principals. This feedback supports integrating MOOC-Eds with other professional learning activities, while the more detailed comments also point to the need for further work on how to make this type of integration work smoothly.

**General Results about the DLT MOOC-Eds**

We organize this section around some key questions similar to those asked about all MOOCs.

*Are educators interested in MOOC-Eds as a vehicle for their own professional development?*

We publicized each of the two DLT MOOC-Eds through press releases and social networking during the two months prior to the start of each course. Given the target audience for the course – K-12 education leaders – and the topic – planning for the digital learning transition – we did not expect the huge numbers that register for other types of MOOCs. We began with a goal of 500 participants and ended up with 2,665 individuals registered for the first DLT MOOC-Ed and 1,791 for the second. These 4,456 registrants included individuals from all 50 States and D.C. and, to our surprise, since we had not made any effort to promote the courses internationally, more than 10% (462) were from other countries, with 90 countries represented. Canada, Pakistan, Great Britain, Australia, Brazil, India and South Africa had the largest representations; and individuals from Nigeria and Kyrgyzstan were among the most active discussion participants. These data and the responses to additional MOOC-Eds confirm that significant interest exists among educators worldwide in exploring this new form of professional learning.

*Which educators are interested in the DLT MOOC-Eds?*

Overall, the DLT MOOC-Eds attracted educators in a variety of roles that comprised the target audience for the design of the course. Given the range of responsibilities, types of schools, levels of experience, and technology fluency, the need for self-directed learning and alternative ways to engage in the MOOC-Ed seems validated.
Table 1 shows the primary areas of responsibility of the enrollees across the two DLT MOOC-Eds. As expected, the largest number of participants (28%) identified their primary area of responsibility as instructional technology, which reflects the focus of the courses. Teachers, school and district administrators, and staff responsible for curriculum, professional development and technology infrastructure were also well represented. The 13% listed as other education professional included consultants, vendors, University faculty, and staff at non-profits education organizations.

Table 1: Primary areas of responsibility for participants in DLT1 and DLT2

<table>
<thead>
<tr>
<th>Primary Area of Responsibility</th>
<th>Number</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Instructional technology</td>
<td>1249</td>
<td>28%</td>
</tr>
<tr>
<td>Classroom teaching</td>
<td>729</td>
<td>16%</td>
</tr>
<tr>
<td>School or district administration</td>
<td>709</td>
<td>16%</td>
</tr>
<tr>
<td>Other education profession</td>
<td>566</td>
<td>13%</td>
</tr>
<tr>
<td>Curriculum and Instruction</td>
<td>564</td>
<td>13%</td>
</tr>
<tr>
<td>Professional development</td>
<td>336</td>
<td>8%</td>
</tr>
<tr>
<td>Technology infrastructure, ops, finance</td>
<td>275</td>
<td>6%</td>
</tr>
<tr>
<td>Student</td>
<td>28</td>
<td>1%</td>
</tr>
</tbody>
</table>

The majority of registrants were from public non-charter schools or districts (66%); others were from private schools (15%) and from public charter schools (5%), while the remaining participants (14%) were not employed by a school or district.

The large majority of registrants reported significant experience in K-12 education, with 69% in DLT1 reporting more than 10 years of experience and those in DLT2 reporting an average of 15.9 years of experience, with a range of 0 to 48 years. Almost all participants had college degrees; 66% listed a master’s degree as their highest degree earned and 11% reported having doctoral degrees. This is consistent with the roles of the participants and the target audience of those involved in planning and implementing innovative initiatives. The participants were 61% female and 39% male, which reflects the larger number of females working in K-12 education. Most of those enrolled, 86%, reported some experience with online learning and 43% reported some experience teaching online. Only 25% reported prior experience taking a MOOC, but almost all reported that they were experienced in using productivity tools and online networking, so it was a technology-sophisticated group of educators.
Was there active participation in the MOOC-Ed?

Table 2: Participant activity in DLT1 and DLT2

<table>
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<tr>
<th></th>
<th>DLT1</th>
<th>DLT2</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number enrolled</td>
<td>2,665</td>
<td>1,791</td>
<td>4,456</td>
</tr>
<tr>
<td>Countries represented</td>
<td>60</td>
<td>60</td>
<td>90</td>
</tr>
<tr>
<td>Visits to course site</td>
<td>21,172</td>
<td>24,724</td>
<td>45,896</td>
</tr>
<tr>
<td>Page views of course site</td>
<td>96,404</td>
<td>100,834</td>
<td>197,238</td>
</tr>
<tr>
<td>Hours on course site (excluding external video and text resources)</td>
<td>2,364</td>
<td>2,653</td>
<td>5,017</td>
</tr>
<tr>
<td>Discussion participants</td>
<td>962</td>
<td>895</td>
<td>1,857</td>
</tr>
<tr>
<td>Number of discussion postings</td>
<td>2,822</td>
<td>3,575</td>
<td>6,397</td>
</tr>
<tr>
<td>Number of discussion pages viewed</td>
<td>74,580</td>
<td>42,173</td>
<td>116,753</td>
</tr>
<tr>
<td>Views of the videos developed for the course (excluding the many videos from other organizations)</td>
<td>6,028</td>
<td>5,041</td>
<td>11,069</td>
</tr>
</tbody>
</table>

At a global level, these data show significant activity over the course of each of the two MOOC-Eds: more than 45,000 page views, 5,000 hours on the course site (and many more hours reviewing linked resources external to the site), over 1,800 participants in the discussions posting more than 6,000 message and more than 116,000 views of those messages, along with more than 11,000 views of the course-specific videos. Certainly, these numbers are far higher than we would find in comparable data from two face-to-face eight-week courses on the same topic.

