

## **Building Better Courses: Examining the Content Validity of the iNACOL National Standards for Quality Online Courses**

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In 2011, the International Association for K-12 Online Learning released the second iteration of the *National Standards for Quality Online Courses*. These standards have been used by numerous institutions and states around the country to help design and create K-12 online courses. However, there has been no reported research on the validity of the standards or the accompanying rubric. This study compares all elements under the five main standards to contemporary K-12 or higher education online course literature. The research concludes with suggested changes and additions, as well as an explanation as to how the research connects to a larger study on K-12 online course design.

### **INTRODUCTION**

There are a variety of popular standards that designers can look to when creating an online course. The Virtual High School (VHS) collaborative, for example, created the NetCourse Evaluation Board in 1998 to reinforce the designs coming out of their 25-week graduate level course (Kozma, 1998). In 2003, work began on the original Quality Matters (QM) rubric, which used a peer-review process carried out by certified QM experts (QM, 2014). The Southern Regional Education Board (SREB) unveiled standards in 2006, although the release of these standards did not describe

any specific process on how the standards were developed (SREB, 2006). One year later, iNACOL released its own standards, largely based on the SREB rubric, as well as the organization's involvement with the Partnership for 21st Century Skills initiative (North American Council for Online Learning, 2007).

This article focuses on the first stage in a larger effort to validate the iNACOL *National Standards for Quality Online Courses* in regards to online course design. The individual standards – as well as the processes behind their development – were all considered as the basis for this study. However, it was decided that this research should be based on popular, current, and non-proprietary standards to allow for the greatest impact on the field. In this article, we examine the initial development of the iNACOL standards. This examination is followed by a systematic discussion of each aspect of the iNACOL standards and whether there is research literature in the field of K-12 online learning, and to a lesser extent the larger field of online learning. Finally, suggestions are provided with the goal of improving the standards.

## LITERATURE REVIEW

The most recent and some of the most widely used national standards on course design in K-12 online learning are those from iNACOL (Barbour & Adelstein, 2013a). Originally released in 2007, the standards were used to create a 0-4 point scale rubric in five areas (i.e., content, instructional design, student assessment, technology, and course evaluation and support). Each of these five sections is further divided into multiple subsections. Under each subsection, the rubric provides specific elements to answer the overlying question, "To what extent does the course meet the criteria in this area?" (iNACOL, 2011, p. 8). The iNACOL *National Standards for Quality Online Courses* are a widely used design instrument currently implemented around the country (Barbour, Clark, DeBruler, & Bruno, 2014). For example, California, Michigan and Texas have selected the iNACOL standards for their statewide online initiatives (iNACOL, 2015; Michigan Department of Education & Michigan Virtual University, 2015). State law in Michigan (i.e., section 21f) allows K-12 students to enroll in online courses, and online courses deposited in the statewide catalog provided by Michigan districts must be reviewed against the current iNACOL standards (Michigan Virtual University, 2016).

Following the release of their quality online course design standards in 2007, iNACOL began the process of updating this initial effort by utilizing feedback from different organizations on the original standards (iNACOL, 2011). Updates continued from a process of review work completed by the California Learning Resource Network and the Texas Agency's Texas Virtu-

al School Network as they utilized the original standards to evaluate online course content (Smith, Bridges, & Lewis, 2013). In addition to these efforts, iNACOL also reconvened an expert panel in the areas of course development, instructional design, professional development, research, education, and administration (iNACOL, 2011). The original standards were eventually updated in 2011 based on feedback from these various efforts.

Despite the popularity of the current iNACOL *National Standards for Quality Online Courses*, there has been no research published that reports the validity of the standards or the published rubric that measures those standards (Barbour, 2013). The validation process is often begun through a basic literature review to examine the support the standards enjoy in the research, work that Ferdig, Cavanaugh, DiPietro, Black, and Dawson (2009) undertook with the iNACOL *National Standards for Quality Online Teaching*. However, as noted by Ferdig and his colleagues, the literature available was limited due to the fact that most research was about traditional classrooms and not online courses. Further, Barbour and Reeves (2009) indicated that there was a much greater base of literature focused on adult populations, as opposed to the K-12 environment.

