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Redefining the Path to Student Success: Transforming Online Courses through Quality Matters Training and Guided Support

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Abstract

Quality Matters (QM) is an international benchmark for quality assurance in online learning. However, few studies to date have analyzed the impact of instructional designer-supported QM professional development using a validated framework of student success. This study examined the impact of QM training and guided support on course quality and student success dimensions (SSDs) from Lane et al.'s (2019) Student Success framework. Six instructors underwent QM training, created a course revision proposal, and revised their course with the support of an instructional designer. Each course was reviewed pre- and post-intervention, using the QM rubric. Results showed that this model led to overall improvements, with review scores increasing post-intervention and SSD integration increasing after revisions. Despite these benefits, the extent of integration varied, indicating a need for more focused support in certain SSDs. These findings emphasize the benefits of QM training, suggesting implications for future research and course design practices.

Introduction

Professional development that supports the creation of high-quality online courses is a top priority for many online educators (Bowman et al., 2022), and many teacher trainings have arisen to meet this demand. Among the most reputable offerings in the United States are the trainings and peer reviews provided by the non-profit organization Quality Matters (QM). In 2006, as part of a U.S. Department of Education grant-funded study, QM's founders sought to develop a system that was applicable within and across institutions to standardize the definition of a "quality" online course. Since then, they have created a set of validated course design standards, grounded in pedagogical research and best practices, a faculty-led peer review process using these standards to evaluate course design, and professional development for applying the standards to course development. The Quality Matters Rubrics at the center of their course review process provide an internationally recognized benchmark for evaluating online courses in various educational contexts.

The QM Higher Education Rubric (6th Ed.) consists of eight General Standards and 44 Specific Review Standards (SRSs) (see Appendix B). During a course review, trained reviewers determine whether each SRS is Met or Not Met. There are also a variety of workshops that assist faculty in applying the rubric to their own courses, such as the "Improving Your Online Course" workshop, which ends with participants creating a plan for revising their

course. QM does not provide post-workshop guided support to help teachers implement revisions, though institutions may independently do so.

Researchers have explored the impact of QM course reviews and QM teacher trainings on course revisions (e.g., Shattuck, 2015, Zimmerman et al., 2020), teacher development (e.g., Kearns & Mancilla, 2017; Young, 2014), and student perceptions (e.g., Barczyk et al., 2017; Sadaf et al., 2019), yet few studies have investigated the impact of QM-focused training paired with institutionally provided course revision guidance. The current study addresses this gap with a two-phased professional development intervention involving QM-focused course design training and follow-up instructional design support.

While there are studies identifying aspects of student success, such as improvements in student performance (Hollowell et al., 2017) and student perceptions (Barczyk et al., 2017) of online courses developed using the QM rubric, no study to date has analyzed the impact of QM-focused course revision using a validated framework of student success. The current study's explicit application of a *student-success framework* to analyze the impact of QM offerings on course development provides a more streamlined understanding of how such professional development benefits students in online courses.

Student success, defined holistically as college readiness (McNair, et al, 2022), combines elements of student performance and perception but goes beyond that to view students as complex individuals with unique backgrounds, diverse characteristics, and personal goals and trajectories. Online course development is also a multifaceted and complex process, so it makes sense to analyze the impact of course development training using an integrated framework of student success. For this reason, the authors of the current study applied Lane et. al.'s (2019) framework of student success, composed of five Student Success Dimensions (SSDs), including Self-management, Connectedness, Academic Capabilities, Mindsets, and Professional Identity, to guide our inquiry. This multiple case study explores how faculty apply knowledge gained from a QM-focused training to revise their courses and how their revisions relate to various SSDs.

Literature Review

Impact of QM Professional Development and Guided Support

Teacher Development

A growing body of research supports the claim that QM professional development positively affects course design and learning outcomes (e.g., Hollowell et al., 2017; Zimmerman et al., 2020). Attention to course design increases teachers' awareness of aspects that support learners, providing them with a comparatively better experience (Shattuck, 2015). Kearns and Mancilla (2017), who analyzed survey data from teacher participants in QM workshops, showed that all participants revised learning objectives, improved course alignment, and paid greater attention to communication with students as a result of the training. Instructors teaching online/blended courses were also likely to revise assessment practices and modify course materials to meet accessibility standards. However, the data was compiled only from instructor surveys; there was no independent review to validate their revision claims. The present study, on the other hand, includes pre- and post-intervention QM reviews in addition

to instructors' self-reported data.

Despite the benefits of using QM guidelines in course development, instructors clearly need general knowledge of instructional design to support their course development processes (Kamenetskiy, 2014; Kennedy, 2014; Moore, 2019; Roehrs et al., 2013). In a 3-year study, Brown et al. (2018) investigated students' perceptions of the integration of the QM standards into their courses after faculty underwent one of four course development training models: (1) Training/professional development, (2) Instructional designer-supported, (3) Lone ranger (sans training and instructional design support), and (4) Combination (training plus instructional designer-support). Courses "developed with the assistance of an instructional designer were of significantly greater quality and had a better course structure" (p.185) than courses in other groups. However, faculty are rarely trained in applying instructional design principles (Kearns & Mancilla, 2016; Young, 2014; Zimmerman et al., 2020). For this reason, the current study merges QM training with guided support from instructional designers to help teachers directly apply newly acquired knowledge to their course revisions.

Student Perception

Students often perceive courses developed in accordance with QM standards more positively (e.g., Martin et al., 2016), even when they do not fully pass a QM Peer Review (Shattuck, 2015). Sadaf et al. (2019) examined graduate students' perceptions of the impact of QM-certified courses on their learning and engagement, finding that a majority of students rated each QM standard as significantly impactful. Kwon et. al. (2017) found that students evaluated QM-developed courses slightly more positively than instructors; areas receiving the highest evaluations included alignment between learning objectives, assessments, instructional materials, learning activities and peer interaction. Barczyk et al. (2017) surveyed 3,160 students on whether the QM Rubric contributed to their success, finding that students under age 45 rated Standard 3 (Course Assessment) the highest, and older students rated Standard 6 (Course Technology) the highest.

Student Success

The concept of student success has traditionally been measured using student performance and retention data but has broadened to include the concept of a student's mastery of the ''college student role" (Collier & Morgan, 2008, pp. 425-426), which involves consideration of students' social and cultural backgrounds. Researchers also consider student attributes, behaviors, motivation, academic preparation, demographic factors, family characteristics (Millea et al., 2018), and personality factors (Abe, 2020) as impacting their success. Levy (2017) characterized online learning success as a combination of attributes, including digital readiness, professional persona, self-directed learning, interpersonal connections/instructor guidance, and provision of student support services.

Course design is an important factor in determining student performance (Joosten & Cusatis, 2019). "Engaging and interactive course design" can "stimulate [students'] active participation and interaction" within the course, which directly supports their success (Stone, 2021, p. 175). Eddy and Hogan (2014) found that an improved course

structure bolstered student achievement, especially for Black and first-generation students. Kauffman (2015) also found that course alignment is critical for the achievement of online learning outcomes.

A considerable body of research connects QM Standards for course design to various student success attributes. Legon (2015), for example, describes how the QM Rubric positively impacts such factors as knowledge acquisition, assignment clarity, and inclusion. Despite a small sample size, Hollowell et al. (2017) demonstrated that students earned higher final exam scores and course averages post-QM intervention. Harkness (2015) discovered a 19.7% increase in passing course grades, a 66.6% reduction in failing course grades, and a 23.5% reduction in course withdrawal for QM-certified online courses, taught by QM-trained instructors.