The table also shows that while DLT2 had 40% of the total enrollees for the two courses, it had more page views and discussion postings. This is likely due to some revisions in the course, including the addition of an *introduce yourself* section of the forum that was very active in unit 1. In may also be that DLT2 had fewer enrollees who were just curious about MOOCs and did not actively participate.

How many of those who enrolled actively participated?

The short answer is that some do, but far fewer than those who enroll; and participation declines significantly over the weeks of the course. The analyses of the decline in participation and other analyses below are from the DLT2 MOOC-Ed data, since we have more detailed analytics available for that course than the prior one.

We began with 1791 enrollees in DLT2. We removed 46 who were staff in the organizations offering the course or expert panelists for the course, since those were not typical participants. We then classified those who made at least one visit to the unit as an active participant in a unit. Just over half, 907, met this criterion in unit 1, so that is the number we count as active participants at the start of the DLT 2 MOOC-Ed. Many of these individuals introduced themselves in the unit 1 discussion but did not return for unit 2, which had 503 active participants. Figure 4 shows the decline in active participants across the eight units of the course. Clearly, information about enrollee numbers can significantly misrepresent how many people actively participate in a MOOC, even with the very lenient criteria for participation of at least one visit to a unit, so we distinguish between enrollees and participants.
Note that units were made available on a weekly basis so, for example, unit 4 was not available until the start of week 4. Since once a unit is opened it remains open for the rest of the course, participants may be working on units prior to the current one at any time. Our analyses have shown that after the first week of the course as many as 50% of the participants’ spend time on units prior to the most recent one. This, and requests from participants, led us to keep the course open for additional weeks after the original end date. Figure 5 below shows the number of participants who visited the course during each week, including two additional weeks after the release of the final unit (P1 and P2) to provide participants with additional time finishing their work in the course.
These data show that many participants did not begin the course until the second week, since there were 907 participants in unit 1 but only 596 participants during the first week. There is then a decline in participation each week, with participation continuing at a reduced rate into weeks 9 and 10.

The circle graphs in Figure 6 provide another way to view the pattern of activity across units and weeks during the second half of the course and the two additional weeks (P1 and P2) provided after the planned end of the course. The Week 5 circle shows that during that week, only 50% of the page clicks were on the Unit 5 content; the other half were on the prior units. In each of weeks 6, 7 and 8, less than 40% of the page clicks were on the schedule units for those weeks. Only by the second post-course week did page clicks in Unit 8 reach 40%.

These data suggest that many participants need additional time both to get started in the course and to complete it. We are adjusting the schedules of further DLT MOOC-Eds based on this analysis.

How much time do participants spend on the course?

Table 3 shows the distribution of responses to the question of: On average, how many hours per units have you spent on MOOC-Ed activities? A typical DLT2 participant (44%) reported spending 3-4 hours per week, with 31% reporting less and 25% more. The percentages from the DLT1 final survey are very similar.
Table 3: Average Hours Spent on Each Unit

<table>
<thead>
<tr>
<th>Hours</th>
<th>Total</th>
<th>% Responding</th>
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<tbody>
<tr>
<td>1-2 hours per unit</td>
<td>42</td>
<td>30.7%</td>
</tr>
<tr>
<td>3-4 hours per unit</td>
<td>60</td>
<td>43.8%</td>
</tr>
<tr>
<td>5-6 hours per unit</td>
<td>30</td>
<td>21.9%</td>
</tr>
<tr>
<td>7-8 hours per unit</td>
<td>4</td>
<td>2.9%</td>
</tr>
<tr>
<td>More than 8 hours per unit</td>
<td>1</td>
<td>0.7%</td>
</tr>
<tr>
<td>Total responses</td>
<td>137</td>
<td>100%</td>
</tr>
</tbody>
</table>

These results, along with data from other courses, suggests that designing for a core group that has 3 to 4 hours of engagement per week, while providing options for those who have more or less time available.

How many participants completed the course?

MOOC-Eds differ from college courses in many ways, including that they do not have formal tests, grades and completion requirements. With our audience of adult professionals who have different goals for taking the course, our measure of success is how many participants are able to advance on their personal goals, not how many meet an instructor-defined criteria for “completion.” However, we did have one metric that could be considered completion. Many educators need a certain number of continuing education units (CEUs) within a certain time period. To enable participants to obtain CEUs, we offered certification of 20 hours of professional development to those who requested it and who:

- Submitted their statements, individually or as part of a team, of goals, challenges, strategies and action steps.
- Provided constructive reviews of the statements submitted by at least six other participants.
- Contributed at least six postings to the discussion forum.
- Completed the end-of-course survey.
- Certified that they spent at least 20 hours on DLT MOOC-Ed activities.