To date, one of the only research-based initiatives examining the quality of online course content has been the QM program. The original QM standards, which focused on higher education and included 40 specific standards grouped under eight general standards (Legon & Runyon, 2007), were developed through a U.S. Department of Education's Fund for the Improvement of Postsecondary Education grant (Shattuck, 2007). These higher education standards have been supported by a full review of the published research literature in post-secondary education (Shattuck, 2013).<sup>1</sup> The rubric associated with these standards has been utilized in hundreds of thousands of instances, and has been tested for reliability and validity (Shattuck, 2015a; Shattuck, Zimmerman, & Adair, 2014). In 2010, QM partnered with the Florida Virtual School to develop and begin testing the reliability and validity of a K-12 version of their standards and rubric (QM, 2016), which included its relationship to K-12 research (Shattuck, 2015b) and the existing iNACOL standards (QM, 2015). While QM's annual subscription fee is beyond the fiscal resources of many K-12 programs, the process that they have undertaken to validate their standards has not be replicated by any other set of online learning standards. All of this begs the question, are the iNACOL *National Standards for Quality Online Course* supported by existing research?

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<sup>1</sup> See <https://www.qmprogram.org/qmresources/research/> for a complete listing of research related to each individual standard.

## METHODOLOGY

The current study examines the construct validity of the iNACOL (2011) *National Standards for Quality Online Courses* using contemporary research. Validity attempts to answer the question, “Does the assessment measure what it was intended to measure?” (Jonsson & Svingby, 2007, p. 136). More specifically, content validity attempts to show how elements of an assessment are relevant and representative to the construct being measured (Haynes, Richard, & Kubany, 1995). It has been argued that content validity can be determined in a variety of ways, such as a logical study of content or the use of quantitative scores (Fitzpatrick, 1983). In this instance, contemporary research is compared to the rubric associated with the iNACOL standards to determine if support for each of the standard elements exists within the research literature.

Contemporary research was collected through Wayne State University’s library and connected databases, including *Education Resources Information Center*, *Education and Information Technology Digital Library*<sup>2</sup> (EdITLib), *ProQuest*, and *Google Scholar*. Wayne State University faculty and other recommended scholars were also consulted to identify relevant and related literature. Numerous search terms were used that included, but were not limited to: K-12, online learning, online design, virtual school, course design standards, and e-learning. As research regarding K-12 online course design has been somewhat limited over the years (Barbour, 2013), often with a focus on individual programs, the search included K-12 online learning literature that was both research-based and also not based on research. In some instances, the search was expanded to include online learning with adult populations when there was a lack of K-12 research available (this was often with a specific focus on the individual element). Given the number of elements contained in the iNACOL *National Standards for Quality Online Courses*, the goals were to find 1) two to three supporting pieces of K-12 online learning research, 2) two to three supporting pieces of K-12 online learning literature, 3) two to three supporting pieces of online learning research, or 4) some combination of the previous items.

## RESULTS

To answer the guiding question of validity, each of the standards from five areas of the iNACOL rubric were reviewed using the same format. Each section begins with a brief overview of the standard. Immediately following is a table that lists the subsections with their individual elements linked to the associated citation(s). Following the table, each of the elements are discussed in relation to the contemporary research.

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<sup>2</sup> In February of 2016, EdITLib, was renamed The Learning and Technology Library (LearnTechLib.)

**Section A: Content**

*“The course provides online learners with multiple ways of engaging with learning experiences that promote their mastery of content and are aligned with state or national content standards” (iNACOL, 2011, p. 8).*

Section A of the iNACOL course design standards contained four sub-sections, which included 13 elements.

**Table 1**

<b>Academic Content Standards and Assessments</b>	
The goals and objectives clearly state what the participants will know or be able to do at the end of the course. The goals and objectives are measurable in multiple ways	
<i>K-12 Literature</i>	<i>Adult Population Literature</i>
Barbour (2007) Morris (2002) Yamashiro & Zucker (1999)	
The course content and assignments are aligned with the state’s content standards, common core curriculum, or other accepted content standards set for Advanced Placement courses, technology, computer science, or other courses whose content is not included in the state standards.	
K-12 Literature	Adult Population Literature
Fulton (2002) Porter, McMaken, Hwang, & Yang (2011)	
The course content and assignments are of sufficient rigor, depth and breadth to teach the standards being addressed.	
<i>K-12 Literature</i>	<i>Adult Population Literature</i>
Thomson (2010)	Anderson (2004)
Information literacy and communication skills are incorporated and taught as an integral part of the curriculum.	
<i>K-12 Literature</i>	<i>Adult Population Literature</i>
Morris (2002)	American Management Association (2012)
Multiple learning resources and materials to increase student success are available to students before the course begins.	
<i>K-12 Literature</i>	<i>Adult Population Literature</i>
Elbaum, McIntyre, & Smith (2002)	McKenzie, Perini, Rohlf, Toukhsati, Conduit, & Sanson (2013)

