BEST PRACTICES IN K-12 ONLINE AND HYBRID COURSES

In the following report, Hanover Research outlines best practice approaches in the development and implementation of high quality online and hybrid courses for K-12 students. This report includes four profiles of exemplary district-level online and hybrid programs and details the elements of the online learning options offered to secondary students.

HANOVER RESEARCH

SECTION II: APPROACHES TO QUALITY ONLINE LEARNING

Although there are concerns related to the rigor and quality of online courses, several effective online education programs at the K-12 and post-secondary level have operated long enough to provide insight into what elements are typically associated with high-quality online and hybrid courses. Hanover Research examines the extant literature and identifies a number of promising practices associated with high-quality and rigorous online learning programs that are further detailed in the following subsections.

ELEMENTS OF QUALITY ONLINE COURSES

COURSE DEVELOPMENT

In regards to course development, districts typically have the option to develop their own online courses or purchase pre-developed curriculum from an outside source. Importantly, a number of districts use a combination of both approaches. Results from 2007 iNACOL survey of online schools revealed that 23 percent of online schools licensed all their courses, while another 23 percent developed all their own courses. The remaining online schools used a combination or both options, with 53 percent licensing over half of their available courses from an outside source. According to iNACOL, there are numerous benefits associated with both approaches to online course development. Figure 2.1 outlines the benefits of each option.[21]

Figure 2.1: Benefits of Online Course Development Options

CURRICULUM OPTIONS	BENEFITS
Purchase Outside Curriculum	▪ Vendor curriculum development teams typically have a greater level of expertise than most school districts. Their development teams include specialized writers, instructional designers, multimedia developers, and technologists. ▪ Developers can offer a wide variety of curriculum and courses that may be difficult to generate at the district-level. ▪ A district-level program may lack the funding and/or expertise necessary to develop and update high-quality course content. ▪ Curriculum and course developers have greater capacity to incorporate more user-testing and user feedback when compared to districts or individual schools. ▪ Developers are more equipped to maintain curriculum and course updates as technology changes.

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[21] Watson, J. and B. Gemin. "Promising Practices in Online Learning: Management and Operations of Online Programs." Op. cit. pp.7-8.

CURRICULUM OPTIONS	BENEFITS
Develop Original Curriculum Internally	▪ Districts can ensure that their curriculum and courses properly align with state and district standards. ▪ District-level curriculum developers can incorporate teachers and their input into the process more than licensed content may allow. ▪ The costs of purchasing outside curriculum may greatly exceed the costs of developing it internally. ▪ Districts have the opportunity to incorporate specific instructional philosophies if they choose to (e.g. project-based learning).

Source: iNACOL[22]

It is important to note that online curricula delivered by outside providers tends to vary in quality and rigor.[23] For example, Temecula Valley Unified School District switched to a more rigorous online curriculum provider in 2008 after their previous online program was critiqued by stakeholders for being too easy.[24]

For those districts that choose to develop their own courses and curriculum, it is recommended that they develop a specialized team to support the course development process. Historically, teachers were primarily responsible for the design and creation of their own courses, but as the field of online learning becomes more widespread and complex, many school districts now incorporate multiple teachers, content experts, and instructional specialists into the course design process to guarantee the development of a high-quality course. As the technology associated with online courses increases in complexity, there is also a growing need to involve individuals with the technological skills necessary to effectively produce and publish online course content.[25] According to an *Educause Quarterly* article entitled "Implementing Best Practices in Online Learning," the creation of a successful online education program requires teamwork and careful consideration that is centered on student learning.[26] Figure 2.2 on the following page outlines iNACOL's suggested composition of an online course design team at the K-12 level.