In DLT2, of the 907 participants who began the course, 67 requested and received certificates of completion of these requirements for CEUs. So by the strictest criteria we can apply, 7.4% of the initial active participants completed the course. However, not all participants needed or wanted a certificate of completion and, as shown in Table 3 above, there were 111 participants active in the final unit, so by that measure 12.2% completed the course. In addition, many participants found the course to be of value to them in meeting their goals, which we consider the more critical definition of success.

Results Related to Self-Directed Learning

To support self-directed learning, the DLT MOOC-Ed needs to enable participants with different goals, interests and learning preferences to choose alternative paths through the course, selecting the resources, discussions, and activities that they would find most beneficial. In this section, we summarize our findings related to this design principle.

What were the participants’ goals for taking the DLT MOOC-Ed?

We collected this information in different ways across the two DLT MOOC-Eds. For the first (DLT1), the registration survey contained an open-ended question asking participants to specify up to three goals for taking the course. We used the results to develop a set of choices for the
second DLT MOOC-Ed (DLT2), asking participants to choose up to three of the provided options, while also allowing them to specify other goals.

Table 4 shows the number of participants in DLT2 who specified each goal. The four most frequently chosen goals, with more than 30% of participants including among their three goals, were: Prepare to lead change in my school or district (44.0%); Understand the potential of digital learning (40.5%); Learn about best practices for DLT transitions (37.6%); and Plan more effective professional development for local teachers (30.1%). These are consistent with the overall intent of the course. Some of the selected goals, such as become a better coach or mentor for other teachers (selected by 20.8% of participants) and improve my own classroom teaching (selected by 16.0%), where not primary goals of the course design, but the course did contain information that participants could use to address these goals.

<table>
<thead>
<tr>
<th>Goal</th>
<th>Total</th>
<th>% Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prepare to lead change in my school or district</td>
<td>792</td>
<td>44.0%</td>
</tr>
<tr>
<td>Understand the potential of digital learning</td>
<td>728</td>
<td>40.5%</td>
</tr>
<tr>
<td>Learn about best practices for DLT transitions</td>
<td>676</td>
<td>37.6%</td>
</tr>
<tr>
<td>Plan more effective professional development for local teachers</td>
<td>541</td>
<td>30.1%</td>
</tr>
<tr>
<td>Become a better coach or mentor for other teachers</td>
<td>374</td>
<td>20.8%</td>
</tr>
<tr>
<td>Understand the benefits and risks of technology in K-12 schools</td>
<td>319</td>
<td>17.7%</td>
</tr>
<tr>
<td>Improve my own classroom teaching</td>
<td>288</td>
<td>16.0%</td>
</tr>
<tr>
<td>Experience a MOOC</td>
<td>271</td>
<td>15.1%</td>
</tr>
<tr>
<td>Engage my community in supporting digital learning</td>
<td>266</td>
<td>14.8%</td>
</tr>
<tr>
<td>Connect with other educators who lead DLT initiatives</td>
<td>262</td>
<td>14.6%</td>
</tr>
<tr>
<td>Learn about approaches to K-12 infrastructures and devices</td>
<td>248</td>
<td>13.8%</td>
</tr>
<tr>
<td>Organize and inform the work of our local team</td>
<td>228</td>
<td>12.7%</td>
</tr>
<tr>
<td>Understand and plan for the financial realities of DLT initiatives</td>
<td>119</td>
<td>6.6%</td>
</tr>
<tr>
<td>Learn how to create a safe internet environment for students</td>
<td>106</td>
<td>5.9%</td>
</tr>
</tbody>
</table>

Did participants meet their personal goals and benefit from participating in the DLT MOOC-Ed?

Given our principle of self-directed learning, this is an important question. Our best data to address this question comes from the end of course survey. A total of 139 participants completed the survey, 15.5% of those who began the course, just over twice the number who requested certificates of completion, and comparable to the number who were active in the last two weeks and units of the course.

Table 5 shows the final survey items most relevant to participants’ views of the value of the course and their satisfaction with it. They were asked to rate each statement on a scale from 1 (not at all true) to 5 (very true).
### Table 5: Satisfaction and Value of MOOC-Ed to Participants of DLT2

