Preparing K-12 Schools for a Pandemic Before It Occurs

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While almost all K-12 schools closed for the COVID-19 pandemic with little or no preparation, one school began to prepare 12 years ago for a time such as this. In 2006, the school leadership team began to consider what would happen to teaching and learning in the event of a large-scale pandemic causing the buildings to be closed. The school implemented a Distance Learning Day (DLD) in fall 2007 and continued it for one day each of five years. This paper describes the rationale, implementation, and outcomes of the endeavor, as well as its impact on students, teachers and parents. Implications for professional development are also included for those seeking to replicate this approach.

INTRODUCTION

"If we wait for a pandemic to appear, it will be too late to prepare." (Pres. G. Bush, 2005 in Mosk, 2020).

While there have been several less widespread pandemics over the past century (e.g., SARS 2004), COVID-19 created panic all over the world impacting every aspect of our lives (Pew Research Center, 2020). In 2006, an independent (not publically funded) school's leadership team decided to prepare for instructional continuity in the event of a widespread pandemic. Preparation might ensure that schooling could continue and teachers and

staff could still be sustained by the tuition dollars that paid their salaries. The school implemented a Distance Learning Day (DLD) in fall 2007 and continued it for one day each of five years. This paper describes the preparation that took place to successfully implement the DLD drawing from data that were collected in 2007. In addition, this paper shares lessons learned from this historical program that can support educational institutions in the planning process of preparing for unexpected events such as a pandemic.

IMPLEMENTATION

In 2006, it was difficult to imagine the reality of 2020, but the school leadership team designed a plan to prepare all school stakeholders for a Distance Learning Day (DLD) in which all instruction would take place from home for one full day. Even a decade ago technology was, and continues to be, the best venue for continuing to provide education when the building is closed to students and teachers. The preparation included teacher professional development, access to tools at home, and parent "buy-in."

The leadership team designed DLD around several assumptions, such as student and teacher access to the Internet, which would enable students to access documents, assignments, and links to resources from the school's learning management system. At the time, students also needed access to some learning materials at home.

Online learning scholars have spent many years developing effective distance learning frameworks which clearly outline the characteristics of high quality online teaching and learning (Means, Bakia, & Murphy, 2014). Among those characteristics, teacher professional development on technology tools and online pedagogy is critical. In the spring of 2006, teachers indicated their success during DLD would require professional development on technology tools that could be used to support the curriculum along with pedagogical support to transform their current lessons into "distance learning" lessons.

Targeting a date for the following school year also allowed teachers time to align the topics they would likely be teaching with their DLD lesson plans. One-on-one and grade-level professional development occurred for the rest of the spring as teachers tested new tools to teach their topic in their subject areas. Teachers created pilot assignments using the same or similar tools they would use on DLD, and they were required to turn in their DLD lesson plans (including pilot lessons) at the beginning of the 2007-2008 school year. Several open help days and individual appointment times were

available to the teachers in order for them to feel confident in their plans.

Many online tools and resources available in 2006 were provided and taught to the teachers. Several of the tools and resources shared with teachers are shown in Table 1. Examples of the activities created by teachers are shown in Figures 1 and 2.

Table 1

Sample Tools and Resources Provided to Teachers to Support Distance Learning Day

Available Tools and Resources for DLD
Wikibooks
Wikis for Educators (student collaboration)
EduBlogs
UnitedStreaming.com (school subscription) (can assign video segments and quizzes)
Podcasts (using Audacity)
WebQuests Spelling City
Online Textbooks (Wikibooks, Classzone)
National Library of Virtual Manipulatives
BrainPop (school subscription)
Discovery
Global Schoolhouse
Epals
Ask an Expert
Digital Storytelling

Figure 1. Example of an Edublog used for middle school science on DLD.

Figure 2. Example of a class wiki used for middle school students on DLD.

Teachers were also encouraged to create some activities that could be completed "offline". The teachers created guidelines and expectations regarding the activities that included the amount of time the activity should take the students and when and how to submit the work when completed. Another important element was having teachers communicate assignment deadlines with each other so student work was spread throughout the day. An example for one of the grade levels is included in Table 2.

Table 2
Timeline for 6th Grade Students to Turn in Assignments on DLD

Subject	Due time
Math	Noon
Language Arts	1:30 pm
Science	2:00 pm
Spanish	2:30 pm
P.E.	3:15 pm
Social Studies	9:00 pm
Art	Next day

A letter was sent to the parent community at the beginning of the 2007-2008 school year in preparation for DLD (see Appendix). The letter explained this was a pilot in the event of a long-term closure. The letter acknowledged that DLD might be an inconvenience for the parents; however, the school felt it was extremely important to be prepared to continue their child's education. Foremost, ensuring teachers, students and parents were prepared for this event was critical for the DLD to be educationally successful.