Table 1, *Continued*

<b>Course Overview and Introduction</b>	
A clear, complete course overview and syllabus are included in the course.	
<i>K-12 Literature</i>	<i>Adult Population Literature</i>
Barbour (2007) Zucker & Kozma (2003)	
Course requirements are consistent with course goals, are representative of the scope of the course and are clearly stated.	
<i>K-12 Literature</i>	<i>Adult Population Literature</i>
Elbaum et al. (2002) Zucker & Kozma (2003)	
Information is provided to students, parents and mentors on how to communicate with the online instructor and course provider.	
<i>K-12 Literature</i>	<i>Adult Population Literature</i>
DiPietro, Ferdig, Black, & Preston (2008) Fulton (2002) Morris (2002)	
<b>Legal and Acceptable Use Policies</b>	
The course reflects multi-cultural education, and the content is accurate, current and free of bias or advertising.	
<i>K-12 Literature</i>	<i>Adult Population Literature</i>
Fulton (2002) Hernandez (2005)	
Expectations for academic integrity, use of copyrighted materials, plagiarism and netiquette (Internet etiquette) regarding lesson activities, discussions, and e-mail communications are clearly stated.	
<i>K-12 Literature</i>	<i>Adult Population Literature</i>
DiPietro et al. (2008) Elbaum et al. (2002)	King, Guyette, & Piotrowski (2009)
Privacy policies are clearly stated.	
<i>K-12 Literature</i>	<i>Adult Population Literature</i>
Children's Online Privacy Protection Act (1998) Family Educational Rights and Privacy Act (2011) Micheti, Burkell, & Steeves (2010)	

Table 1, *Continued*

Instructor Resources	
Online instructor resources and notes are included.	
<i>K-12 Literature</i>	<i>Adult Population Literature</i>
Davis (2003) Morris (2002) Zucker & Kozma (2003)	
Assessment and assignment answers and explanations are included.	
<i>K-12 Literature</i>	<i>Adult Population Literature</i>
Zucker & Kozma (2003)	Roby, Ashe, Singh, & Clark (2013)

**Subsection: Content Standards and Assessments.** Section A began with clearly stated goals and objectives, noting that both should be well-defined with multiple means of measurement. This was consistent with the advice from several studies in primary and secondary distance education. For example, in his book discussing the design of Wichita public schools online program, Morris (2002) advised that, to start, every teacher should create an orientation video that discusses assignments, due dates, expectations, and many additional items. The information was posted and available to students throughout their time in the course. Similarly, Yamashiro & Zucker (1999) reported a panel review of online courses delivered by the VHS, which focused on ensuring that “benchmarks and models of performance [were] provided and made up front” (p. 13). Barbour’s (2007) interviews with course developers from the Center for Distance Learning and Innovation (CDLI) reinforced the importance of clear instructions and expectations for the students by naming the concept as one of his seven principles of creating effective web-based content.

The goals and objectives should also be aligned to state and common core standards, as well as other relevant sets of standards not necessarily included by the states, such as Advanced Placement and technology classes. Fulton (2002) suggested that alignment with state standards is one of a handful of traditional indicators that could help policymakers evaluate the quality of online courses. There are also other reasons to consider standards alignment. For example, the introduction of Common Core State Standards, as explained by Porter et al. (2011) could bring K-12 schools shared expectations for all students, a greater focus on core areas as seen in international curriculum, allowance of states to focus on other areas in local education, and, possibly, improvement of the quality of common assessments.

After alignment, the rigor, depth, and breadth of assignments are reviewed. There does not have to be a drastic shift from what works in traditional classrooms. Teachers interviewed by Thomson (2010) believed online and traditional setting content could be similar, but it was how students interacted with the material that would differ, specifically noting self-motivation as a barrier. This was further enforced by Anderson (2004), who theorized that interaction was what needed to be considered to ensure depth of learning, noting that “sufficient levels of deep and meaningful learning can be developed as long as one of the three forms of interaction (student–teacher; student–student; student–content) is at very high levels” (p. 66).