<table>
<thead>
<tr>
<th>Satisfaction</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Avg.</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>I feel like I have made good progress on my personal goals</td>
<td>4.3%</td>
<td>3.6%</td>
<td>23.7%</td>
<td>46.8%</td>
<td>21.6%</td>
<td>3.8</td>
<td>139</td>
</tr>
<tr>
<td>I’ve been engaged in and enjoying the MOOC-Ed experience</td>
<td>3.7%</td>
<td>5.9%</td>
<td>13.2%</td>
<td>37.5%</td>
<td>39.7%</td>
<td>4.0</td>
<td>136</td>
</tr>
<tr>
<td>I developed new insights and knowledge that will enable me to better contribute to furthering digital learning in K-12 education</td>
<td>2.2%</td>
<td>5.0%</td>
<td>9.4%</td>
<td>38.1%</td>
<td>45.3%</td>
<td>4.2</td>
<td>139</td>
</tr>
<tr>
<td>I feel motivated to address the need to further digital learning in my school or district</td>
<td>2.2%</td>
<td>2.9%</td>
<td>12.3%</td>
<td>34.1%</td>
<td>48.6%</td>
<td>4.2</td>
<td>138</td>
</tr>
<tr>
<td>I would recommend that my colleagues participate in future Digital Learning Transition MOOCs for Educators</td>
<td>4.4%</td>
<td>3.6%</td>
<td>10.2%</td>
<td>25.5%</td>
<td>56.2%</td>
<td>4.3</td>
<td>137</td>
</tr>
</tbody>
</table>

Taking responses of 3, 4 or 5 as showing some agreement, these data show that at least 90% of the participants reported that they made progress on their personal goals; were engaged in the MOOC-Ed experience; developed new insights and knowledge that would enable them to further digital learning in K-12 education; became more motivated to do so; and would recommend future DLT MOOC-Eds to colleagues. If we consider the 128 participants who agreed that they had made progress on their goals to have “completed” the course, we now have 14% of those who participated in Unit 1. Of course, we do not know if others who did not complete the survey would also agree with this statement, so the actual number may be higher.

*In what ways and to what extent did participants personalize their learning (choose different paths through the MOOC-Ed) to meet their learning goals??*

This is an important question in our research, since understanding different pathways that participants take through the MOOC-Ed would help us design courses that enable productive self-directed learning for more educators. We are just beginning to explore this topic, so offer some preliminary ideas and data here.

Participants did not necessarily participate in a linear way or go through the activities in a particular order. Similarly, participants chose to engage (or not engage) in different elements and resources in the course.

In our final survey, we asked participants to rate the value of each of the elements of the course. The results are shown in Table 6. With the exception of two experimental Twitter chats (which we will not necessarily continue in future DLT MOOC-Eds), at least 85% of respondents who completed the final survey used each type of activity provided in the course. We will be seeking ways to obtain data from more participants throughout the course in the future.
Combining the ratings of 4 and 5 into a *valuable* response, we find that more than 3/4 found the video resources, text resources and expert panel videos to be valuable. About 2/3 found the introductory videos (we are working on improving those for future courses), group discussions and projects valuable. Fewer, but still well over ½, found the project feedback and the additional suggested resources to be valuable. Data on the same questions midway through the course (Unit 4) provided similar patterns, with 117 respondents.

**Table 6: Value of Elements of the Course to Participants of DLT2**

<table>
<thead>
<tr>
<th>Element</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Did Not Use</th>
<th>Avg.</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introductory Video Presentations</td>
<td>3.6%</td>
<td>8.7%</td>
<td>17.4%</td>
<td>38.4%</td>
<td>29.0%</td>
<td>2.9%</td>
<td>3.8</td>
<td>138</td>
</tr>
<tr>
<td>Video Resources</td>
<td>0.7%</td>
<td>6.5%</td>
<td>12.3%</td>
<td>34.1%</td>
<td>44.9%</td>
<td>1.4%</td>
<td>4.2</td>
<td>138</td>
</tr>
<tr>
<td>Text Resources</td>
<td>0.7%</td>
<td>2.2%</td>
<td>15.9%</td>
<td>39.9%</td>
<td>39.1%</td>
<td>2.2%</td>
<td>4.2</td>
<td>138</td>
</tr>
<tr>
<td>Group Discussions</td>
<td>2.2%</td>
<td>8.7%</td>
<td>21.0%</td>
<td>37.7%</td>
<td>26.1%</td>
<td>4.3%</td>
<td>3.8</td>
<td>138</td>
</tr>
<tr>
<td>Expert Panel Videos</td>
<td>2.2%</td>
<td>5.1%</td>
<td>14.5%</td>
<td>42.0%</td>
<td>34.1%</td>
<td>2.2%</td>
<td>4.0</td>
<td>138</td>
</tr>
<tr>
<td>Goals &amp; Challenges Project</td>
<td>2.2%</td>
<td>0.7%</td>
<td>20.3%</td>
<td>27.5%</td>
<td>38.4%</td>
<td>10.9%</td>
<td>4.1</td>
<td>138</td>
</tr>
<tr>
<td>Project Feedback from Participants</td>
<td>0.7%</td>
<td>6.6%</td>
<td>24.3%</td>
<td>32.4%</td>
<td>23.5%</td>
<td>12.5%</td>
<td>3.8</td>
<td>136</td>
</tr>
<tr>
<td>Participant Suggested Resources</td>
<td>2.2%</td>
<td>1.4%</td>
<td>19.6%</td>
<td>37.0%</td>
<td>24.6%</td>
<td>15.2%</td>
<td>3.9</td>
<td>138</td>
</tr>
<tr>
<td>Twitter Chats</td>
<td>5.8%</td>
<td>4.4%</td>
<td>9.5%</td>
<td>12.4%</td>
<td>5.8%</td>
<td>62.0%</td>
<td>3.2</td>
<td>137</td>
</tr>
</tbody>
</table>

In future analyses, we will be exploring whether groups of participants show different patterns of use of the categories of resources. For example, are there video-focused and text-focused participants? Are there participants who mainly value the expert panels and discussions, which tend to focus on more specific “how tos” than other resources?