On the other hand, Ni et al. (2013) did not find a significant difference between QM and non-QM certified courses in retention rate, overall GPA, and student perception, even after faculty were paired with instructional designers for informal pre-reviews and course revisions. Researchers hypothesize that the higher withdrawal rates and lower grades may indicate that instructors of these courses held students to higher standards.

Conceptual Framework

While considerable research links the application of QM Standards to student success attributes, no study to date explicitly investigates the impact of QM training and instructional design support on instructors' course revision processes using an established framework of student success. Using a validated framework to interpret the impact of QM training and support on student success, as the current study does, lends itself to more refined and comprehensive findings than other studies which explore only one or two student success attributes at a time.

The current study distinguishes itself from similar student success studies by employing Lane et al.'s (2019) framework for evaluating student success within a higher education context. This framework is based on five student-centered dimensions: Connectedness, Mindsets, Self-management, Academic Capabilities, and Professional Identity (see Appendix A). These student success dimensions (SSDs) were part of a larger framework to evaluate student support services. The framework was developed through a collaborative four-part process, beginning with extensive consultation between a broad range of stakeholders (including support service staff and students) and a comprehensive review of relevant literature. Following this was the development of SSDs, SSD objectives, evaluation questions, and indicators (see example in Table 1). Finally, a survey was developed and analyzed to validate and refine the framework.

Table 1. Example of Self-management SSD from Lane et al.'s (2019) Framework

Dimension of support for learning	Objective	Evaluation question	Indicator	Data collection questions In relation to the initiative:
Self-management	To support students to build their own learning	To what extent does the initiative improve	Students report improved self-management capabilities	1) I have a clearer understanding of my goals 2) I am better able to prioritize tasks

Dimension of support for learning	Objective	Evaluation question	Indicator	Data collection questions In relation to the initiative:
	strategies within their personal, work and study lives	student self-management capabilities?		3) I am better able to manage my time

The Current Study

This multiple case study explores the impact of QM training and guided support on instructors' course revision processes. Six university instructors completed a QM-focused workshop and implemented course revisions under the guidance of professional instructional designers. Throughout the process, instructors reflected on their revision choices. Each instructor's online course was also reviewed informally, using the QM rubric, before and after their participation in the study. Pre- and post-intervention reviews provided third-person insight into the impact of the QM training on course revision, while instructors' self-reports showed how they interpreted QM guidelines to revise their courses and, consequently, support the SSDs. The study addresses the following research questions:

- How does short-term training plus guided support impact course design quality?
- How do faculty integrate aspects of student success into their course revisions after completing multi-layered professional development?
- How do instructors' interpretations of online course design evolve throughout the training?

Methodology

The current study is a collective, or multiple, case study, which facilitates comprehensive comparisons across several cases (Crowe et al., 2011). The authors employed a thematic analysis of each individual instructor (see Quintão et. al, 2020) and, due to word limit requirements, reported results as a narrative, weaving individual cases together around each thematic area.

The design of this study comprised four distinct phases, including pre- and post-intervention course reviews and a two-phased professional development intervention. The two-phased professional development addresses findings in teacher cognition literature that indicate teachers often need additional support, beyond the initial training, to successfully integrate new knowledge into daily practices (Cook et al., 2002; Mozelius et. al., 2018; Roehrs et al., 2013). Pre- and post-intervention QM reviews, conducted by trained QM reviewers, coupled with teacher perspective data, painted a robust picture of how the intervention impacted course revision. Reviews were not visible to other reviewers nor participating instructors during the study.

Institutional Context

This study was conducted at a large R1 university in the United States. QM training and guided support were provided by QM-trained instructional designers at the university's central support office for teaching and learning.

Participants

Six university instructors, including Thomas (Management of Information Systems instructor), Evan (Education & Leadership Studies instructor), Andy (Environmental Engineering instructor), Olivia (Library Sciences instructor), Taylor (Nutrition Sciences instructor), and Cindy (College of Nursing instructor), were recruited to participate in this study. Criterion sampling (Palinkas, et. al, 2015) was employed, based on two requirements. First, only instructors with fully developed online courses were eligible to participate. Second, participants had little QM experience. These criteria ensured that everyone possessed similar knowledge of online course design. Participants had either a Masters or Doctoral degree and varied in teaching experience from 2-15 years. To protect their anonymity, pseudonyms are used for all participants.

Positionality of Research Team

The research team consisted of instructional designers and QM coordinators working in the Center for Teaching and Learning at the same southwestern U.S. university. Each research team member was a trained QM course reviewer and workshop facilitator.

Study Design

Pre-Intervention: Mapping SSDs and SRSs

Before the study commenced, a panel of four Quality Matters experts, all external to the study except for the P.I., convened from four different higher education institutions to map Lane et al.'s (2019) Student Success Dimensions (SSDs) to the Specific Review Standards (SRSs) of the Higher Education Quality Matters Rubric (6th edition). The goal was to find both alignment and gaps between the SSDs and the SRSs to determine how comprehensively the QM Rubric addresses student success. The first step of the mapping process involved experts familiarizing themselves with the adapted framework (see Appendix A). They used this framework to evaluate QM Standards and determine which SSD(s) were most closely aligned with each SRS. After completing these first steps individually, experts met as a group to review and refine their mapping. The harmonization process included defining the group's understandings of each SSD-SRS relationship, as shown in bracketed text in Table 2.

Table 2. Example Mapping of SSDs to an SRS

Specific Review Standard	SSD
SRS 1.3 - Communication expectations for online discussions, email, and other forms of interaction are clearly stated. [helps learners plan and manage their discussion participation and is important for promoting learners' active involvement in the course]	1. Self-management 2. Connectedness

The result was at least one SSD assigned to each SRS in the QM Rubric. Some SRSs included more than one SSD, resulting in overlap. For example, SRS 1.3 (see Table 2), was mapped to both Self-Management and

Connectedness because this SRS helps learners manage their discussion participation and is important for promoting learners' active involvement in the course (See Appendix B for complete map). Interestingly, the experts did not believe that any of the QM Standards were aligned with the Professional Identity SSD.

Intervention Phase 1: Quality Matters Training

The QM training was based on the Improving Your Online Course workshop. The objective of this training was to guide participants to utilize the QM Rubric to review and improve existing online courses. To complete this training, instructors conducted a self-review of their courses, and based on their review, wrote a Revision Proposal for their course, listing their *proposed changes* and rationalizing each change.

Intervention Phase 2: Guided Course Revision & Review

Next, instructors were paired with QM-trained instructional designers (external to the research team) to guide them through the revision process. After finalizing course revisions, instructors completed an Amendment Report, in which they described at least five of their most impactful revisions. These *reported changes* provided insight into which revisions the teachers deemed most impactful and why they made those changes. Instructors were not explicitly trained on the SSDs nor asked to focus on them during their revisions; rather, the focus of the study was to see which SSDs implicitly emerged through QM-focused training.

Before and after the intervention, a different group of QM-trained reviewers evaluated each course using the QM Higher Education Rubric (6th Edition). Pre-revision reviewers evaluated a pre-intervention version of the course, and post-revision reviewers evaluated a post-intervention version of the same course. Instructors did not have access to reviewer comments throughout the study but were able to request them afterward.

Data Analysis

The authors employed abductive analysis to investigate the impact of QM training. Data was divided into QM Reviews (pre- and post-intervention) and teacher perspective data (Revision Proposals and Amendment Reports). Three QM-trained analysts external to the research team coded the data, and results were synthesized by the P.I. and Co-P.I.