[22] Table adapted from: Ibid., pp. 7-8.
[23] Kamenetz, A. "Virtual Schools Bring Real Concerns About Quality." Op. cit.
[24] "Restoring Rigor to Summer School Online Credit Recovery." Apex Learning. p. 2.
http://www.apexlearning.com/documents/Success_Story_Temecula.pdf
[25] Watson, J. and B. Gemin. "Promising Practices in Online Learning: Management and Operations of Online Programs." Op. cit. p. 6.
[26] Abel, R. "Implementing Best Practices in Online Learning." *Educause Quarterly*, November 2005, p. 76.
http://net.educause.edu/ir/library/pdf/eqm05312.pdf

Figure 2.2: Recommended Members of an Online Course Design Team
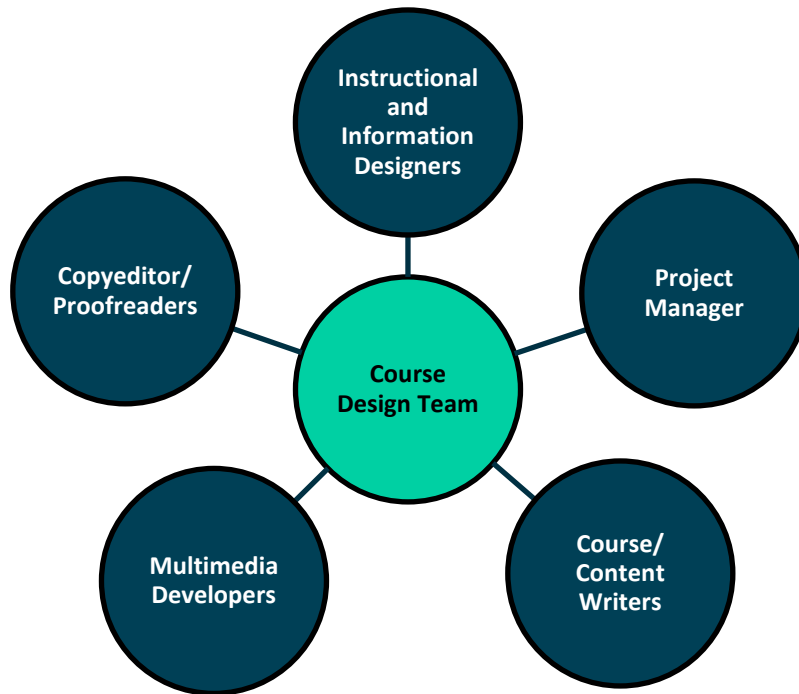
Source: iNACOL[27]

After a course is first developed, the literature specifies the importance of continuing evaluation to facilitate any necessary course improvements. In order to evaluate the efficacy of an online course, districts should gather feedback about the course from both teachers and students. The type and scope of revisions are contingent on the results of the evaluation, but can be conducted continuously or be implemented on a set schedule, depending on the preferences of the district. To garner feedback about online program quality, TRIO Wolf Creek Distance Learning Charter School surveys students and teachers at the end of each course to inquire about any additional courses that should be developed and to ask about any improvements that can be made to already-existing online coursework.[28]

COURSE WEBSITE

The appearance and layout of a course website or course page in a learning management system (LMS) can have a large impact on the overall quality of the course, as it can determine how well student learning is facilitated. At the postsecondary level, many organizations publish guidelines for instructors that detail research-based practices in online course website design. The design of a course website should be simple yet professional, and should avoid "gimmicky images and unusual color schemes." Furthermore, the course website should provide students with easy access to all relevant course materials, such as

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[27] Watson, J. and B. Gemin. "Promising Practices in Online Learning: Management and Operations of Online Programs." Op. cit. p. 6.
[28] Ibid., p. 8.

the course schedule and syllabus. To ensure the development of high-quality online course websites, California State University- Chico developed a rubric for online instruction, and recommends that developers of online course websites adhere to the organization and design standards outlined in Figure 2.3.