We also explored the relationship among three variables across all participants in the course: number of course pages viewed, number of discussion forum pages viewed, and number of postings in the discussion forum. Some participants provide comparatively few postings themselves, but are very active readers of others discussion postings. The most active reader of postings viewed 338 postings but did not post a single comment in the forum. Others have a much higher ratio of postings to viewings of others’ posts. Similarly, comparing course page view to forum page views and postings shows that some participants were heavy users of the course resources with little use of the discussion forum, while others were more engaged in the forum and made relatively less use of the course resources.

Participants’ comments when asked what they found most beneficial about the DLT MOOC-Ed represent how they chose to focus their time and attention in different ways, on different topics, and in different parts of the MOOC-Ed and how they utilized certain parts of the course. Some comments about what participants found most beneficial follow:

- I learned to differentiate and make professional learning learner-centered. This course helped me know how to support my colleagues.
• The expert panels have all been very helpful in beginning dialogs with other administrative personnel in the district.

• All the video resources were wonderful. I learned a lot from each one. I took from the course the importance of communication to all key stakeholders. Also how vital it is to have a strong team in place to move the transition forward.

• Readings were great. I can download and review at own pace.

• The benefits of seeing/hearing where other educators were on this journey...and how they overcame or are overcoming obstacles.

• Being able to articulate my journey.... Encouragement and energy coming from the fact that so many educators are in similar places and working toward similar objectives.

• This course has helped me to understand and realize the potential of digital learning in K-12 schools. It provided me great opportunities to communicate and collaborate with others.

• The volume of the resources was overwhelming at times, but I appreciated the opportunity to personalize the learning by choosing the resources that applied to my situation.

• The action plans, goal setting and strategies have been helpful. They allowed me to put my thoughts together. Expert panels confirmed the thoughts I had about implementing a DLT and also taught me new things.

• I found that the last two units really assisted me with moving forward in my planning and understanding. I think this was because this was the area where I needed more assistance in my own learning.

• I found it engaging and "walking the talk" - one could proceed at their own pace and with their own choices, but were put on track with many resources to assist learning.

Overall, analyses of participants’ goals and self-directed learning suggest two lessons for future MOOC-Eds: (1) The need to continue to provide alternative resources, projects and paths to enable participants to meet their own goals through self-directed, peer-supported learning; and (2) The need to clearly communicate what goals a specific MOOC-Ed is and is not intended to meet. For example, the DLT MOOC-Ed is designed for those involved in planning school and district initiatives, but is not intended to address in detail classroom practices in specific content areas and grade levels. Defining and communicating the purposes of a MOOC-Ed so that potential participants can determine whether it fits their goals and interests is an important consideration for the success of MOOC-Eds.

Results Related to Peer-Supported Learning

Peer-supported learning takes place in the DLT MOOC-Ed through (1) the discussion forum in each course, (2) the crowdsourcing about valuable resources and ideas, (3) and the peer feedback to the two sections of the project – the first on goals and challenges and the second that adds strategies and action steps.

Open-ended responses show that these elements were highly valued by some participants:

• The greatest benefit that MOOC-Ed has granted to me was the contact with like-minded educators.

• The MOOC provided a structured environment for me to create an initiative with support from educators around the world. I was energized both by the content I viewed/read and the discussions with other participants. I felt like other participants were very engaged and
offered realistic, thoughtful feedback. The crowdsourcing of the resources helped me focus on the most important resources for sharing with others.

- The best part was suggestions/ideas/feedback/participation in online discussions. These helped me in framing an action plan for my own professional development and design an action plan to help the Coordinators working under me.

- Feedback from colleagues was the most beneficial part. Also, helped to know that so many of us are in similar situations and have similar challenges and experiences

- The discussion forum was most reflective and helpful as I learned about the barriers and its solutions to promote digital learning in my schools.

- I loved seeing others from all different locations talking about the same thing - passion for the students, for the schools and for digital learning. The interaction with others was so great - Everyone has such great ideas and opinions and to pool them all together like this was amazing. Well done!

- Just received all the "tools" (Chromebooks, bags, charging carts) this week at our school to begin a 1:1 program. Although, I am as excited as a kid at Christmas, I have stayed awake many nights lately stressing about starting the program. However, the discussion and the many insightful comments that I have read have given me some confidence to dive in and start the transformation at my school.