Abductive Analysis

The analysis utilized abductive reasoning, a method particularly suited for exploratory research, enabling the authors to iteratively identify patterns in the data. This approach allows both inductive and deductive reasoning and is conducive to incorporating pre-existing conceptual frameworks, such as Lane et al.'s (2019) SSDs. The iterative movement between data and emerging themes characterizes abductive analysis and guides interpretation of qualitative data, refining the grounded theory approach often used in qualitative data analysis (Charmaz, 2009).

Analysis Procedure

Data analysis was divided into three stages. Stage 1 involved the preparation of data for analysis. Stage 2 comprised the first two steps of abductive analysis, Revisiting the Phenomenon and Defamiliarization, and Stage 3 incorporated the final step of abductive analysis, Alternative Casing (Timmermans & Tavory, 2012; Tavory & Timmermans, 2014).

During Stage 1, the Co-P.I.s de-identified the data and created a QM Review Analysis template, a Teacher Perception Analysis template, and a Data Synthesis template before passing the data to the analyst team. To prepare teachers' self-reported data, the Co-P.I.s conducted a comparison of the *proposed changes* in the Revision Proposals and *reported changes* in the Amendment Reports. This established whether the *reported changes* were equivalent to the *proposed changes*. Because the instructors did not always use the same language to describe their *reported* and *proposed* changes, it was important to apply consistent logic to identify each course change as a unique unit of measurement to form the basis for comparison. For example, some instructors described one change by listing multiple accessibility revisions (e.g., "check hyperlinks, tables, and headings for accessibility") while others separated these tasks as multiple smaller changes. Each *proposed* and *reported* change was categorized by type, enabling assessment of the relationship between proposed and reported changes (See Appendix C).

During Stage 2, data analysts evaluated revision trends in the QM reviews and coded instructors' self-reports for SSDs. They reviewed all data sources independently before meeting to harmonize their findings. The analysts compared pre-intervention and post-intervention QM reviews to identify the frequency of SRSs that moved from Not Met to Met (or vice versa) and their corresponding SSDs. Because the pre-intervention reviewer differed from the post-intervention reviewer, discrepancies occasionally arose, such as an SRS moving from Met to Not Met with no revisions. In these instances, the Co-P.I. served as the tiebreaker.

The analysts then assigned each *proposed* and *reported change* to corresponding SSDs, and evaluated whether proposed changes actually happened by (1) comparing proposed and reported changes and (2) reviewing the revised course site to check whether proposed changes had been made. Analysts provided their observations for each instructor, which resulted in preliminary themes. The final step of Stage 2 involved a frequency evaluation of SSDs coded in teacher perspective data, which offered insight into how often instructors discussed student success in their *proposed* and *reported* revisions. Upon completing Stage 2, data analysts and researchers reviewed their individual analyses and identified themes across participants, addressing differences in SSD coding and revising as needed. The Co-P.I.s then reviewed preliminary themes within and across data sets to determine a final set of themes. Finally, the Co-P.I.s amalgamated data from each case to determine overall trends among instructors.

Results

The results for each case were analyzed individually, then synthesized according to theme. Results are reported

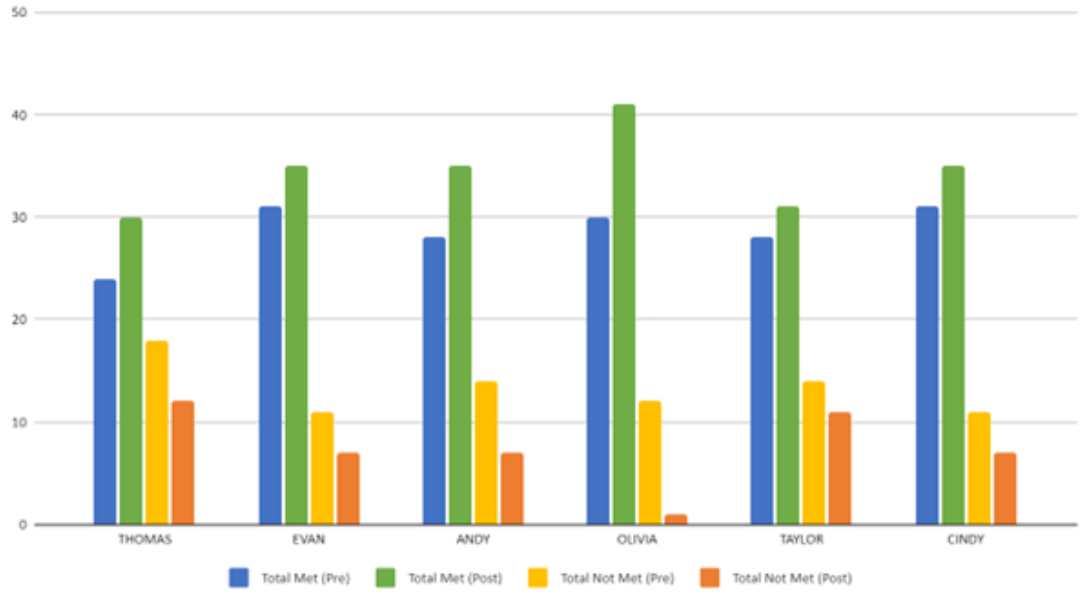
in the following section as a thematic narrative rather than a series of individual cases, highlighting the overall findings of the study.

Research Question 1: Course Design Quality

The instructor participants shared several common themes concerning their course revisions. Regarding RQ1 (*How does short-term training plus guided support impact course design quality?*), each instructor's QM review scores improved after the intervention. This improvement was mainly reflected in the areas of the QM Rubric concerning course alignment, accessibility, and learner engagement. While some instructors made complex changes to their courses, such as revising learning outcomes or major course projects, others focused on surface-level changes, such as reorganizing course content to be more logical or updating file naming conventions. Notably, instructors tended to utilize institutionally created templates to meet Specific Review Standards (SRSs). Below is a summary of the findings that address the first research question of this study.

Course Review Scores Post-Revision

All instructors substantially improved in QM review scores from pre-revision to post-revision. The average improvement rate (actual improvements divided by total possible improvements) for all instructors combined was 48.8% (*SD* = 22), though this varied across individual instructors. For Olivia, all but one SRS initially marked Not Met changed to Met post-revision, resulting in a 91.7% improvement rate, with only one (SRS 8.5, Accessible video/audio content) remaining Not Met. Olivia's review scores demonstrated her achievement of nearly all SRSs. For all instructors' totals of Met and Not Met SRSs across the pre-revision and post-revision reviews, refer to Figure 1.

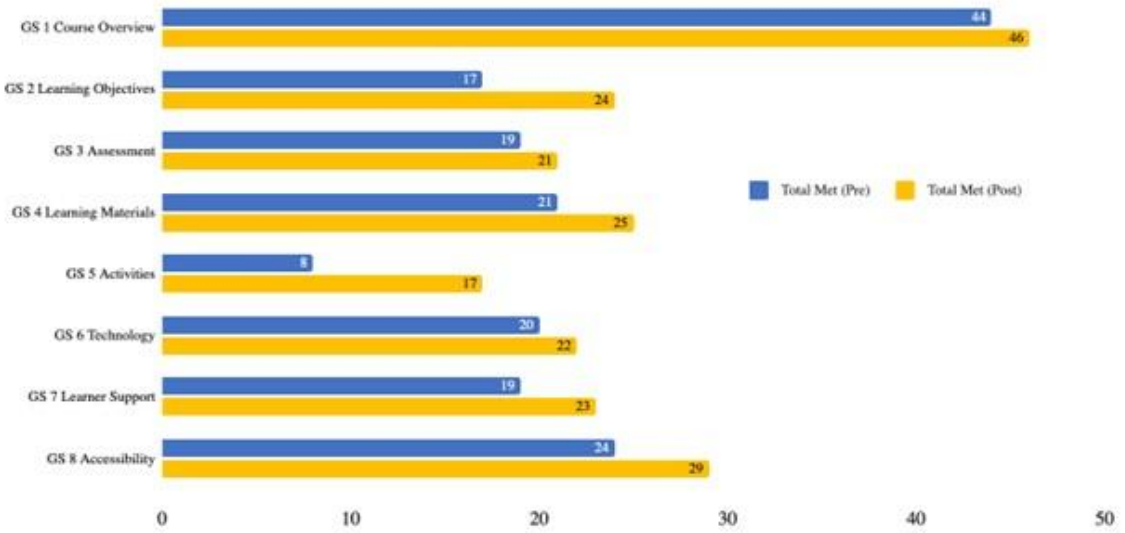


Note.