Figure 2.3: Recommended Standards for Online Course Website Design

AREAS RELATED TO ONLINE ORGANIZATION AND DESIGN	RELEVANT STANDARDS
Course navigability and organization	▪ Syllabus is easily located ▪ Links to other parts of the course or external sources are accurate and up-to-date ▪ Instructional materials required are easily located ▪ Course content is organized in a logical format ▪ Topics are clearly identified and subtopics are related to topics ▪ Sequential topics are annotated with dates ▪ Course schedule is available in a printer-friendly format for student convenience ▪ Organization and sequencing of the course content is logical and clear ▪ Resources are separated into "required" and "optional" categories
Syllabus	Includes the following elements: ▪ Course objectives ▪ Course completion requirements ▪ Expectations of students' participation, honesty, etc. ▪ Timeline for student participation is clear ▪ Faculty member(s) introductory information ▪ Expectations of availability of and turnaround time for contact with instructor ▪ Course schedule is summarized in one place
Aesthetic design	▪ Typeface is easy to read ▪ Sufficient contrast between text and background makes information easy to read ▪ Appropriate images supporting course content add visual interest ▪ Design keeps course pages to a comfortable length with white space
Consistency in course	▪ Layout of course is visually and functionally consistent ▪ Navigability is clear, simple, and user friendly ▪ Spelling and grammar are consistent and accurate ▪ Written material is concise ▪ Language of written material is friendly and supportive ▪ Clear directions are given for each task or assignment ▪ Sentences and paragraphs are brief

Areas Related to Online Organization and Design	Relevant Standards
Universal accessibility	▪ Universal accessibility concerns are addressed throughout the course, including transcripts of any non-text objects ▪ Images are optimized for speedy display and include alternative text ▪ Alternative formats of materials provided, when possible (e.g., optional print packet of extensive reading materials, CD of audio clips used in course, etc.) ▪ Use of color adds interest but does not disadvantage those with color blindness

Source: California State University, Chico[29]

Online Instruction

The transition from face-to-face instruction to instruction in an online learning format requires instructors to take on new roles and responsibilities that vary from those of a traditional classroom setting. To facilitate a quality online course, teachers must adapt their pedagogy to make it appropriately engaging for distance learners. According to the research, the presence of meaningful communication and effective instruction is central to students' engagement in an online course.[30] To accomplish this, iNACOL recommends that online learning programs establish pre-determined course policies that specify minimum communication requirements for instructors and students. In fact, iNACOL presents a number of model communication guidelines currently in use by various K-12 online learning programs:[31]

▪ Student email is answered within 24 hours

▪ The teacher initiates phone calls to each student at least monthly

▪ A weekly progress check is recorded for each student

▪ Student discussions are actively facilitated

▪ Parent calls are held monthly

▪ Weekly or monthly face-to-face meetings are held with a mentor or supervisor

In addition to the establishment of effective communication practices, online instructors often face challenges in modifying their pedagogy to meet the unique needs of an online learning environment. Importantly, iNACOL indicates that the existing research on effective online instruction at the K-12 level is not extensive; therefore, Hanover Research examined the literature related to best practices for online instruction at the post-secondary level. A report published by Penn State's World Campus identifies a number of recommended online teaching principles and characteristics, as described in Figure 2.4.

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[29] Table adapted from: "Instruction Design Tips for Online Learning." California State University, Chico, 2002. pp. 3-4. http://www.csuchico.edu/tlp/resources/rubric/instructionalDesignTips.pdf

[30] Keengwe, J. and T.T. Kidd. "Towards Best Practices in Online Learning and Teaching in Higher Education." *MERLOT Journal of Online Learning and Teaching*, June 2010. p. 533. http://jolt.merlot.org/vol6no2/keengwe_0610.pdf

[31] Bulleted points taken verbatim from: Watson, J. and B. Gemin. "Promising Practices in Online Learning: Management and Operations of Online Programs." Op. cit. p. 12.