We designed the course so that there are specifically focused discussions embedded into each unit, while the entire discussion forum could also be accessed separately. We begin in the first two units by dividing participants into smaller groups according to the first letter of their state or country, in order to keep the number of people in a discussion manageable while keeping those from the same places together. In units 3 and 4, participants are then grouped for discussion according to whether they are working on a plan for a classroom, school, district or other educational organization. In later units, discussions focus on specific topics (e.g., technology infrastructure, assessment, community connections) so participants select those of interest to them. The comments are not threaded, so are all at the same level and organized by time of posting. Options to quote prior postings and to mark postings as “agree,” “disagree” or “insightful” are available, and those that receive at least five positive ratings are flagged for other participants. The course facilitators seeded initial discussion topics and added comments to maintain some presence in the course and move the discussions along, but most of the discussions were initiated and driven by the participants.

As noted above, different participants made different levels of use of the discussion forum, and the ratio of discussion postings to views varies widely across participants. Survey responses from participants, also described above, show that about 67% of respondents rating the group discussion to be valuable and well over 50% found the feedback about projects and peer-suggested resources to be valuable.

What types of exchanges took place in the online discussions?

The discussion forums also provide a rich set of exchanges that can be analyzed in many different ways. In a related MOOC Research Initiative project, Shaun Kellogg, Sherry Booth and Kevin Oliver (2014) at the Friday Institute have begun with two types of discourse analyses, which are described below. They are also applying social network analysis techniques, which will be reported separately. Updated research reports will be available at http://www.mooc-ed.org. A summary of their analyses to date is provided below.
We analyzed the content of the discussions in two ways. The first looks at the five discourse characteristics of the postings adapted from the Transcript Analysis Tool (Fahy, Crawford, & Ally, 2001):

1. Statements. Convey facts, information, or direct answers/comments to preceding posts.
2. Scaffolding. Initiate, continue or acknowledge interpersonal interactions.
3. References. Quote or directly refer to other sources.
4. Reflections. Express the individual’s thoughts, judgments or opinions in a way that welcomes responses.
5. Questions. Invite others to provide answers or information.

Figure 7 shows the results from a stratified sample of the discussions. (The initial *introduce yourself* discussion was not included, since it was intended to have primarily statements.)

![Figure 7: Discourse Characteristics of Postings](image)

The data show that, other than statements, scaffolding was the most common characteristic among postings, followed by references, reflections, and questions.

We also applied the Interaction Analysis Model (Gunawardena, Lowe, & Anderson, 1997) to assess the extent to which the interactions among educators resulted in the co-construction of knowledge. This analysis classifies each discussion into one of the following five phases according to the highest phase reached in the postings under that discussion:

1. Sharing and comparing. Further the discussion by providing observations, opinions or examples that support or extend prior statements.
2. Dissonance and inconsistency. Identify areas of disagreement or potential disagreement.
3. Negotiation and co-construction. Explore common ground, clarify intent, seek agreement or integrate ideas.
4. Testing and modification. Test ideas against prior information, research and/or data and proposed synthesis of ideas.
5. Summary, application and metacognition. Summarize agreements, describe applications of knowledge or acknowledge changes in understanding.

The data, shown in Figure 8, display the proportions of discussions by the highest phase of knowledge construction reached in a discussion thread.

![Figure 8: Highest Phase of Knowledge Construction Reached at the Discussion Level](image)

The data show that nearly half the discussions reach the negotiation and co-construction level, which suggests productive exchanges are taking place. It is also interesting to note that this analysis shows far more postings at level 3, negotiation and co-construction, than at level 2, dissonance and inconsistency. That is consistent with two observations of the discussions: (1) the participating educators very rarely directly expressed disagreement and (2) of the three tags participants could select for every posting, those of agree and insightful were used often, while disagree was almost never used. Participants seem very hesitant to directly express disagreement with each other.

These analyses suggest that DLT MOOC-Eds are fairly successful in stimulating engaged and productive interactions, which is consistent with the view of those who followed the discussions – we’ve been impressed by the number of thoughtful postings and lengthy exchanges.

**Results Related to Integration into Blended Learning Programs**

We believe that MOOC-Eds can provide valuable professional learning experiences for many educators, but that they become most valuable when combined with other face-to-face or online learning opportunities. For example, the DLT MOOC-Ed addresses planning for a K-12 digital learning transition in schools and districts. In practice, this requires a team that brings together expertise in curriculum, assessment, professional development, technology, funding, policy, administration and communications. The DLT MOOC-Ed includes a large amount of content across these areas and was designed to be most beneficial when groups worked through the
course content in teams that were responsible for local planning. When that was not possible, we encouraged participants to work with local colleagues who were also interested in the course. At the time they completed the DLT2 registration survey, the majority of participants, 55%, planned to participate with colleagues; 35% with a school or district planning team and 20% with other colleagues in their school or organization.

Feedback from participants verified the value of a team approach. Representative comments include:

• The most beneficial aspect of this course was actually the face-to-face conversations informed and occasioned by the MOOC with the other members of my school team.

• This course helped members of our DLT team see the possibilities and open their minds beyond the traditional 45-minute class periods.

• I am happy that we took part as a school team, which in turn was part of a greater District team. It is these group conversations that I found to be most helpful.

