THE SCHOOL DISTRICT OF
PHILADELPHIA

Ten Best Practices for Teaching and Learning in an Online Environment: A Summary of Existing Literature

Soula Servello, Senior Project Manager; Kristyn Stewart, Senior Research Associate

. . . .

Transitioning to Online Learning

Following the unexpected school closures caused by the Coronavirus pandemic (COVID-19), the School District of Philadelphia (SDP) released a Continuity of Education Plan[1] to provide educational and instructional materials, resources, and supports to students, families, and staff. On April 13, 2020, SDP began implementing the review and enrichment portion of the Digital Learning Plan. Planned online instruction began on May 4, 2020.

To inform ongoing processes for the transition to online instruction through the end of the 2019-20 school year, the Office of Evaluation, Research, and Accountability (ERA) conducted a review of existing meta-analyses and systematic reviews to summarize evidence-based practices for online learning.

This brief is a summary of the key findings from articles, frameworks, and dissertations that describe and explain the practices that optimize teaching and learning in an online environment. It details ten key components that should be applied to the online learning environment, as well as recommendations and strategies to support teachers and students in being successful during digital learning.

Brief Summary of the Existing Literature on K-12 Online Learning

Much of the existing research on online, virtual, or remote learning in a K-12 setting is limited, and findings on the impact on student learning outcomes are mixed. A recent report by the Education Endowment Fund (EEF, 2020) summarized findings from 60 systematic reviews and meta-analyses on remote learning and noted that 1) none of the studies examine impacts on learning during a global pandemic, and 2) most of the studies look at college or adult learners. In addition, the focus of most of the research is about the effectiveness of online learning compared to traditional face-to-face learning, not about methods to inform best practices for teaching in online environments (Ferdig et al., 2009).

---

[1] SDP's Continuity of Education Plan can be found online at: https://www.philasd.org/wp-content/uploads/2020/04/The-School-District-of-Philadelphia%E2%80%99s-Continuity-of-Education-Plan-.pdf

Similarly, research on the effectiveness of online learning strategies based on grade level and content area is sparse, and findings suggest successful online learning relies on teachers' ability to utilize technology and their comfort with various online platforms. Some research addresses the different abilities of younger versus older students. For example, Oliver et al (2010) suggests that older students may be more comfortable with "managing course designs that include authentic problems resolved through interactions with other learners," (p. 57) while younger learners "may require more chunked and sequential presentation of content, or at least more scaffolding for open-ended tasks" (p. 58).

Overall, research suggests that all grade levels benefit from similar elements of effective online teaching. How K-12 online learning is designed, delivered, and supported is the key factor in the success of online learning and the improvement of student outcomes (Barbour, 2019; Rice, 2006). The elements of effective teaching - clear explanations, scaffolding, and feedback - must be present for any online learning to be effective (DiPietro et al., 2008).

Despite the mixed previous findings and new context of remote learning during a pandemic, the literature identifies **ten key components of successful online learning** to inform practice and decision-making:

1. Start with a strong organizational foundation that supports effective teaching in the online environment.
2. Be clear about the expectations and guidelines of the online course with both students and families.
3. Structure the course carefully to be able to track student progress.
4. Differentiate instruction to meet the needs of diverse learners.
5. Use a multi-faceted approach to regularly assess student learning.
6. Provide regular and consistent feedback and contact to engage and motivate online learners.
7. Nurture positive peer interactions to help increase motivation and improve learning outcomes.
8. Teachers must use technology effectively to support classroom interaction and collaboration.
9. Include parent/guardians in the virtual school community and encourage them to support their children to work independently.
10. Provide quality professional development opportunities to support teachers transitioning to – and teaching/learning in – an online environment.

Each component is described with practices/strategies below.

Ten Key Components of Successful Online Learning

#1: Start with a strong organizational foundation that supports effective teaching in the online environment.

Effective instruction is a keystone to academic achievement in both the traditional and virtual classroom (NSQOL, 2019; Darnell, 2013; K-12 Online Learning, 2011). In an online format, organizing institutions must establish the foundation for strong instruction.

Across studies of K-12 online education, responsibilities of the school district include:

- Selecting a curriculum that is adaptable to online learning.
- Selecting appropriate online delivery models.
- Providing adequate access to technology for both teachers and students.
- Providing the autonomy necessary to encourage and foster teacher creativity in developing course content and select engaging supplemental online materials to enhance their students' learning.
- Ensuring teachers are credentialed in their content area so that they have the knowledge needed to administer content to students.
- Coordinating opportunities for teachers to collaborate online via professional communities of practice in order to share technological and pedagogical practices that may be beneficial to students.