High levels of interaction directly tie into the importance of communication and information literacy skills. This notion is not necessarily new, as Morris (2002) required the inclusion of a communication area for the Wichita online program, noting it was important for both the student and teacher to understand expected communication responsibilities. This element also had strong support not just in K-12 education, but in the business world as well. For example, the American Management Association (2012) was a strong advocate for communication and information literacy skills being taught in the classroom. Companies surveyed noted that critical thinking, communication, collaboration, and creativity were required of graduates entering the workforce.

The first subsection concluded with discussing student access to resources before the course even begins, a notion with support in both K-12 and higher education research. Advanced information, however, can come in a variety of formats, all with their own unique advantages. For an online course, it is appropriate to share out hardware requirements, resources, dates, times, and policies (Elbaum et al., 2002). It would also be beneficial to offer pre-class activities, allowing for a grasp of the topic before it is even discussed (McKenzie et al., 2013), which can lead to a deeper understanding.

**Subsection: Course Overview and Introduction.** Successful designers understand the importance of a clear syllabus and clearly defined course requirements that are in line with course goals. The VHS review board took this position, as it considered the syllabus a characteristic of a ‘high quality’ rated course (Zucker & Kozma, 2003). Elbaum et al. (2002) recommended the designer first list course objectives and then follow with activities and learning cycles built around the objectives. This method would guarantee the syllabus to line up with course goals so students know what is coming their way. This specific method of design neatly falls in line with the first of Barbour’s (2007) seven principles of creating effective web-based content for adolescent learners, which were developed based on interviews with asynchronous course content designers.



Keeping with delivering information, a course should indicate how communication between the students, parents, instructor, mentors, and course provider is managed. A strong push for clearly defined communication can be found at the K-12 level (DiPietro et al., 2008; Fulton, 2002; Morris, 2002). For example, the teachers interviewed by DiPietro et al. (2008) mentioned the importance of not just communication, but making use of a variety of channels (e.g., phone calls, email, and instant messaging). It was important for the teachers to have multiple ways for the students to connect with them and provide support when needed.

**Subsection: Legal and Acceptable Use Policies.** The third subsection considered a handful of issues that revolve around legislative regulations that would impact an online course, beginning with equality in the classroom. A successful online course will respect multicultural education, allowing for equal learning opportunities while keeping the content up to date and free of bias. This element has two distinct parts, the first of which is making sure that all students have access to the same learning opportunities. As noted by Fulton (2002), “any virtual school – public or private – that accepts public funding must guarantee that it does not discriminate by race, ethnicity, gender, disability, religion, or other categories protected by law” (p. 24). This can come in the form of state or federal regulations regarding educational equality (Hernandez, 2005). The second part of this element dealt with bias in the classroom, an important topic for designers to keep in mind. The very nature of an online course means geographic boundaries can become inconsequential, allowing for students with a variety of backgrounds to partake in the class.

The next element called for a code of conduct for the class. It should touch upon netiquette, plagiarism, and overall academic integrity. While the benefits of sending out policies to the students have been previously mentioned (Elbaum et al., 2002), teachers from the DiPietro et al. (2008) study specifically noted including a code of conduct and continuous monitoring of online behaviors. A specific code that outlines the boundaries of academic integrity can help in setting a proper tone for the course (King et al., 2009).

Related to a code of conduct, privacy policies should also be posted for students. Laws such as the Children’s Online Privacy Protection of 1998 and the Family Educational Rights and Privacy Act of 2011 were designed to protect student information, and online courses need to adhere to these guidelines. However, it can be difficult to explain this to a young student, as policies written at advanced reading levels hinder the student from understanding their rights. It is no surprise, then, that children and teenagers prefer policies to be short, simple, and concise (Micheti et al., 2010). This is certainly not to say that privacy policies cannot be detailed; they just need to be clear, listing out the topics in a logical order.

