International Journal
of Online Graduate Education

Preparing Today's K-12 Teachers for 1:1 Technology: Integrated Delivery During an International Pandemic

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Volume 5, Issue 1 (2022)

Along with societal tensions, inequalities in resources, and various debates from all sides, the COVID-19 pandemic has had profound and likely lasting implications for K-12 schools and teacher preparation programs. While many schools followed a hybrid model during pandemic lockdowns, still others were 100% virtual. One to one (1:1) initiatives are hence becoming more prevalent with the everchanging developments and schools should be prepared for the *new normal*.

As recently as March 2021, many schools were mandated to integrate some form of face-to-face instruction. Because of this directive, school districts must elicit thoughtful recommendations from their school board and leadership to best meet the needs of the varied level of students (Masters, 2021). Institutions of higher learning are then responsible for fulfilling the necessary training to accommodate the learning curve (The Federal Role in Education, 2021).

Problem Statement

During pandemic lockdowns, school districts nationwide were tasked to creatively instruct K-12 students under abnormal circumstances. The pandemic has forced leadership to evaluate current practices, and many have decided to resolve the problem by implementing a one to one (1:1) initiative where each student in a school was provided their own Chromebook for school and home use. Along with the new challenges of integrating technology into schools using varied instructional models and practices, professional development (PD) was found to be an additional need that would specifically address effective use of such technology. Teachers would need to be properly equipped to make the necessary changes while transitioning from traditional methods of instruction to technology-based methods of instruction. When considering pre-service teachers who were participating in observational practicums or student teaching, the challenge could become magnified. Depending on the locale, some school divisions were 100% online while others were participating in a hybrid model. Student teachers and practicum students trying to work through these experiences were paired with teachers who were also learning to instruct with this new platform of instruction.

This task became especially challenging because teachers who had been successful overall were now being asked to significantly change how they manage their daily duties, while continuing to maintain high scores and student success rates. The significant amount of change during the pandemic challenged even the savviest educators. Prior to the pandemic, teachers were planning lessons for roughly 50-minute periods or 90-minute blocks with face-to-face instruction. Once the shutdowns began, teachers were tasked with planning asynchronous self-paced assignments alongside synchronous learning sessions through online meeting platforms such as Zoom or Google Meets. The Virginia Department of Education (VDOE), with the foresight that the pandemic may not disappear quickly, offered to pay for the Canvas learning platform utilized by many colleges and universities in Virginia for up to two years for anyone interested (VDOE, 2020). While not every school division took advantage of this offer, many in fact did. This added another layer of training and responsibility for teachers as they were already restructuring their previously successful teaching practices. Navigating such a dynamic period in education, while taking on the responsibility of also mentoring pre-service teachers, added to already confusing times. Teacher preparation programs were required to remain flexible as

school divisions navigated from a traditional format to 100% virtual, then to a hybrid format, and then back to traditional with virtual integration.

Technological Changes

The call to address these challenges impacted by the pandemic required a shift in teacher and faculty mindset regarding teacher education. First, in order to successfully implement new technology appropriate for student learning, teachers were required to participate in training to ensure that students understood the vision and expectations of the program. The second step required mandatory PD days with the focus of continuing to strengthen the teachers' knowledge and skill sets related to teaching with Chromebooks. Finally, dedicated weekly Professional Learning Community (PLC) time was granted by administration to promote teacher collaboration and brainstorming (i.e., problem solving) as issues arose throughout the school year. The inclusion of pre-service teacher candidates in PLCs supported best practices as they were preparing to launch their own careers during unprecedented times (Connolly, 2020).

School Structural Changes

Previous studies confirmed that a lack of vision from leadership has also been a major hindrance in 1:1 initiatives (Lewis, 2016). With this information, higher education institutions were now tasked with preparing teacher candidates and school leaders in not only the traditional areas of teacher education (i.e., lesson plan development, classroom management, and curriculum development), but now were asked to further prepare candidates in virtual lesson development, hybrid teaching formats, and ongoing professional learning using technology (EPPs, 2022). The lack of vision and lack of training could be especially arduous for schools impacted by a swift shift in leadership within their school or district. Regardless of the faculty shift, whole faculty training is imperative for positive school restructuring (Fischer & Hamer, 2010). Thus, the leadership should provide a clear vision with expectations and there should be a systematic discussion of how administrative and teacher perceptions should align regarding the impact of technology use in the classroom while further supporting the whole student (McLeod & Dulsky, 2021).