Figure 2.4: Principles of Effective Online Instruction

TEACHING PRINCIPLE	DESCRIPTION OF EFFECTIVE ONLINE INSTRUCTION
Actively engage in online instruction	▪ Although the majority of the curriculum or course material is designed and available to students at the start of the course, online instructors should still take an active role in the distance education. ▪ An instructor's role as a guide, facilitator, and teacher is arguably more important in an online course due to the lack of any face-to-face interactions. ▪ Online courses provide teachers with the opportunity to focus more on student interactions during the duration of the course because the course content is already generated. ▪ Instructors should pay attention to students' course program, communicate course expectations, and manage students' learning experience.
Practice proactive course management strategies	▪ Examples of proactive course management studies include: monitoring assignment submissions, communicating with students, reminding students of missing or upcoming deadlines, and making course adjustments where and when necessary. ▪ The level of course management should be adapted based on the instructor, the size of the class, the students, and the demands of the course. It is often challenging for instructors to find the appropriate level of course management that works within their online classroom and works for their own time management. ▪ Instructors should set clear and defined expectations for students and communicate them effectively so that the roles and responsibilities of the instructor and the students are clearly defined.
Establish patterns of course activities	▪ The establishment of patterns and routines during an online course can help instructors and students develop a sense of time management to balance the expectations of the online course with their non-course, life activities. ▪ A course schedule helps instructors contain the course activities into an appropriate duration and workload. ▪ A pattern of activities and timed expectations may assist students in their ability to keep pace with the class requirements. ▪ It is beneficial for an instructor to establish work timeframes wherein course-related activities take place so that the students become familiar with the defined work patterns and expect that the instructor's responses will be confined to a predetermined timeframe.
Prepare for potential course interruptions	▪ Communicate any unexpected changes to students in order to reduce the level of stress and anxiety associated with changes to the pre-established course pattern. ▪ It is recommended that instructors inform students of any changes to the course schedule via: email, a posting on an announcement page, a phone message. Any interruptions that are scheduled in advance can be noted in detail on the syllabus so that students can prepare accordingly. ▪ For any longer-term interruptions to the course, instructors can work with a teaching assistant or colleague to manage the course during their absence.

TEACHING PRINCIPLE	DESCRIPTION OF EFFECTIVE ONLINE INSTRUCTION
Respond to student inquiries in a timely manner	▪ Instructors should strive to provide feedback to student inquiries within one business day. If an instructor is unable to respond in full, they should send a shorter response explaining when a more detailed response will be sent. ▪ It is important to note that a students' ability to complete their work may be dependent on a response from the instructor; therefore instructors should establish and maintain a reasonable response timeframe for their course. ▪ The research related to online students satisfaction levels cite instructor connectedness as the most rewarding or frustrating aspect of an online course experience. ▪ Instructors are expected to monitor student inquiries regularly and adjust course operation or content if a similar inquiry is received on multiple occasions. It may allude to the need for a refinement in instructions or content, or point to a need for additional clarification.
Establish a timely process for returning assignment grades	▪ Instructors should develop a plan for how assignments will be graded and returned to students in a timely manner. An expectation of a two-day turnaround for assignments and quizzes ensures that students receive the necessary feedback to assist their course progress within a reasonable time period. ▪ Instructors should inform students about when grades are posted or expected to be posted, particularly if there is a delay in the timeline. ▪ There are often times when an instructor may not be able to offer a quick turnaround for an assignment and in those cases; it is advised that instructors communicate with students about when they can expect the feedback to limit the negative effects on the class. ▪ Graded assessments are valuable because they can act as a form of effective feedback for students to help them take corrective measures, if necessary.
Use the Learning Management System (LMS) for communication	▪ It is recommended that instructors and students communicate through the online course learning system, as it is often complicated for students and instructors to maintain communication through multiple contact emails. ▪ The use of the LMS as a primary communication tool can help students and instructors review the chain of communication more easily and maintain relevant communications in one location. ▪ Through the course management system, student and instructor data is stored in an institutionally managed system, which ensures confidentiality and security.
Ensure course quality	▪ The quality assurance process is important in the design, development, and delivery on an online course because it will contribute to students' learning and satisfaction. ▪ Instructors should review and test the course across all relevant domains to ensure quality in course content, instructional design, and system performance. ▪ Instructors can gather input from users and their colleagues and use that feedback to further improve the design and delivery of the course. ▪ Proactive quality assurance processes will reduce the amount of time instructors have to spend during the course to address system problems, instructional confusions, or potential user frustration.

Source: Magna Publications[32]

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[32] Tabled adapted from: Ragan, L.C. "10 Principles of Effective Online Teaching: Best Practices in Distance Education." Magna Publications, Inc.