Percentage of Total Met and Not Met SRSs for the QM reviews of the pre-revision and post-revision versions of the course.

Figure 1. Changes to Review Scores

Course Areas Improved



Note. Total number of Met SRSs across all instructors within each General Standard.

Figure 2. Total SRSs Met for Each General Standard

Alignment. Most instructors focused on improving course alignment and clarity of learning outcomes. Several revised learning outcomes, aiming for greater coherence and measurability. Evan, for example, improved course alignment by revising the Course Learning Outcomes (CLOs) and writing new Module Learning Outcomes (MLOs). In so doing, he created a more coherent course structure, contributing to a marked improvement in multiple SRSs that were previously Not Met. Andy also overhauled his MLOs, refining their measurability and clarifying their relationship to the CLOs, which resulted in related Standards transitioning from Not Met to Met. Andy created new assessment rubrics, further supporting course alignment. Olivia revised her CLOs to increase measurability before creating MLOs and adding assessment rubrics, while Cindy concentrated her revision efforts on comprehensive changes to CLOs, MLOs, and their alignment to assessments, instructional materials, and learning activities. She also added explanations showcasing the alignment between these different elements to her students.

Thomas, who focused primarily on updating the organization of his course site by introducing a Start Here section and a Reference Library, was an exception to this finding. In his post-revision review, higher-level SRSs concerned with major course revisions continued to be Not Met. Where he did attempt to make more complex changes, his post-revision QM review suggests he had only partial success. For instance, he added an explanation in his course site about how MLOs and CLOs support learning activities, but this explanation was not specific enough to meet SRS 2.4, which remained Not Met in the post-revision review.

Accessibility. Another course revision trend was the emphasis on accessibility. Four instructors' (Thomas, Evan, Olivia, and Taylor) accessibility-based SRSs moved from Not Met to Met post-revision. These instructors revised content and course structure for ease of use, readability, and adherence to the accessibility SRSs. For example, Andy added a course navigation video and closed captioning for his course videos, and Olivia checked and

updated all course pages, files, and videos to be more accessible. Even when a review score did not change, instructors made accessibility-based revisions to their courses. Andy and Cindy made accessibility-based changes addressing video captioning (SRS 8.5) and course navigation (SRSs 8.1) respectively, but these SRSs had already been Met pre-revision.

Engagement. There was also a general trend toward improving student engagement and interaction (SRS 5.2). Andy enhanced learner engagement with the addition of enriched video content. Taylor's revisions were deliberately student-centered; for example, though SRS 5.2 was Met pre-revision, Taylor implemented a new technology (VoiceThread) to increase learner-learner engagement. Like Taylor, active learning served as Cindy's dominant revision approach, as she added several engaging activities to her course. Consequently, her pre-revision Not Met rating for SRS 5.2, due to un-interactive learning activities, changed to Met in the post-revision review.

Complex Vs. Surface-level Revisions

There was notable variation between each instructor's depth of engagement with instructional design principles. While some implemented substantive changes addressing pedagogical effectiveness and learning outcomes, others focused on surface-level changes, such as adding links or reorganizing content, without deeply affecting the instructional core of their course. Evan, for instance, went above and beyond, revising course areas despite having already "Met" the corresponding SRS. Similarly, Taylor's changes were complex and multi-layered, starting with a complete revision of her CLOs, which informed changes in assignment descriptions and instructional materials. Cindy also made multi-layered revisions to alignment, first revising her CLOs, which led her to revise her MLOs (SRS 2.2), assessments, instructional materials, and learning activities. Andy's MLO revisions led to alignment-based changes on his assessments (SRS 3.1) and learning activities (SRS 5.1).

Again, Thomas is the exception to this trend. He made few in-depth changes that directly affected his pedagogical approach and course alignment. Instead, his revisions were largely surface-level changes such as adding links, modifying text, and rearranging course material.

Use of Institutionally Created Templates

The use of institutionally provided templates emerged as a common tool among several instructors, with three of the six instructors (Thomas, Olivia, and Taylor) using these templates in their revisions. Most of Thomas's course revisions were facilitated by his adoption of institution-provided templates. His post-revision reviewer cited use of these templates as evidence for their Met decision for five SRSs. All QM reviewers cited templates as the reason for instructors meeting SRSs in General Standard 1 (Course Overview and Introduction), General Standard 7 (Learner Support), and General Standard 8 (Accessibility and Usability).

Research Question 2: Student Success

Regarding RQ2 (*How do faculty integrate aspects of student success into their course revisions after completing*

multi-layered professional development?), Self-management and Academic Capabilities were the SSDs most frequently enhanced by the instructors' revisions. They were also the two SSDs most commonly impacted by instructors' self-reporting in Revision Proposals and Amendment Reports. Following is the complete analysis for the second research question.

SSDs in Pre-Post QM Reviews

Table 3. SRSs from Pre-Intervention to Post-Intervention Reviews by Student Success Dimensions

SSDs per SRSs	Thomas	Evan	Andy	Olivia	Taylor	Cindy
Self-management (*N* = 35)						
Pre-Revision Review (Total Met SRSs)	19	25	23	23	23	28
Post-Revision Review (Total Met SRSs)	25	29	28	34	26	30
Not Met to Met SRSs [a]	6	4	5	11	5	3
Met to Not Met SRSs [b]	0	0	0	0	2	1
Improvement Rate [c]	37.5%	40%	41.7%	91.7%	41.7%	42.9%
Academic Capabilities (*N* = 17)						
Pre-Revision Review	9	11	12	10	8	14
Post-Revision Review	10	14	15	16	12	15
Not Met to Met [a]	1	3	3	6	4	1
Met to Not Met [b]	0	0	0	0	0	0
Improvement Rate [c]	12.5%	50%	60%	85.7%	44.4%	33.3%
Connectedness (*N* = 14)						
Pre-Revision Review	9	10	9	12	10	9
Post-Revision Review	11	12	13	13	11	11
Not Met to Met [a]	2	2	4	1	1	2
Met to Not Met [b]	0	0	0	0	0	0
Improvement Rate [c]	40%	50%	80%	50%	25%	40%
Mindsets (*N* = 6)						
Pre-Revision Review	2	4	4	5	4	2
Post-Revision Review	2	5	5	6	4	5
Not Met to Met [a]	0	1	1	1	0	3
Met to Not Met [b]	0	0	0	0	0	0
Improvement Rate [c]	0%	50%	50%	100%	0%	75%

[a] Total SRSs that changed from Not Met in the pre-revision course review to Met in the post-revision course review

[b] Total SRSs that changed from Met in the pre-revision course review to Not Met in the post-revision course review

[c] Improvement rate calculated by dividing the actual improvements (SRSs that went from Not Met to Met) by the total possible improvements (SRSs that were Not Met in the pre-intervention review).