Aside from a clear vision with expectations, and consistent discussions of varied perceptions regarding the use of technology, the need for school restructuring should be considered in the paradigm shift of education to maximize 21st century skills learned during daily instruction (Flanagan, 2014; Gherardi, 2017). Professional development needs to occur often and be intentional. One way to maximize new learning through PD is to offer choices to meet the individual needs of the teachers and teacher candidates. Teachers, and faculty in teacher education programs, who have advanced knowledge in instructional practices with technology integration should be used as presenters throughout PD sessions. Additionally, as schools continue to build new ideas into their restructured programs, the exploration of digital resources rich in quality content should be considered. With the 1:1 hybrid initiative as a primary focus resulting from the pandemic, digital resources should replace traditional textbook resources (Traditional vs. Digital, 2018). The U.S. Department of Education has created the #GoOpen movement to actively contribute to free digital resources for teacher and student use (U.S. DOE, 2017). In January of 2010, Virginia launched its version of openly licensed material (Vollmer, 2010). Theme Seven supports the need to explore content rich resources that are compatible with

Chromebooks. Finally, leadership should take advantage of their current Instructional Technology Resource Teachers (ITRTs) housed within the school and let them share how they can work alongside classroom teachers to maximize their individual learning curves related to the new endeavor(s).

Gaps Exposed by the Pandemic

While some schools have enough funding to purchase Chromebooks for each student in each grade level, others do not mirror similar resources. For this discrepancy, there are some opportunities to apply for Chromebook Grants. If neither of those scenarios are an option, still other districts allow a hybrid schedule, where the school may split their face-to-face interaction (Tuesday/Friday for ½ of the school, Monday/Thursday for the other ½ of the school; Wednesdays could be used for PD or development of PLCs). By allowing the students to come face-to-face two days out of the week, and complete the other three days virtually, it enables the schools to house the Chromebooks at school and also to share the technological resources among the students.

Infrastructure is another vital component to a successful 1:1 initiative. Because of the increased use of technology, it is believed that school divisions must first invest in systems with strong enough bandwidth to support well over 1,000 devices operating simultaneously while on campus. The days of a teacher desktop or laptop being the sole device in the room ended with the onset of a 1:1 initiative. In March of 2020, when many schools nationwide were forced to go virtual, a significant equity gap was immediately revealed. While there has always been a divide with equity in online education, certainly the unforeseen pandemic heightened the awareness of the equity gap pertaining to online education (Pressley, 2022). School personnel learned very quickly that internet access from home was not a level playing field. While some students never experienced a delay in the delivery of instruction, others were forced to work on a smartphone, and even worse for some, they could not log in to the internet at all. Schools now needed to expand the infrastructure to support the 1:1 outside the school and into the community.

New Initiatives and Possibilities for K-12 and Teacher Education

In order to improve teaching with Chromebooks to close the “pandemic gap,” three distinct steps must occur. The first step is to provide whole group teacher training sessions that focus on promoting a clear vision and expectations of what students and faculty may expect moving forward. This will not only facilitate learning for the K-12 population, but for the teacher candidates moving into their own classroom, as well. The second step consists of making minor changes to the current PD days to make them more meaningful to teachers. Professional Development sessions should be intentionally focused and allow experts, as identified by the administration office or local colleges and universities, to share best practices related to technology integration (i.e., specifically the use of 1:1 initiatives) during the pandemic. Additionally, leadership should allow Instructional Technology Resource Teachers (ITRTs) and teachers, who have shown significant competency in areas that will improve teaching with technology, to also lead PD sessions. The final step includes creating PLCs to promote collaboration and problem solving related to issues and ideas surrounding the 1:1 initiative. Each PLC should have a contact person who is responsible for relaying information to and from administration and technology leaders. ITRTs should also periodically meet with individual

PLCs to provide insight and additional training, if necessary. With all of the new integration and structural changes, ITRTs and Administration should closely monitor progress of the PLCs by examining the quarterly presentations submitted by each group and overall academic disaggregated data.

Conclusion

As districts and schools continue to shift and adjust student schedules to better assist the everchanging needs, it is necessary to closely monitor student success, teacher morale, and effective integration of the Chromebooks during the 1:1 initiative. With a few minor adjustments, the *new normal* has shown to be quite effective in many schools (Pacheco, 2021). This plan contains an element of accountability that should highlight successes and individual growth of the teachers throughout the K-12 schools, and those moving into the teaching field, to better assist all students during this global pandemic and beyond.

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