RESULTS

The "pilot" lessons helped teachers and students dive deeper into the tools and methods they would use for DLD as they learned the features of each tool and how to manage technical issues prior to DLD. Following DLD, online surveys were sent to teachers, parents and students to get feedback from different points of view that would allow improvement for subsequent years of this event. The results below are based on data gathered in 2007 following the first DLD.

Teacher Perceptions

Teachers reported several benefits of DLD, such as student autonomy as they managed their assignments, the use of problem-solving skills, and an upgrade in student technology skills. Teachers reported students especially enjoyed the blogs and collaborative work in wikispaces. Many of the issues teachers mentioned were typical of a regular day (e.g., students did not read directions, etc.).

Regarding preparation, the majority of teachers reported being either very well prepared (47%) or somewhat prepared (47%). In general it was noted that teachers who "bought into" DLD seemed to be more successful than those who thought it was just another thing they had to do. The necessity of using technology tools for instruction also upgraded proficiency, and teachers seemed to enjoy learning from their peers during the professional development prior to DLD.

Parent Perceptions

The parent survey received 111 responses with a wide-range of reactions regarding the usefulness of DLD as shown in Table 3.

Table 3
Parent Reported Usefulness of DLD for Students

Level of Usefulness	Percent Response
Useful for the future	38%
Useful for Possible school closure	36%
Not useful	26%

Parents were also asked to estimate the amount of time their child spent on the computer during DLD, and the large majority reported their child spent 3-4 hours using a computer during the day. When asked how DLD impacted their household, responses ranged from "enjoyment to being a part of their child's learning" to DLD being a "major inconvenience and likely unnecessary."

Student Perceptions

One hundred (100) students in grades 4-8 submitted completed surveys. Students were asked how their DLD compared to their normal school day regarding time spent on work. As shown in Figure 3, the majority of students reported spending less than a full school day's time on their learning activities on DLD while almost one-third reported spending more time than a normal school day.
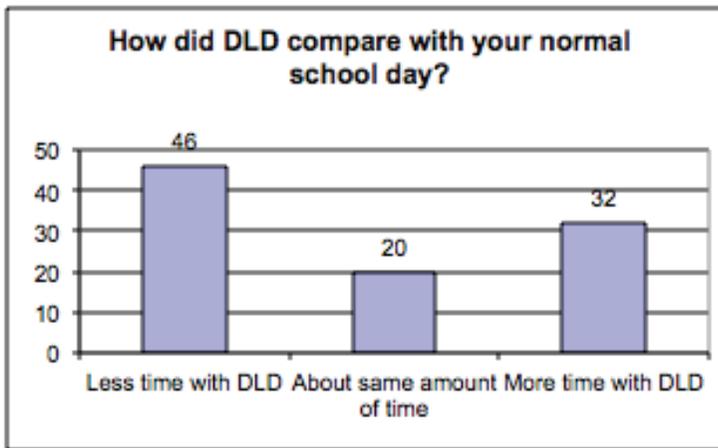
Figure 3. Comparing amount of time spent on learning for DLD and typical school day.

Students were also asked how prepared they felt due to the pilot activities prior to DLD. As shown in Figure 4, the majority of students felt prepared. In the open-ended responses, students reported enjoying DLD and appreciated the pace of the day. However, several students commented that it would be helpful to have more clear instructions, more fun activities, and less work.
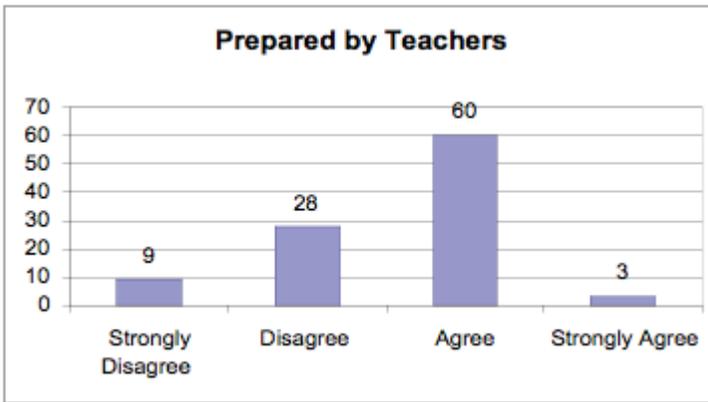
Figure 4. Student agreement on their preparation for tools prior to DLD.

IMPLICATIONS FOR TEACHER EDUCATION

Several lessons emerged from DLD that may prove useful to schools or programs hoping to replicate this program. DLD provided an opportunity for self-directed learning, enhanced problem-solving skills, and improved communication with peers and teachers.

Piloting the program prior to DLD is a critical component in supporting teachers as they upgrade their technology integration skills in a low-stakes environment with the opportunity for support and feedback. Even if a full day of distance learning is not feasible, teachers can prepare engaging lessons online while determining the knowledge, tools and access necessary to teach from a distance (Moore-Adams, Jones, & Cohen, 2016). Implementing scheduled online pilot lessons will help with planning effective subsequent training sessions.