TRAINING FOR ONLINE INSTRUCTORS

The pedagogical skills of an online instructor may have a large impact on students' experience in an online course. Teachers who transition from a traditional classroom environment to teaching an online course must make a number of changes to their pedagogy and overall instruction. For instance, online instructors rely heavily on technology for instruction and communication purposes.[33] Therefore, schools and districts should aim to provide institutional support to facilitate teachers' ability to use effective online instructional practices. [34]

iNACOL specifies that professional development for online instructors should begin at orientation and continue throughout the duration of a teacher's online teaching career. The existence of an orientation or training program is important because it acts as a uniform starting point for all online instructors and can establish any relevant expectations for course management. Continuing professional development is equally important, particularly because the technology and recommended pedagogy associated with online learning at the K-12 level is consistently changing.[35] Professional development for online instructors should help teachers develop skills in the areas of: online instruction, course management, technology, and socialization.[36] For example, iNACOL suggests the following as prospective topics for continued online teacher professional development:[37]

- Helping teachers understand how to motivate individual learners.
- Enhancing student interaction and understanding without visual cues.
- Tailoring instruction to particular learning styles.
- Developing Web 2.0 and 21st century skills.
- Modifying interactive lessons to meet individual student needs, including the needs of disabled students.
- Developing heightened communication skills to enhance email correspondence and discussion board postings, and to recognize the tone of writing and the nuances of word usage.
- Improving the time management skills critical for online teachers.

Online and hybrid teachers should be trained by top-performing teachers who have substantial experience in online education. The incorporation of a master-level teacher ensures expertise, but also offers a sense of credibility among more novice online

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https://www.mnsu.edu/cetl/teachingwithtechnology/tech_resources_pdf/Ten%20Principles%20of%20Effective%20Online%20Teaching.pdf

[33] Keengwe, J. and T.T. Kidd. "Towards Best Practices in Online Learning and Teaching in Higher Education." Op. cit., p. 538.

[34] Abel, R. "Implementing Best Practices in Online Learning." Op. cit. p. 1.

[35] Watson, J. and B. Gemin. "Promising Practices in Online Learning: Management and Operations of Online Programs." Op. cit. p. 11.

[36] Keengwe, J. and T.T. Kidd. "Towards Best Practices in Online Learning and Teaching in Higher Education." Op. cit., p. 537.

[37] Bulleted points taken verbatim from: Watson, J. and B. Gemin. "Promising Practices in Online Learning: Management and Operations of Online Programs." Op. cit. p. 11.

instructors. According to the literature, a number of effective online programs promote collaboration and professional development through mentoring initiatives, wherein experienced online teachers serve as role models for less-experienced instructors.[38]

PROMOTING RIGOR IN ONLINE EDUCATION

In addition to elements of quality online education, the literature recognizes numerous approaches that can effectively enhance the rigor of an online course. A 2001 study by Charles Graham and Christopher Essex examined what elements constitute academic rigor in online courses at the postsecondary level. The analysis examined interview data gathered from faculty members to determine what methods instructors use to ensure online courses are appropriately challenging for students.[39] Figure 2.5 includes the specific instructional strategies cited by online instructors and highlighted in the analysis.

Figure 2.5: Approaches to Promote Academic Rigor within Online Courses

CATEGORY	INSTRUCTIONAL APPROACH
Expectations	■ Make expectations clear ■ Make expectations high ■ Make grade criteria explicit ■ Increased demands because of the absence of feedback from face-to-face contact
Selection of Readings	■ Provide high quality readings and texts ■ Provide materials a step above students' level ■ Provide a variety of materials
Critical Thinking	■ Require and support students' efforts to examine multiple issues from multiple perspectives ■ Require students to cite the readings ■ Require student reflections
Modeling	■ Model good scholarship ■ Model rigorous thinking
Support	■ Provide appropriate scaffolding for learners ■ Expend additional effort to get feedback from students
Discourse	■ Ask questions that encourage thinking about relationships and not memorization ■ Structure online discussions carefully
Assignments	■ Create challenging assignments ■ Create assignments that require high cognitive processes ■ Design authentic and realistic projects and problems for the students

Source: Charles Graham and Christopher Essex[40]

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[38] Ibid., pp. 12-13.