**Subsection: Instructor Resources.** The final subsection of Section A looked to assure that the instructor had access to resources to help with the learning management system (LMS), as well as built-in course assessments, answers, and explanations. Unsurprisingly, support for courses in the form of design and material are important to educators in general (Roby et al., 2013), therefore, they have become a high priority in many K-12 online programs (Davis, 2003; Morris, 2002; Zucker & Kozma, 2003). Specific training within the LMS itself has helped Michigan Virtual School (MVS) and VHS educators gain a practical knowledge about their online space, allowing for opportunities to create resources educators will come to depend on (i.e., assessments and answers – Davis, 2003; Zucker & Kozma, 2003). For example, this was the rationale for the process of resource creation that was actually mandated as part of the Teachers Learning Conference, a required course for all VHS educators (Zucker & Kozma, 2003).

**Section B: Instructional Design**

*“The course uses learning activities that engage students in active learning; provides students with multiple learning paths to master; the content is based on student needs; and provides ample opportunities for interaction and communication — student to student, student to instructor and instructor to student” (iNACOL, 2011, p.11).*

Section B of the iNACOL course design standards contained five subsections, which included 11 elements.

**Table 2**

<b>Instructional and Audience Analysis</b>	
Course design reflects a clear understanding of all students' needs and incorporates varied ways to learn and master the curriculum.	
<i>K-12 Literature</i>	<i>Adult Population Literature</i>
DiPietro et al. (2008)	
Kapitzke & Pendergast (2005)	
Looi, Zhang, Chen, Seow, Chia, Norris, & Soloway (2011)	
Simpson & Park (2013)	

Table 2, *Continued*

<b>Course, Unit and Lesson Design</b>	
The course is organized by units and lessons that fall into a logical sequence. Each unit and lesson includes an overview describing objectives, activities, assignments, and resources to provide multiple learning opportunities for students to master the content.	
<i>K-12 Literature</i>	<i>Adult Population Literature</i>
Barbour (2007) Barbour & Adelstein (2013b) DiPietro et al. (2008)	
<b>Instructional Strategies and Activities</b>	
The course instruction includes activities that engage students in active learning.	
<i>K-12 Literature</i>	<i>Adult Population Literature</i>
Barbour & Adelstein (2013b) Selco, Bruno, & Chan (2012)	Chen, Lambert, & Guidry (2010) Hoic-Bozic, Momar, & Boticki (2009)
The course and course instructor provide students with multiple learning paths, based on student needs that engage students in a variety of ways.	
<i>K-12 Literature</i>	<i>Adult Population Literature</i>
Christensen, Horn, & Johnson (2011) Horn & Stalker (2015) Packard (2013) Vander Ark (2012)	
The course provides opportunities for students to engage in higher-order thinking, critical reasoning activities and thinking in increasingly complex ways.	
<i>K-12 Literature</i>	<i>Adult Population Literature</i>
Murphy, Rowe, Ramani, & Silverman (2014)	
The course provides options for the instructor to adapt learning activities to accommodate students' needs.	
<i>K-12 Literature</i>	<i>Adult Population Literature</i>
Christensen, Horn, & Johnson (2011) Horn & Stalker (2015) Mastropieri, Scruggs, Norland, Berkeley, McDuffie, Tornquist, & Connors (2006) Packard (2013) Vander Ark (2012)	
Readability levels, written language assignments and mathematical requirements are appropriate for the course content and grade-level expectations.	
<i>K-12 Literature</i>	<i>Adult Population Literature</i>
Barbour (2007) DiPietro et al. (2008)	

Table 2, *Continued*

<b>Communication and Interaction</b>	
The course design provides opportunities for appropriate instructor-student interaction, including opportunities for timely and frequent feedback about student progress.	
<i>K-12 Literature</i>	<i>Adult Population Literature</i>
DiPietro et al. (2008) Reeves, Vangalis, Vevera, Jensen, & Gillan (2007)	
The course design includes explicit communication/activities (both before and during the first week of the course) that confirms whether students are engaged and are progressing through the course. The instructor will follow program guidelines to address non-responsive students.	
<i>K-12 Literature</i>	
Johnston & Barbour (2013)	
The course provides opportunities for appropriate instructor-student and student-student interaction to foster mastery and application of the material.	
<i>K-12 Literature</i>	<i>Adult Population Literature</i>
Elbaum et al. (2002) Rice (2012)	
<b>Resources and Materials</b>	
Students have access to resources that enrich the course content.	
<i>K-12 Literature</i>	<i>Adult Population Literature</i>
Cavanaugh (2013) Elbaum et al. (2002) Rice (2012)	