Teacher preparation is critical, especially the pedagogy of teaching online rather than emergency teaching (Hodges, Moore, Lockee, Trust, & Bond, 2020). Understanding teacher confidence and competence in technology integration is an important element in designing appropriate professional development (Christensen & Knezek, 2017). In the early planning stages of the DLD, surveys related to technology integration were given to the teachers to assess their level of confidence with technology integration. The baseline data were used to design the different types of professional development that would be necessary to make DLD successful.

For some teachers, preparation required one-on-one sessions finding resources they could easily use to augment what they were doing rather than expect them to transform their teaching right away (e.g., Wikibooks or Spelling City) (Kimmons, Graham, & West, 2020). For other teachers, PD was working with teaching teams showing them a variety of resources to enhance their online lessons in a more collaborative way (e.g., wikispace, Edublogs). In general, teachers gravitated toward tools where they could post and edit a variety of resources (text, images, links, videos, etc.), quickly and efficiently, such as wikis, blogs, and text documents.

Teachers who were already confident integrators of technology only needed additional tools to be provided to support their ideas (e.g., United-Streaming, podcast tools, VoiceThread). Supporting teachers at their individual level allowed confidence to grow over time and each year showed growth in the number of teachers who tried new and more challenging activities with their students online (Avci, O'Dwyer, & Lawson, 2020). While many of the teachers were focused on preparing for DLD, it also changed the tools they used for daily classroom activities.

Another important component is the opportunity for teachers to share examples from their pilot lessons with their peers. Taking time to debrief after the pilot lessons provides teachers a chance to learn from each other. Sharing also holds teachers accountable for their DLD lessons (Darling-Hammond, Hyler, & Gardner, 2017). While some teachers will approach this program with enthusiasm and creativity, others may be reluctant or even resistant (Rogers, 1962). Creating a culture of accountability and commitment to student learning will cultivate the belief that all teachers have something to contribute to this unique event. Sharing examples also demonstrates a commitment to shared responsibility for the success of DLD rather than placing the burden on the small number of early technology adopters.

Finally, schools should consider making DLD a regular part of their school year, a tradition to which the students and teachers look forward. The knowledge and skills developed become the catalyst for future learning and growth, and committing to something over time allows teachers and students to replicate, perhaps elevate, strategies that worked well while fine-tuning those in need of improvement (Hutchison & Woodward, 2018).

While many schools were thrust into emergency teaching online during the 2020 pandemic, it is imperative for educators to develop the necessary skills to provide a quality education whether it be face-to-face, hybrid, or all online (Archambault & Larson, 2015; Darling-Hammond et al., 2017). Resources that were used for preparation of DLD as well as survey instruments used to assess baseline teacher technology integration skills are available at

https://sites.google.com/view/rchristensen/home. Historical documents as well as updated information and resources are included on the website.

FUTURE RESEARCH

Plans to follow up with teachers (and students) who were part of the DLD are being developed to assess whether the preparation that occurred through 2012 impacted their teaching (and learning) practices during the 2020 pandemic. Data using surveys focused on technology integration knowledge and skills were obtained prior to the DLD and are available (website listed above) for any researcher interested in gathering baseline data from educators to aid in planning appropriate professional development.

Future research may also include an updated set of available tools and engagement strategies to reflect technological advances since the early days of DLD. For example, teleconferencing services such as Skype were available in 2006, but these tools were in their infancy and limited in terms of features, call stability, and the number of participants. Current software and hardware options available to educators and students create new opportunities for blending synchronous and asynchronous learning experiences barely imaginable in 2006.

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APPENDIX A

Letter sent to parents from the school in preparation for the DLD
Dear Parents,

[Name of school] will be having a Distance Learning Day (DLD) on December 12th for students in grades 4 – 8. On that day students will be staying at home but still be learning from their teachers. Over the past few years we have been forced to close our doors for a few days at a time due to a flu epidemic. In preparation for something that could last even longer, a pandemic, we are piloting a day in which the teachers will prepare lessons which students can access and complete at home.

While we don't mind if they remain in their pajamas all day, we have the expectation that students will have a full day of school work to complete. Teachers will be available at scheduled times throughout the day, via various technological means, to assist students who may be having difficulties. In addition, teachers have been trying out their technology tools in advance of the DLD to make sure everything works as expected. Teachers are using these tools with your children in preparation for not only this day but for the 21st century. Some of the technologies that teachers will be using include online textbooks, UnitedStreaming videos, online quizzes, wikis, blogs, email and more.

We are aware that there may be some concerns such as three children at home with only one computer or slow Internet access. We don't expect that your child will be sitting at the computer all day so some scheduling for use of the computer may be necessary. The students will access their assignments from their teachers' web pages and some assignments can be completed "off-line".

We are excited and feel like this is "forward thinking" in preparation for events that are out of our control. If you have major concerns please contact us and we will work with you to resolve them.

Sincerely,

[School leader signature]