#2: Be clear about the expectations and guidelines of the online course with both students and families.

Providing explicit online learning criteria for students and parents may enhance motivation to complete assignments in a remote environment. Teachers should explicitly address the following prior to executing instruction online (Darnell, 2013; International Association for K-12 Online Learning, 2011):

- Objectives: What are students expected to learn and in what order (scope, sequence, objectives)?
- Interactions: How and when are teachers and students expected to interact with each other?
- Assessment: How and when will student learning be assessed?
- Response Time: How do students ask questions and within what time frame teachers are expected to respond to student questions?
- Behavior: How are students and teachers expected to behave online?

#3: Structure the course carefully to be able to track student progress.

The quality of the course structure and organization provided by teachers can either help or hinder the student and parents in their ability to meet the course expectations (Darnell, 2013; Black et al., 2009; Ferdig et al., 2009; International Association for K-12 Online Learning, 2011).

Across studies of K-12 online education, recommendations to ensure that courses are structured and progress can be tracked include:

- Establishing clear instructions to help parents and students navigate the online classroom.
- Using consistent systems and processes to accurately record attendance and track course progress.
- Organizing course content and instruction materials in an easy to access format.
- Providing course timelines and due dates in an organized fashion.
- Using regular reminders to encourage the completion of coursework.
- Developing systems to help students with efficient time management.
- Promptly contacting students about changes in the course timeline or assignments.

#4. Differentiate instruction to meet the needs of diverse learners.

Similar to the traditional classroom, online instruction is most effective when it is differentiated to meet the needs of each learner (Darnell, 2013; NSQOL, 2019).

Across studies of K-12 online education, strategies to support individual student learning in an online environment include:

- Gathering information about each student's strengths and interests.
- Developing an individualized online learning plan for each student based on skills, interests, and trajectories that allows for a customized pacing and/or pathway to content mastery.
- Identifying instructional tools and platforms that support students with different needs.
- Adapting materials through creating alternative formats, if needed.
- Utilizing small group and break-out rooms to address students with differing needs and allow for personalized opportunities for growth and enrichment.

#5: Use a multi-faceted approach to regularly assess student learning.

Similar to the traditional classroom, teachers should regularly assess student learning. In an online learning format, assessments should take a more dynamic approach than in the traditional classroom (Darnell, 2013). Some suggestions for online assessments include comprehension phone calls, video chats, presentations, and book chats.

Across studies of K-12 online education, strategies for multifaceted assessment include:

- Assessing both prior knowledge and comfort with the technology and platform used to deliver content.
- Providing opportunities for students to self-assess their knowledge.
- Utilizing a variety of assessments including non-traditional assessments that accurately measure student learning.
- Developing a system to monitor academic integrity.

#6: Provide regular and consistent feedback and contact to engage and motivate online learners.

Task-specific feedback helps students understand where they are and how they can improve (Evidence Based Education, 2020). Additionally, research suggests that assessments, if used meaningfully, can increase student engagement by emphasizing student growth and learning over time. This may be helpful in keeping students and families motivated when learning in an online environment (Darnell, 2013; DiPietro et al., 2008).

Across studies of K-12 online education, strategies to engage students through feedback include:

- Providing meaningful and timely feedback on assessment performance.
- Displaying student academic growth and course progress over time in a graphic format.
- Explicitly acknowledging new knowledge and skills gained by students.
- Establishing relationships through timely and encouraging communication using various formats.

#7: Nurture positive peer interactions to help increase motivation and improve learning outcomes.

A positive school and classroom community and culture has been well-documented as an indicator of student success both in traditional and remote learning environments. Lee and Burkham (2001) found that the most important factor in student satisfaction and persistence "may have more to do with the social organization of the school than with any other factor" (cited in Rice, 2006, 438-9). Another study (Frid, 2001 cited in Rice, 2006) found that increased interaction influenced motivation and engagement in activities and resulted in increased student persistence with a challenging problem. In the early grades, relationships between teachers and students have been shown to be particularly integral when a sense of security and belonging may be more critical to success in a virtual environment. Specific practices may advance these relationships (Oliver et al., 2010; Darnell, 2013; EEF, 2020).