**Subsection: Instructional and Audience Analysis.** The first subsection of B focused on understanding the needs of your students and incorporating a variety of ways to learn the curriculum. Individualized instruction and differentiating are not new concepts in education. The ideas can be readily found in the K-12 online environment (DiPietro et al. 2008; Kapitzke & Pendergast, 2005; Looi et al., 2011; Simpson & Park, 2013). The challenge was trying to discover strengths and weaknesses of each participant in a student-centered environment where interaction from the instructor was minimal. Success has been found when the teachers consistently monitor the class, which is what occurred with Michigan virtual educators (DiPietro et al., 2008). By reviewing students, the educators were able to discover learning styles and gaps, which was considered a best practice.

**Subsection: Course, Unit and Lesson Design.** The second subsection looked at the logical order of units, a posted overview outlining objectives, activities, and assignments, and the resources to allow multiple pathways for student success. While there was only one element mentioned in the second subsection, it contained individual requirements that should be reviewed separately. To start, course sequencing was beneficial to both the student and the designer, which is why it has been viewed as a vital pedagogical strategy for online education (DiPietro et al., 2008). It is also an area that was previously discussed in Section A (see “Subsection: Course Overview and Introduction”).

Creating an overview or summary of the lessons can be helpful for students, especially those in nontraditional online courses, where asking a teacher to clarify can be a drawn out process (Barbour & Adelstein, 2013b). When Barbour (2007) discussed the seven principles of online course design, one teacher in particular noted that he created notes and examples because a lot of his students “...were isolated, and knowing that they didn’t have access to a [content-area] teacher readily whenever they wanted... so I tried to make the websites... compensate for that as much as I possibly could” (p. 103).

**Subsection: Instructional Strategies and Activities.** The first element suggested active learning should be considered as the course is designed. Active learning can be an important factor for student success, as it gives them a connection to the concepts being taught, which in turn allows for student-created content (Barbour & Adelstein, 2013b). Students involved with active-learning courses have readily shown higher scores on statewide exams (Selco et al., 2012). Active learning has also worked in higher education settings (Chen et al., 2010; Hoic-Bozic et al., 2009), showing a connection to higher order and critical thinking skills, which tied directly into the third element.

Allowing for higher order and critical thinking is not a new concept in education. The concern is that engagement in critical thinking is minimal when adolescents are left to their own devices. However, if the classroom environment is set up to reinforce such behaviors, it can be promoted with the students (Murphy et al., 2014).

Both elements two and four shared similar ideas, discussing multiple pathways and adaptive activities, all based on students’ individual needs. The concept of individualization was discussed above, which showed strong support in K-12 online learning). Differentiating lessons can yield powerful results (Christensen et al., 2011; Horn & Stalker, 2015; Packard, 2013; Vander Ark, 2012). For example, Mastropieri et al. (2006) showed that eighth grade science classes had comparatively higher scores on both unit and state exams than classes who stuck with traditional lecture and lab activities.

Finally, it is important to note that adapting can be more than just differentiating. The learner's skills are taken into consideration. Understanding students and designing appropriate lessons that target average or below average students (DiPietro et al., 2008) – with extension activities for those on the higher end (Barbour, 2007) – will help curb confusion with the materials.

**Subsection: Communication and Interaction.** A key to success for online courses is communication. Without the advantage of face-to-face interactions, the course design must provide different opportunities for instructor-student discussion. Frequent and prompt feedback is supported in K-12 literature, noting that teachers should respond within a 48-hour period from submission of the assignment (Reeves et al., 2007). Not only does feedback keep motivation levels high, but a long waiting period has the potential of lowering student engagement (DiPietro et al., 2008). This is important to consider, as keeping students engaged for an online course can be challenging. Even with high quality materials, the ability to have face-to-face debates, discussions, and role playing are seen as more attractive to students (Johnson & Barbour, 2013).

While teachers should be involved, it is important to let the students lead the conversation and for teachers to not take over discussion threads (Elbaum et al., 2002). This ultimately can help to form an online community. Working towards a strong community will naturally lead to collaboration activities, such as blogs, video conferencing, simulations, group projects, and jigsaw sharing (Rice, 2012).