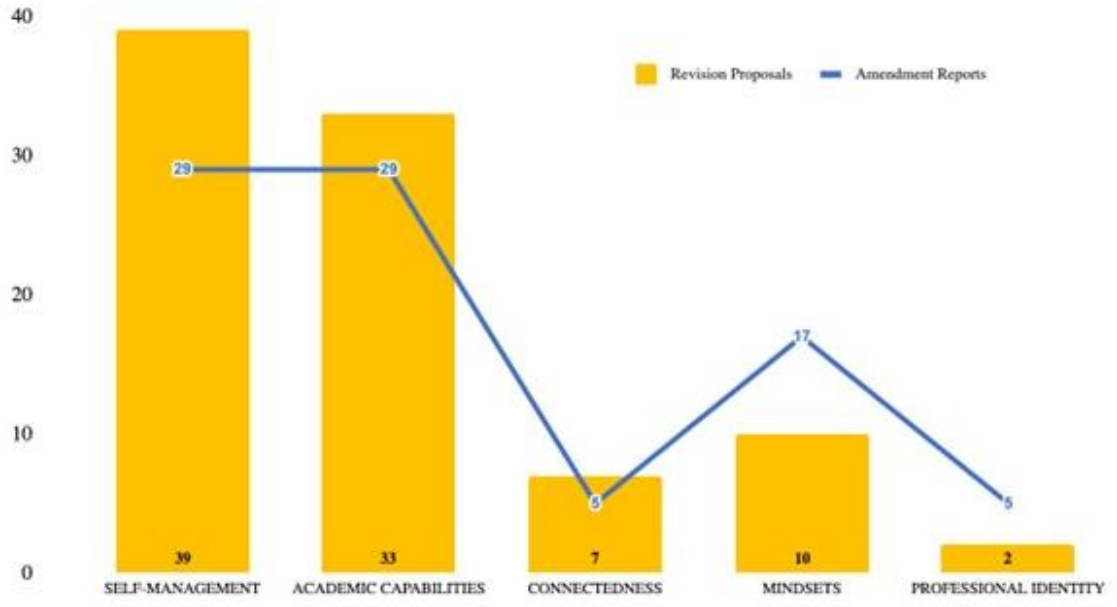
Most instructors demonstrated a strong ability to support various SSDs even before the study intervention. All six instructors Met, on average, 67.1% (*SD* = 8.6) of Self-management SRSs in their pre-revision reviews, with similarly strong showings for Academic Capabilities (*M* = 62.8%, *SD* = 12.7), Connectedness (*M* = 70.2%, *SD* = 8.3), and Mindsets (*M* = 58.3%, *SD* = 20.4). For full values, see Table 3.

Thomas, Evan, Andy, and Olivia made the greatest improvements in Self-management SRSs. Across all instructors, the average improvement rate was also the highest for Self-management SRSs (*M* = 49.3%, *SD* = 20.9). Academic Capabilities, Connectedness, and Mindsets had slightly lower but still strong average improvement rates, with *M* = 47.7% (*SD* = 24.7), *M* = 47.5% (*SD* = 18.4), and *M* = 45.8% (*SD* = 40.1) respectively.

Despite improvements, there was still room for growth after the intervention. Even after revisions, substantial percentages of Self-management (18.1%, *SD* = 9.1), Academic Capabilities (19.3%, *SD* = 13.2), Connectedness (15.5%, *SD* = 7), and Mindsets (25%,*SD* = 23) SRSs remained Not Met across all instructors.

SSDs in Self-Reporting Data

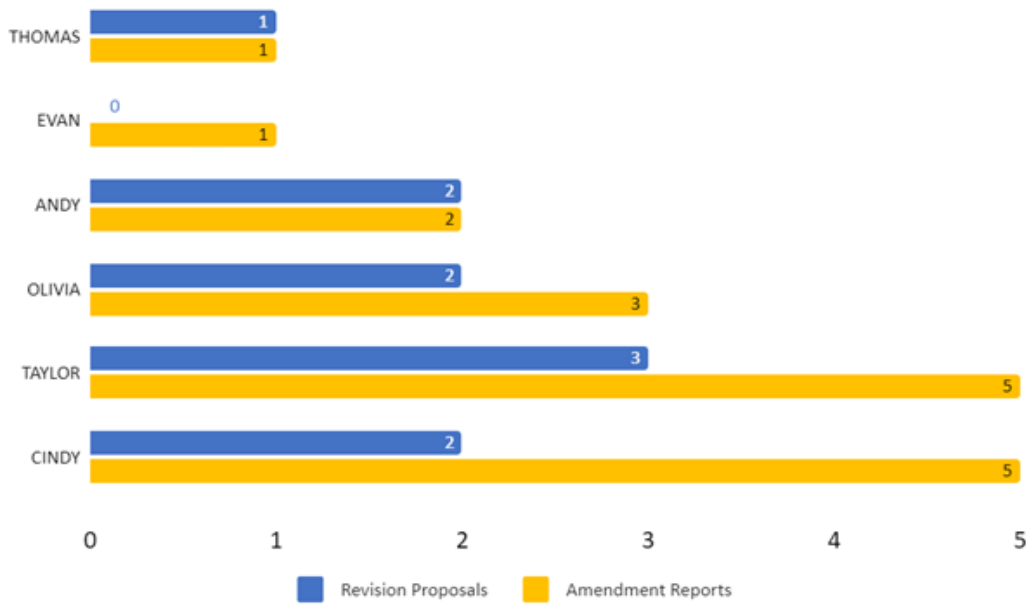
Self-management and Academic Capabilities were also the most frequent SSDs referenced in the instructors' self-reports. Self-management was coded most frequently in both the Revision Proposals and the Amendment Reports for five out of six instructors (Thomas, Evan, Andy, Olivia, and Taylor), with Academic Capabilities trailing closely behind. Across all instructors, Mindsets and Professional Identity emerged as increased areas of focus (see Figure 3). Though there were only 10 total *proposed changes* related to Mindsets, this increased to 17 *reported changes* in their Amendment Reports. Similarly, only two *proposed changes* were related to Professional Identity, but five were mentioned in the Amendment Reports.



Note. Total number of Proposed Changes in the Revision Proposals across all instructors in columns; total number of Reported Changes in the Amendment Report in the line.

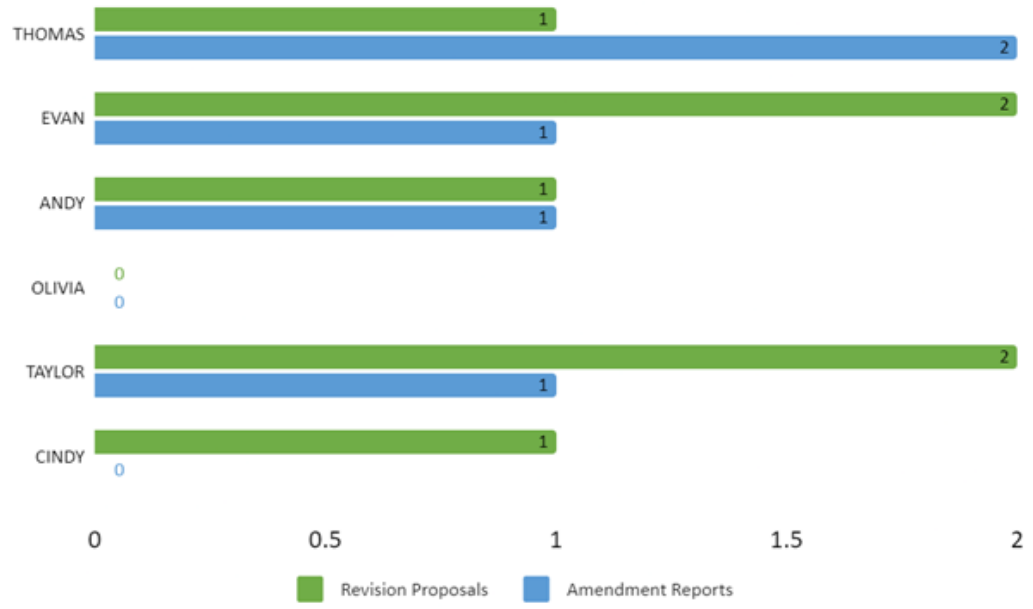
Figure 3. Proposed Changes vs. Reported Changes