• Love the resources and find that there are many to share. We are working as a team in the district on this course and the time we spend together is invaluable.

• [The most valuable part was] meeting as a team at my school weekly to create our self-assessment and the discussions we have had around our goals and what we are learning in the MOOC-Ed.

In addition, the MOOC-Ed is designed to support blended approaches based upon the versatility of the content, the non-linear possibilities, and the encouragement to participate in groups or teams. The fact that MOOC-Eds are currently offered at no cost to participants also provides flexibility in terms of integrating the MOOC-Ed into other initiatives, assuming that the timing works. We have explored using the DLT MOOC-Ed as part of a graduate course, in which students also had their own Google Community site, interactions prior to the MOOC-Ed, and projects after the MOOC-Ed to complete their course requirements. We are also integrating the DLT MOOC-Ed into a yearlong professional development program for North Carolina principals, which involves face-to-face sessions, online modules, and executive coaching components. We are currently exploring other possibilities for wrapping other activities around MOOC-Eds and integrating MOOC-Eds into larger professional learning programs.

Results Related to Case Study and Project Based Learning
Case studies and project based learning are incorporated in the DLT MOOC-Ed through the following:

• school and district case studies in units 2 and 3;

• expert panels, which focused on lessons learned from local initiatives and often included leaders from the case study schools;

• the project that participants were invited to submit that summarized their recommended goals and challenges (unit 3) and their strategies and action steps (in unit 7) for their local initiative; and

• the peer feedback participants were asked to provide in response to the submitted projects.

A number of participants cited these elements as most valuable in their comments about the course:
• I have learned how other districts and schools have been implementing digital learning.... I was able to see a bigger picture than what I am faced with in my daily role in my district and I have enjoyed that.

• I have a great deal more background knowledge about development of digital learning in a K-12 setting. I really appreciate the resources that have been presented and the expert panels have all been very helpful in beginning dialogs with other administrative personnel in the district.

• I particularly benefited from the case study presentations, which gave lots of insight into the successes and challenges of districts that are ahead of our implementation schedule.

• Creating the plan after seeing how others had done it was a great inspiration.

• I felt that the practical ideas and tips from those working in the field were very helpful in understanding how to implement technology and address the challenges that we face.

• I learned that my struggles with technology integration are not unique and it was very beneficial to hear from those who have found solutions to these problems and are now very successful. I particularly like the expert panel discussions because I would print out the questions posed to the panelists and then take notes on their responses for future reference.

• The Action plans, goal setting and strategies have been helpful. They allowed me to put my thoughts together. Expert panels confirmed the thoughts I had about implementing a DLT and also taught me new things.

• The goals and challenges statement was very beneficial. It made my team focus on these aspects. Although we knew our challenges, it was more clear once it was formulated on paper.

• I have benefited most from the MOOC-Ed from working with my local team, expert panels and other resources on the course. Working on our district assessment and goals as well of the discussions we have about the units have helped us stay focused on the big picture of using technology to change the way we teach.

We divided the projects into those that addressed digital learning initiative planning within a classroom, school, district or other educational organization. We handled peer feedback differently than most other MOOCs. We asked participants to submit their projects as discussions in a designated area of the forum and then to provide constructive feedback to each other as comments. We asked for feedback from at least three participants for each project submission, and participants could choose which ones they would address. This meant that feedback was not anonymous, as it is in many MOOCs, and that participants could read as many projects and comments as they wanted and engage in discussions about the projects and feedback. This is consistent with the belief that MOOC-Eds are about learning, not grades, and that open peer discussions are an important element.

The project was divided into two parts, with goals and challenges submitted in unit 3 and strategies and action steps added in unit 7. The number of project statements submitted and the number of comments, by category of project, are shown in Table 7. Participants were invited to submit projects as a team, so some of the projects represent the work of multiple participants.
Table 7: Project Statements and Comments Submitted by Category

<table>
<thead>
<tr>
<th>Category</th>
<th>Part 1 Statements Submitted</th>
<th>Part 1 Feedback Comments</th>
<th>Part 2 Statements Submitted</th>
<th>Part 2 Feedback Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classroom</td>
<td>14</td>
<td>96</td>
<td>7</td>
<td>44</td>
</tr>
<tr>
<td>School</td>
<td>37</td>
<td>152</td>
<td>25</td>
<td>109</td>
</tr>
<tr>
<td>District</td>
<td>24</td>
<td>114</td>
<td>10</td>
<td>48</td>
</tr>
<tr>
<td>Other organization</td>
<td>30</td>
<td>105</td>
<td>10</td>
<td>45</td>
</tr>
<tr>
<td>Total</td>
<td>105</td>
<td>467</td>
<td>52</td>
<td>246</td>
</tr>
</tbody>
</table>

Conclusions

This report is based upon early work on MOOC-Eds, both on the design and development and on the research sides. It does yield some initial insights into our design principles and how we can better instantiate them in the MOOC-Eds. For example, the results suggest the need to provide additional guidance about alternative paths for self-directed learning. The results also confirm the need to provide alternative resources (e.g., a variety of case studies so participants can select those that are similar to their own contexts) and alternative media (e.g., video, podcast and transcript) to fit different participants’ needs and preferences.