[39] Graham, C. and C. Essex. "Defining and Ensuring Academic Rigor in Online and On-Campus Courses: Instructor Perspectives." National Convention of the Association for Educational Communications and Technology, November 2001. http://files.eric.ed.gov/fulltext/ED470163.pdf

[40] Table adapted from: Ibid., pp. 334-335.

In regards to online curriculum, one article from the journal *For Each to Excel* specifies that there are certain characteristics associated with rigorous online course curriculum. First, the author highlights the importance of student engagement in online learning and suggests that engagement can be best achieved through project-based learning and collaborative opportunities. Quality online courses "should balance group assessments and individual assessments," as the incorporation of collaboration requirements teaches students valuable problem solving skills. Notably, the author specifies that simply sharing ideas on a discussion board is only the first step in meaningful collaboration.[41]

For example, the instruction at Stanford Online High School, an independent rigorous and selective online program, revolves around bi-weekly live discussion seminars that use technology to enhance the environment of a traditional classroom. Within the live discussion seminars, students are expected to actively participate in live debates with their instructor and peers. According to Stanford Online High School, this instructional strategy engages students in advanced conversations while compelling them to think critically and actively about their positions and the positions of their online peers.[42]

Also noted is the importance of formative assessments in online courses. The integration of assessments that require students to solve a complex problem or complete a project is typically more engaging because they involve the construction of knowledge, and allows teachers to better understand student progress and learning.[43]

HYBRID LEARNING

A 2012 report from the Michael and Susan Dell Foundation examined the implementation of various hybrid learning models across multiple schools and districts. The findings established a number of "lessons learned from implementation" while drawing from the experiences of participating schools, and include: [44]

- **Create a process for innovation and continuous improvement:** All schools developed a blended learning model but created a process for continued improvement, meaning that they allowed for changes in their pre-established model. Successful schools "emphasize that blended learning is less about implementing a static model than it is about using a model as a starting point for ongoing iterations and improvement."

- **Understand the challenges of integrating online and offline learning:** Many schools found disconnects between standards-based curriculum and the content of available

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[41] Miller, A.K. "Three 'Look-Fors' for Rigorous Online Courses." *For Each to Excel*, February 2012.
http://www.ascd.org/ascd-express/vol7/709-miller.aspx

[42] [1] "Our Classrooms." Stanford University Online High School. https://ohs.stanford.edu/virtual_classroom.html
[2] "Course Catalog 2014-2015." Stanford Online High School, June 2014.
https://ohs.stanford.edu/OHS_Course_Catalog.pdf

[43] Miller, A.K. "Three 'Look-Fors' for Rigorous Online Courses." Op. cit.

[44] Bulleted points adapted from: Bernatek, B., et al. "Blended Learning in Practice: Introduction to Case Studies from Leading Schools." Michael and Susan Dell Foundation. pp. 9-11.
https://gosa.georgia.gov/sites/gosa.georgia.gov/files/Blended_Learning_in_Practice.pdf

online programs. Therefore, it is important to understand the ways in which online programs can be effectively integrated into learning while also realizing their shortcomings in order to find "their optimal place within instruction."

- **Prepare for complex logistics of student movement:** The majority of schools focused on refining the logistics of student movement in an attempt to maximize the number of instructional minutes provided to students.

- **Budget additional time and resources for technology:** In many instances, the infrastructure and resources needed to support online and blended learning exceeded what was originally anticipated. Therefore, it is recommended that districts allocate appropriate time and resources to the development of blended learning options.

- **Anticipate the persistence of traditional school challenges:** It is important to note that the schools that provided blended learning opportunities continued to focus on other areas related to student achievement that blended learning could not address.

The literature also specifies that schools that provide hybrid learning opportunities often articulated challenges related to the quality of available online education programming. According to the Michael and Susan Dell Foundation, "even the strongest online programs today are relatively new and have not yet realized their potential for delivering an effective, engaging learning experience."[45]

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[45] Ibid., p. 11.