Mindsets was the second most common SSD for Andy and Olivia. Cindy and Taylor increased their focus on the Mindsets SSD from two and three *proposed changes*, respectively, to five *reported changes* each. Thomas and Evan are exceptions to this trend. Thomas had one *proposed* and one *reported* Mindsets change; only one of Evan's *reported changes* was coded for Mindset, but this SSD was not linked with any of his *proposed changes*.



Note. Number of proposed Mindset changes in Revision Proposals and reported Mindset changes in Amendment Reports for each instructor.

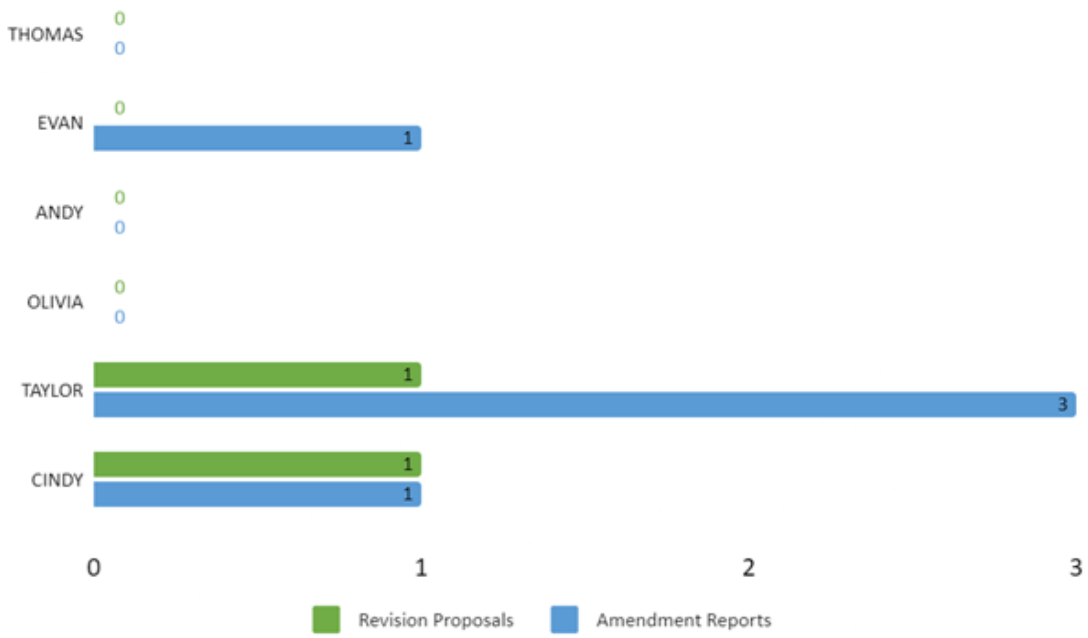
Figure 4. Changes to Mindsets SSD



Note. Number of proposed changes in the Revision Proposal and reported changes in the Amendment Report related to Connectedness for each instructor.

Figure 5. Changes to Connectedness SSD

Connectedness was less commonly associated with the instructors' course revisions, followed by Professional Identity. None of the instructors described more than two Connectedness changes in either self-reporting document, and there were no changes related to Professional Identity for Thomas, Andy, or Olivia. Evan described zero Professional Identity changes in his Revision Proposal, though he mentioned one in his Amendment Report. Cindy had one *proposed* and one *reported* Professional Identity change. Taylor made the greatest improvement in supporting her students' Professional Identity, with one *proposed* Professional Identity *change* and three *reported changes*.



Note. Numbers of proposed changes in the Revision Proposal and reported changes in the Amendment Report related to Professional Identity for each instructor.

Figure 6. Changes to Professional Identity SSD

Research Question 3: Interpretations & Actions

Finally, regarding RQ3 (*How do instructors' interpretations of online course design evolve throughout the training?*), there was substantial variation in the specificity with which instructors described their revision changes; instructors who described more specific changes tended to be more successful in implementing those revisions. There was also variation in the consistency with which the changes in the Revision Proposals were addressed in the Amendment Report. The following section provides an overview of these trends.

Variation in Specificity

The specificity with which the instructors described *proposed changes* correlated with their success in implementing those changes. Andy described his revisions with the most precision of all the instructors. All six tasks in his Revision Proposal were specific and actionable, such as "create an introduction video walking students

through the course site." He also had the most success in implementing these revisions, with all six *proposed changes* present in his Amendment Report. Similarly, Olivia created specific tasks, such as "revise all CLO verbs to be aligned with Bloom and measurable." Evan described specific tasks, like "connect individual learning activities with course/unit objectives," for the majority of his proposed revisions. However, some of his *proposed changes* were more general, like "include a plan to interact with students."

Taylor and Cindy, on the other hand, did not describe their course changes with as much specificity as the other teachers. Several of Taylor's *proposed changes* included general descriptions, like "revise course assessments," and she did not complete these changes. Instead, the *proposed changes* implemented during her revisions were specific and well-defined from the outset (e.g., "Rewrite CLOs and MLOs based on my current knowledge of Bloom's taxonomy, alignment, class needs, and required knowledge for the field"). Like Taylor, Cindy's experience illustrates the importance of specific actionable items to drive course revisions. While she created some specific action items in her Revision Proposal related to learning outcomes, other *proposed changes* (e.g., accessibility-based revisions) were written as general "throughout course" tasks. These general *proposed changes* were not present in her Amendment Report.

Thomas's proposed revisions were a mix of specific, general, and copied directly from the QM Rubric. However, there was no connection between the specificity of his *proposed changes* and whether he made those changes. Instead, his revisions were associated with the ease with which they could be accomplished (e.g., by using templates).

Variation in Consistency

There was also variation among instructors regarding the consistency with which *proposed changes* were addressed in the Amendment Report. Andy was the most consistent, with 83.3% of his *proposed changes* appearing in his Amendment Report. Olivia and Cindy also reported more than half of their proposed revisions (55.6% and 54.5% respectively), with Evan not far behind (50%). Thomas and Taylor had the least consistency between their Revision Proposals and Amendment Reports, with only 28.6% and 33.3% of their *proposed changes* appearing in their Amendment Reports, respectively (see Table 4).

Table 4. Total Changes in Revision Proposal and Amendment Report

	Total Proposed Changes (Revision Proposal)	Total Reported Changes (Amendment Report)	Changes Present in both Revision Proposal and Amendment Report
Thomas	7	7	2
Evan	4	4	2
Andy	6	7	5
Olivia	9	5	5
Taylor	9	6	3
Cindy	11	6	6

Andy focused on changes that he perceived to have the most impact on his course, prioritizing SRSs marked 'essential' in the QM Rubric, such as those related to learning outcomes and alignment. This allowed him to convert most of his *proposed changes* into *reported changes*, listing the same five changes in both his Revision Proposal and Amendment Report. Olivia similarly focused on essential SRSs (learning outcomes, alignment, and accessibility). Though she had more *proposed changes* ($N = 9$) than Andy ($N = 6$), they both included five *reported changes* in their Amendment Reports.