Our early research leads to a wide range of questions for future research. A few examples include:

- How can participants best be placed in groups to foster productive discussions? What is the optimal size for discussion groups?
- How can discussions be initiated, facilitated, and connected to resources and activities in order to encourage high levels of engagement and exchanges that involve reflection and co-construction?
- How can we best balance having participants move through the units on a common schedule so they can engage in peer-supported learning with providing flexible scheduling to meet educators’ needs?
- Can we identify characteristics of participants and preferred self-directed paths through the MOOC-Ed? How can we design future MOOC-Eds to optimize them for participants with different profiles?
- What types of case studies and projects are most engaging and beneficial for participants? What guidance and structures lead to productive peer feedback?
- Can participation be further incentivized by the use of badges or other forms of recognition?
- What impact do MOOC-Eds have on professional knowledge, skills and practices?
- How can MOOC-Eds best be integrated with other professional development activities?

Our experience developing, offering and researching MOOC-Eds, both what has been reported in this chapter and other related work, strongly confirms our initial hypotheses that this approach to professional learning is a valuable addition that can help address the needs of the K-12 education workforce. We continue to believe that MOOCs are best suited to adult, motivated professionals, and that our work and research on other types of MOOCs supports that view. We find that our design principles of self-directed learning, peer-supported learning, case study
and project-based learning, and blended learning have merit as a foundation for MOOC-Eds, but that there are many complex design decisions involved in making an individual course of value to a large and diverse audience of educators. We are especially interested in the roles MOOCs can play as part of pre-service preparation and ongoing professional learning for educators, since they can provide valuable learning opportunities but do not replace local professional learning teams, coaching, peer collaborations or face-to-face programs. The important question, we believe, is not Do MOOC-Eds work? but rather How can we optimize the value of MOOC-Eds? What professional learning needs can best be addressed by MOOC-Eds? and How are MOOC-Eds best blended with other professional learning activities to support educators in providing the education our children needs to be prepared for college, careers and citizenship in the digital information age? We look forward to continuing our work in addressing those questions.

References


About the Authors

Glenn Kleiman is the Executive Director of the Friday Institute for Educational Innovation and a Professor at the NC State University College of Education. A cognitive psychologist by background (Ph.D., Stanford, 1977), his work in education has spanned basic and applied research, curriculum development, software development, providing professional development for teachers and administrators, policy analyses, and consulting for school districts and state departments of education. Prior to joining NC State University in July 2007, he was Vice President and Senior Research Scientist at Education Development Center, Inc. (EDC) in Newton MA, where he directed the Center for Online Professional Education and was Co-Director of the Northeast and Islands Regional Education Lab. He was also on the faculty of the Harvard Graduate School of Education from 1995-2007 and was education chair of the Harvard/EDC Leadership and the New Technologies Institutes. Dr. Kleiman was a member of the North Carolina eLearning Commission and played a lead role in the development of the North Carolina Race to the Top proposal, which received $400
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Mary Ann Wolf is the Director of Digital Learning Programs for the Friday Institute for Educational Innovation at NC State University. Mary Ann has worked closely with federal, state, and local education leaders; policy-makers; and organizations on connecting policy and practice for innovative education reform, digital learning, and instructional practices. Mary Ann played a lead role in developing and facilitating the Digital Learning Transition MOOC-Ed and in establishing the Friday Institute’s growing initiative on MOOCs for Educators. She is also a part of the development and facilitation team for the Distinguished Leadership in Practice – Digital Learning for principals across the state in conjunction with NCPAPA. Mary Ann wrote Innovate to Educate: Education System [Re]Design for Personalized Learning, an influential report based upon a Symposium held by SIIA, ASCD, and CCSSO. She also co-authored Culture Shift: Teaching in a Learner-Centered Environment Powered by Digital Learning for the Alliance for Excellent Education and two reports on Mobile Learning in North America for UNESCO and CoSN. Previously, Mary Ann was the Executive Director of the State Educational Technology Directors Association (SETDA). In this position, she worked with education leaders and policymakers in all 50 states to share data and models of how to improve education to ensure America’s and our students’ competitiveness in the global economy. Mary Ann served on the Congress on the Future of Content Task Force and was a member of the NAEP Technology Literacy Assessment steering committee. She testified before the US House of Representatives Education and Labor Committee; and SETDA hosted, with the National Science Foundation, Future of Learning educational technology showcases for members of Congress and staffers in the House and the Senate.

Dave Frye is the Associate Director of The Friday Institute for Educational Innovation, an institute at the NC State University College of Education that fosters collaborations to advance education through innovation in teaching, learning, and leadership. An education administrator and strategic leader by background, Dave has led innovative programs and initiated new uses for technology to develop college students into future campus and community leaders in the Midwest and Southeast. As a member of the team that founded The Friday Institute, Dave works with leading researchers, educators and policy-makers to create a unique, collaborative environment and identify strategic initiatives for developing real-world, research-based solutions to education’s grand challenges.

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