Across studies of K-12 online education, strategies to support peer interaction include:

- Coordinating virtual activities and clubs that foster relationship building.
- Establishing and communicating that well-established office hours exist for students, parents, and teachers to meet virtually.
- Identifying and using several communication platforms that allow for different methods of interaction.
- Providing opportunities for peers to provide feedback to each other.
- Providing opportunities for peers to share models of good work.
- Providing opportunities for live discussion of content.

#8: Teachers must use technology effectively to support classroom interaction and collaboration.

In the virtual classroom, instructional success hinges on the ability of the teacher to use technology and the effectiveness of organizational training aimed at improving teacher use of technology (McFarlane, 2011; iNACOL, 2011; Oliver et al., 2010; Darnell, 2013).

Across studies of K-12 online education, strategies to support virtual learning include:

- Using both asynchronous and synchronous learner-centered strategies and tools to maximize interaction between the teachers and students.
- Incorporating diverse media such as audio and video clips into assignments.
- Integrating multi-faceted communication methods including chat boxes, video chats, virtual polls, online games, and white board features.
- Implementing learner-centered activities that require virtual student collaboration and support students in their quest to collaborate virtually.
- Promoting student interaction in online groups in order to foster collaboration and promote higher-order thinking skills such as analysis, synthesis, and/or evaluation.
- Monitoring and reinforcing the expectations for appropriate interaction among students.

#9: Include parent/guardians in the virtual school community and encourage them to support their children to work independently.

Parental involvement in students' learning activities is associated with improved outcomes, especially for younger students (Phillips, 2011, cited in EPIC, 2020). However, research on secondary students in virtual schools indicates that when parents teach their children parts of a curriculum, their students end up with lower grades and test scores (Black, 2009). Parental involvement should be limited to encouraging students to stay on track with their online learning, and teachers should provide clear instructions for how students can contact them to ask questions so students don't rely on parents for instruction. However, communication between teachers and parents is important to student learning and especially critical in the early grades as younger students rely more heavily on parents for learning support and guidance (Darnell, 2013).

Across studies of K-12 online education, strategies to build community in an online environment include:

- Meeting individually with students and parents to gain a better understanding of the students' attributes, interests, and learning styles, as well as share information about the organization and expectations of the course.
- Regularly reassuring parents that they are able to approach teachers with questions.
- Responding to parents in a timely fashion.
- Providing mechanisms for parents to interact with teachers and each other in order to share successes, challenges, concerns, and strategies (such as a closed Facebook group).

#10: Provide quality professional development opportunities to support teachers transitioning to – and teaching/learning in - an online environment.

Professional development to support the transition to teaching in an online environment is very important (Darnell, 2013; Black, 2009). Ongoing professional development is also critical for teachers to both improve their content knowledge as well as their proficiency and comfort with online pedagogy and related technology (Ferdig et al., 2009; iNACOL, 2011). For example, researchers found that online students who had facilitators who completed web-based professional development on topics like supporting online assignments, developing time management skills, and engaging students had a higher level of retention (Hannuma, Irvin, Lei, & Farmer, 2008, cited in Barbour, 2019).

Three critical elements to consider for teacher professional development in an online environment include: 1) Content Knowledge, 2) Pedagogical Knowledge, and 3) Technology Knowledge, including how technology and content influence and constrain one another (Koehler, Mishra, and Cain, 2013, cited in Education Policy Innovation Collaborative, 2020).

Across studies of K-12 online education, preparing teachers for the online environment includes training to:

- Use technology effectively and efficiently.
- Motivate and engage students in a virtual environment.
- Increase student interaction and collaboration.
- Tailor online instruction to various learning styles.
- Modify online lessons.
- Develop effective time management strategies.
- Maintain accurate records of relevant information and communications in the appropriate format.
- Find and evaluate new online resources.

Summary and Self-Reflection

This brief presents ten key components from the research literature with practices and strategies that may contribute to effective teaching and learning in an online environment. **To what extent are these key components of successful online instructional being implemented in your setting?**

- ☐ Setting clear guidelines for participation in the online course that include information about the scope and sequence, interaction standards, assessment timelines, expected response time, and behavioral requirements.

- ☐ Structuring the course so that it can be navigated efficiently and student progress can be tracked including having instructions and content easily accessible to parents and students and having attendance, reminder, and time management systems in place.

- ☐ Differentiating instruction to meet the needs of diverse learners including developing individualized learning plans with modified content and pacing based on student interests, skills, and trajectories.

- ☐ Regularly assessing students' prior knowledge, comfort with applicable technology, and mastery using a multi-faceted approach.