Taylor and Cindy (alongside Andy) transferred the most *proposed changes* to their Amendment Reports. Like Andy and Olivia, these changes focused on essential SRSs. Evan had the fewest *proposed changes* in his Amendment Report, which resulted in a completion rate, with most changes focused on essential SRSs (alignment and accessibility).

Unlike other instructors, there are discrepancies between Thomas's Revision Proposal and the *reported changes* in his Amendment Report. Though Thomas recognized the need for course alignment in his *proposed changes*, his *reported changes* focused on low-effort, surface-level changes.

It is important to note that, although some instructors' *proposed changes* did not appear in their Amendment Reports as impactful changes, they *were* actually made, as indicated by the pre-to-post review evidence. Additionally, changes emerged in all instructors' Amendment Reports that were not initially stated in their Revision Proposals.

Discussion

QM Training, Guided Support, and Course Revision

This study expands upon previous literature that found professional development positively impacts instructors' ability to meet QM standards (e.g., Hollowell et al., 2017; Zimmerman et al., 2020). It also supports claims that instructional designer support benefits instructors' QM course reviews (Brown et al, 2018). In the current study, a trend was observed where instructors improved course design quality following the intervention, particularly in the areas of course alignment, accessibility, and learner engagement. These improvements indicate the effectiveness of the training plus guided support model in enhancing instructors' ability to make substantive, pedagogically sound, and learner-centered changes to their courses.

The training and guided support model also increased participants' awareness of institutional course design resources, with five out of six instructors incorporating various institutionally provided templates into their course revisions. These templates were specifically cited as evidence for meeting associated SRSs in QM course reviews, suggesting that templates are an effective course revision practice (Murillo & Jones, 2020). Most instructors used templates as a time-saving tool for meeting the less complex standards, which allowed them to focus on more in-depth changes. However, Thomas did not move beyond the use of templates, pointing to a potential limitation of these resources in fostering more individualized approaches to course design.

Student Success Dimensions (SSDs) and Course Revisions

A pivotal aspect of this study was the examination of how faculty integrated SSDs into their course revisions after completing professional development. One notable trend was the consistent application of all SSDs, except for Professional Identity, in both the pre-revision and post-revision reviews. This suggests that instructors already had an implicit understanding of these dimensions, which was enhanced throughout the training.

Instructors' self-reports strongly represented all SSDs. However, Self-management and Academic Capabilities emerged as the two SSDs for which instructors reported the most changes, which indicates that this was prioritized during revision (Gilmore et al., 2016). It also highlights how the QM Rubric is heavily weighted toward these two SSDs.

Instructors incorporated less common SSDs, such as Mindsets, Connectedness, and Professional Identity, to varying degrees. Their integration into course revisions despite less frequent mapping in the QM Rubric suggests instructors' natural inclination to support these SSDs. Professional Identity emerged through instructors' rationales for their revisions as an area of focus, despite not being mapped to any SRSs in the QM Rubric. This indicates an opportunity for QM professional development programs to broaden their scope, addressing a more comprehensive range of SSDs.

Evolution of Instructors' Interpretations of Online Course Design

This study also illuminated instructors' evolving interpretations of online course design. A key finding was the variation in the specificity and consistency with which instructors described and implemented revisions. Instructors who articulated specific revisions tended to implement those revisions successfully, highlighting the importance of detailed and well-defined action plans in successfully implementing planned revisions.

Several instructors omitted *proposed changes* from their Amendment Reports, even though the review data indicates that these changes were made, and all instructors described changes in their Amendment Reports that were not initially planned in their Revision Proposals. It is important to remember that the Amendment Report elicited only the five *most impactful* revision changes. Since the Revision Proposal was created at the end of the QM training, before guided revision, instructors' priorities and focus may have shifted while revising or as a result of working with the instructional designer.

Limitations

While this study provides valuable insights, there are several limitations, including the potential variance in the mapping of SSDs onto the QM Rubric and the coding of the SSDs onto the instructors' Revision Proposals and Amendment Report, which were executed by two different groups of people. Though the harmonization process and the expertise with the QM Rubric was the same for both groups, this discrepancy underscores the need for a more standardized approach to mapping and interpreting SSDs in course design. Furthermore, the possibility of

bias exists in the Instructor Perception Data, which relies on instructors' self-reports, and in the course reviews, which were performed by individual reviewers. Though it is nearly impossible to remove all instances of bias from qualitative research, future studies could incorporate more objective measures of course design quality and instructor development.

Implications and Directions for Future Research

This study has several implications for professional development and online course design quality. The finding that Professional Identity SSD was not mapped to any SRS on the QM Rubric indicates a potential gap in the Quality Matters Rubric. Despite this gap, Professional Identity was valued by the participating instructors in their reflective writing, indicating a need for future investigation and professional development.

The findings also suggest that institutions should continue to invest in professional development programs for online course design, particularly those utilizing established quality assurance frameworks like the QM Rubric. Such investments can lead to significant improvements in course quality, as evidenced by the improved review scores post-intervention. Such programs should emphasize clear, specific, and actionable goals for course design improvements. Additionally, the variability in improvement rates and depth of engagement with instructional design principles suggests that professional development programs would benefit from personalized approaches that involve instructional design support to meet the unique needs of individual instructors.

Future research could also explore the impact of different types of professional development on course quality and SSDs, including those less emphasized in this study, like Mindsets and Professional Identity. Given the varied levels of complexity in instructors' revisions, future researchers may explore which factors influence the depth of revisions instructors choose to make. Additionally, examining students' perspectives and performance in revised courses, using a validated student success framework, could provide additional insight into the actual impact of these changes on student experience.

Conclusion

This study contributes to the growing body of knowledge on the effectiveness of professional development in online course design. The findings highlight the potential of short-term training combined with guided support to improve course design quality, especially in crucial areas like alignment, accessibility, and engagement. It also illuminates the strong capacity of the QM Rubric, and related professional development, to inherently support various dimensions of student success. As online education continues to evolve, such insights will be invaluable in shaping effective professional development models that not only meet quality standards but also embrace student-centered pedagogical practices.

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Appendix A. Dimensions of Student Success (Annotations from Lane et al., 2019)

Student Success Dimension	**Objective (quoted directly from original article)**	**Evaluation Question (adapted to QM Rubric Standards)**	**Indicator (adapted to QM Rubric Standards)**
Connectedness	To foster a sense of belonging for enhanced student engagement To foster strong networks for enhanced student engagement To improve students' collaborative capabilities for working productively in teams	To what extent does this SRS strengthen students' sense of belonging? To what extent does this SRS support students in expanding and strengthening their learning-related networks?	As a result of this SRS… Would students report an increased sense of belonging with the university, discipline, course or peers? Would students report an expanded and strengthened learning network? Would students report improved collaborative capabilities?
Mindsets	To deepen students' desire to engage in learning	To what extent does this SRS deepen students' engagement in their own learning?	As a result of this SRS… Would students report deeper engagement in their own learning?
Self-management	To support students to build their own learning strategies within their personal, work and study lives	To what extent does this SRS improve student self-management capabilities?	As a result of this SRS… Would students report improved self-management capabilities?
Academic capabilities	To improve students' academic capabilities for academic success	To what extent does this SRS improve academic capabilities?	As a result of this SRS… Would students report improved academic capabilities (i.e., higher academic achievement through grades/GPA, persistence, progression, and

Student Success Dimension	Objective (quoted directly from original article)	Evaluation Question (adapted to QM Rubric Standards)	Indicator (adapted to QM Rubric Standards)
			retention)?
Professional identity	To improve students' career orientation in preparation for their future beyond university	To what extent does this SRS improve career orientation?	As a result of this SRS… Would students report improved career orientation?

Appendix B. SSD Mapping to QM Higher Education Rubric (6th Ed.)

General Standards	Specific Review Standards	Dimension Level 1: Explicit relationship between the SRS and SSD	Dimension Level 2: Implicit relationship between the SRS and SSD	Dimension Level 3: More implicit relationship between the SRS and SSD
1. Course Overview and Introduction	1.1 Instructions make clear how to get started and where to find various course components.	1. Self-management		
	1.2 Learners are introduced to the purpose and structure of the course.	1. Self-management		
	1.3 Communication expectations for online discussions, email, and other forms of interaction are clearly stated.	1. Self-management	2. Connectedness	
	1.4 Course and institutional policies with which the learner is expected to comply are clearly stated within the course, or a link to current policies is provided.	1. Self-management		
	1.5 Minimum technology requirements for the course are clearly stated, and information on how to obtain the technologies is provided.	1. Self-management		
	1.6 Computer skills and digital information literacy skills expected of the learner are clearly stated.	1. Self-management		
	1.7 Expectations for prerequisite knowledge in the discipline and/or any required competencies are clearly stated.	1. Self-management		
	1.8 The self-introduction by the instructor is professional and is available online.	1. Connectedness		
	1.9 Learners are asked to introduce themselves to the class.	1. Connectedness		
2. Learning Objectives	2.1 The course learning objectives, or course/program competencies, describe	1. Self-management		

General Standards	Specific Review Standards	Dimension Level 1: Explicit relationship between the SRS and SSD	Dimension Level 2: Implicit relationship between the SRS and SSD	Dimension Level 3: More implicit relationship between the SRS and SSD
(Competencies)	outcomes that are measurable.			
	2.2 The module/unit-level learning objectives or competencies describe outcomes that are measurable and consistent with the course-level objectives or competencies.	1. Self-management	2. Academic capabilities	
	2.3 Learning objectives or competencies are stated clearly, are written from the learner's perspective, and are prominently located in the course.	1. Self-management	2. Academic capabilities	
	2.4 The relationship between learning objectives or competencies and learning activities is clearly stated.	1. Self-management	2. Academic capabilities	3. Mindsets
	2.5 The learning objectives or competencies are suited to the level of the course.	1. Self-management	2. Academic capabilities	
3. Assessment and Measurement	3.1 The assessments measure the achievement of the stated learning objectives or competencies.	1. Self-management		
		1. Academic capabilities		
	3.2 The course grading policy is stated clearly at the beginning of the course	1. Self-management		
	3.3 Specific and descriptive criteria are provided for the evaluation of learners' work, and their connection to the course grading policy is clearly explained.	1. Self-management		
	3.4 The assessments used are sequenced, varied, and suited to the level of the course.	1. Self-management	2. Academic capabilities	3. Mindsets

General Standards	**Specific Review Standards**	**Dimension Level 1: Explicit relationship between the SRS and SSD**	**Dimension Level 2: Implicit relationship between the SRS and SSD**	**Dimension Level 3: More implicit relationship between the SRS and SSD**
	3.5 The course provides learners with multiple opportunities to track their learning progress with timely feedback.	1. Self-management	2. Mindsets	
4. Instructional Materials	4.1 The instructional materials contribute to the achievement of the stated learning objectives or competencies.	1. Self-management	2. Academic capabilities	
	4.2 The relationship between the use of instructional materials in the course and completing learning activities is clearly explained.	1. Self-management		
	4.3 The course models the academic integrity expected of learners by providing both source references and permissions for use of instructional materials.	1. Self-management		
		1. Academic capabilities		
	4.4 The instructional materials represent up-to-date theory and practice in the discipline.	1. Academic capabilities		
	4.5 A variety of instructional materials is used in the course.	1. Academic capabilities		
5. Learning Activities and Learner Interaction	5.1 The learning activities promote the achievement of the stated learning objectives or competencies.	1. Self-management	2. Academic capabilities	
	5.2 Learning activities provide opportunities for interaction that support active learning.	1. Connectedness		
		1. Mindsets		
	5.3 The instructor's plan for interacting with learners during the course is clearly stated.	1. Connectedness	2. Mindsets	

General Standards	Specific Review Standards	Dimension Level 1: Explicit relationship between the SRS and SSD	Dimension Level 2: Implicit relationship between the SRS and SSD	Dimension Level 3: More implicit relationship between the SRS and SSD
	5.4 The requirements for learner interaction are clearly stated.	1. Self-management		
6. Course Technology	6.1 The tools used in the course support the learning objectives or competencies.	1. Self-management	2. Academic capabilities	
	6.2 Course tools promote learner engagement and active learning.	1. Connectedness	2. Mindsets	
	6.3 A variety of technology is used in the course.	1. Self-management		
	6.4 The course provides learners with information on protecting their data and privacy.	1. Self-management		
7. Learner Support	7.1 The course instructions articulate or link to a clear description of the technical support offered and how to obtain it	1. Self-management		
	7.2 Course instructions articulate or link to the institution's accessibility policies and services.	1. Self-management	2. Connectedness	
	7.3 Course instructions articulate or link to the institution's academic support services and resources that can help learners succeed in the course.	1. Self-management	2. Connectedness	
	7.4 Course instructions articulate or link to the institution's student services and resources that can help learners succeed.	1. Self-management	2. Connectedness	
8. Accessibility	8.1 Course navigation facilitates ease of use.	1. Self-management	2. Academic capabilities	3. Connectedness

General Standards	**Specific Review Standards**	**Dimension Level 1: Explicit relationship between the SRS and SSD**	**Dimension Level 2: Implicit relationship between the SRS and SSD**	**Dimension Level 3: More implicit relationship between the SRS and SSD**
& Usability	8.2 The course design facilitates readability	1. Self-management	2. Academic capabilities	3. Connectedness
	8.3 The course provides accessible text and images in files, documents, LMS pages, and web pages to meet the needs of diverse learners.	1. Self-management	2. Academic capabilities	3. Connectedness
	8.4 The course provides alternative means of access to multimedia content in formats that meet the needs of diverse learners.	1. Self-management	2. Academic capabilities	3. Connectedness
	8.5 Course multimedia facilitates ease of use.	1. Self-management	2. Academic capabilities	3. Connectedness
	8.6 Vendor accessibility statements are provided for all technologies required in the course.	1. Self-management		

Appendix C. Example of Teacher Perception Data Preparation

Theme	Improvement Plan	SSD	Amendment Report	SSD
Course Intro	Add course "tour"		1. Reorganized the Start Here section of the course (by adding descriptive titles to links). 2. Revised the Start Here (adding links & consolidating important information that was previously scattered across the course) 3. Created a Course Readiness Checklist	
Community building	Add communication expectations			
Alignment	1. Add course map 2. Add explanation re: how CLOs and SLOs are met		Added CLO section to the Course Overview	
Activities	Add writing assignments that allow for submission of a preliminary draft for instructor feedback			
Student Support Resources	Add accessibility policies or accommodation statements		1. Added a Tech and Student Resources section. 2. Created a Reference Library Section	
Accessibility	The course design reflects a commitment to accessibility and usability for all learners.			
Course navigation			Organization of the main menu.	