- ☐ Implementing academic and non- academic activities that require peer interactions including coordinating student clubs, office hours, and opportunities for content-based discussion and collaboration

- ☐ Utilizing both asynchronous and synchronous learner-centered technology, strategies, and modes of communication to maximize interaction and foster collaboration between teachers, students, and peers.

- ☐ Including parent/guardians in the virtual school community and encouraging them to support their children to work independently.

- ☐ Supporting effective teaching in the online environment by selecting a curriculum and delivery models that are adaptable to online learning and providing adequate access to training and technology needed to implement online instruction.

- ☐ Providing ongoing quality professional development aimed at easing the transition to online learning and enhancing teachers' ability to implement strategies that promote effective teaching in the online environment.

Next Steps

Tracking implementation successes and challenges is a key part of the continuous improvement cycle. As a next step, ERA will use the research presented in this brief to compile a checklist that administrators and teachers can use to track implementation of online learning and identify areas of strength and opportunities for improvement.

References

Barbour, M. (2019). The Landscape of K-12 Online Learning: Examining What is Known. In M. Grahame Moore & W.C. Diehl (Eds.), Handbook of Distance Education (pp 521-542), Publisher: Routledge.

Black, E.W. (2009). An Evaluation of Familial Involvements' Influence on Student Achievement in K-12 Virtual Schooling (Doctoral dissertation, University of Florida, FL, USA). Retrieved from https://ufdcimages.uflib.ufl.edu/UF/E0/02/42/08/00001/black_e.pdf.

Black, E., DiPietro, M., Ferdig, R., & Polling, N. (2009). Developing a survey to measure best practices for k-12 online instructors. Online Journal of Distance Learning Administration, 12(1).

Darnell, N. S. (2013). Best practices in teaching K–3 online: A content analysis of distance education journals, blogs, and electronically-documented surveys (Doctoral dissertation).

DePietro, M., Ferdig, R.E., Black, E.W., Preston, M. (2008). Best practices in teaching K-12 online: Lessons learned from Michigan Virtual School teachers. Journal of Interactive Online Learning, 7(1), 10-35.

Education Endowment Fund. (2020). Remote Learning: Rapid Evidence Assessment. Retrieved from https://educationendowmentfoundation.org.uk/public/files/Publications/Covid-19_Resources/Remote_learning_evidence_review/Remote_Learning_Rapid_Evidence_Assessment.pdf

Education Policy Innovation Collaborative (EPIC). (2020). Research Relevant for State School Shutdowns and Moves to Distance Education. Michigan State University, Institute for Public Policy and Social Research. https://ippsr.msu.edu/sites/default/files/covid/research_schoolmove.pdf

Evidence Based Education (2020). Assessment and Feedback in an Online Context: Feedback. *Chartered College of Teaching.* Retrieved from https://my.chartered.college/2020/04/assessment-and-feedback-in-an-online-context-feedback/

Ferdig, R., Cavanaugh, C., DiPietro, M., Black, E., & Dawson, K. (2009). Virtual schooling standards and best practices for teacher education. Journal of Technology and Teacher Education, 17(4), 203-226.

International Association for K-12 Online Learning (2011). National Standards for Quality Online Teaching. Retrieved from https://aurora-institute.org/wp-content/uploads/national-standards-for-quality-online-courses-v2.pdf

McFarlane, D. (2011). A comparison of organizational structure and pedagogical approach: Online versus face-to-face. The Journal of Educators Online, 8(1), 1-43.

Oliver, K.M., Townsend, L., Kellogg, S., Brady, K.P. (2010). Needs of elementary and middle school teachers developing online courses for a virtual school. Distance Education, 31(4), 55-75. DOI: 10.1080/01587911003725022

Patrick, S., Powell, S. (2009). A Summary of Research on the Effectiveness of K-12 Online Learning. International Association of Online Learning (iNACOL). Retrieved from https://www.k12.com/sites/default/files/pdf/school-docs/NACOL_ResearchEffectiveness-hr.pdf

Quality Matters and Virtual Learning Leadership Alliance (2019). The National Standards for Quality Online Teaching (NSQOL). Retrieved from https://www.nsqol.org/the-standards/quality-online-teaching/

Rice, K.L. (2006). A Comprehensive Look at Distance Education in the K-12 Context. Journal of Research on Technology in Education, 38(4), 425-448. Retrieved from http://people.uncw.edu/caropresoe/EDN523/523_Spr_07/K12_Distance_Learning.pdf