**Subsection: Resources and Materials.** Proper resources will also help students foster mastery of a subject. The use of virtual manipulatives, for example, has garnered higher performance results in algebra courses that took advantage of this unique resource (Cavanaugh, 2013). This does not mean that traditional resources should be ignored, as hard copy materials can have a positive impact as well (Elbaum et al., 2002).

Resources can originate from multiple sources, which can be overwhelming for educators and designers not knowing where to even begin. Trusted sites, such as PBS or Scholastic, are an excellent place to begin the search (Rice, 2013). Educators should also search out teacher specific sites that link directly to appropriate media, simulations, and games that are readily available.

## Section C: Student Assessment

*“The course uses multiple strategies and activities to assess student readiness for and progress in course content and provides students with feedback on their progress” (iNACOL 2011, p.14).*

Section C of the iNACOL course design standards contained three subsections, which included seven areas of measurement.

**Table 3**

<b>Evaluation Strategies</b>	
Student evaluation strategies are consistent with course goals and objectives, are representative of the scope of the course and are clearly stated.	
<i>K-12 Literature</i>	<i>Adult Population Literature</i>
DiPietro (2010) Zucker & Kozma (2003)	
The course structure includes adequate and appropriate methods and procedures to assess students' mastery of content.	
<i>K-12 Literature</i>	<i>Adult Population Literature</i>
Naidu (2013)	Palmer & Devitt (2014)
<b>Feedback</b>	
Ongoing, varied, and frequent assessments are conducted throughout the course to inform instruction.	
<i>K-12 Literature</i>	<i>Adult Population Literature</i>
Cavanaugh, Barbour, & Clark (2009)	
Assessment strategies and tools make the student continuously aware of his/her progress in class and mastery of the content.	
<i>K-12 Literature</i>	<i>Adult Population Literature</i>
Naidu (2013) Rice (2012)	
<b>Assessment Resources and Materials</b>	
Assessment materials provide the instructor with the flexibility to assess students in a variety of ways.	
<i>K-12 Literature</i>	<i>Adult Population Literature</i>
Morris (2002)	
Grading rubrics are provided to the instructor and may be shared with students.	
<i>K-12 Literature</i>	<i>Adult Population Literature</i>
Hall & Salmon (2003) Rice (2012)	
The grading policy and practices are easy to understand.	
<i>K-12 Literature</i>	<i>Adult Population Literature</i>
Rice (2012)	

**Subsection: Evaluation Strategies.** Successful online courses include student evaluation strategies that align with course objectives and are consistent with goals. Educators who use multiple and appropriate means of assessment do this for more than just keeping tabs on students. It helps engage students with the content (DiPietro, 2010), keeping them in lock step with the goals. This should all be clearly stated to the student, possibly outlined in the syllabus (Zucker et al., 2003), as was previously mentioned in Section A.

Evaluation strategies are only as good as the methods and procedures used, which have to be able to assess mastery of content. The open progression of online courses can make this difficult, but designers need to implement assessments that are valid, reliable, equitable, and secure (Naidu, 2013). When implemented within online higher education courses, multiple means of formative and summative assessments helped students show significant improvement in mastery of the material (Palmer & Devitt, 2014).

**Subsection: Feedback.** Evaluations should not necessarily be a simple snapshot in time. The feedback itself can also come from both the student and the teacher. Prior research in K-12 online courses, for example, showed high value in using student feedback (Cavanaugh et al., 2009).

Students are also generally enthusiastic to hear feedback and advice on how to achieve mastery (Naidu, 2013), and should be a high priority for educators. The feedback should be meaningful to the understanding, as well as given in a timely manner (Rice, 2002). Much like the methods used, the feedback itself should be clear to the students and easily accessible.

**Subsection: Assessment Resources.** Evaluation materials should be varied, allowing for multiple means of assessment. There are similar methods that can be shared between online and traditional settings. These would include preparation materials, rubrics, and any other resources required for course, state, and district assessments (Morris, 2002).

It can be argued that students should see course rubrics, as it allows them to see what exactly the instructor expects (Rice, 2002). Since rubrics are presented in a matrix format, students can make note of their own strengths and weaknesses (Hall & Salmon, 2003). Regardless of the assessment the teacher selects and their decision to share that with students, Rice commented that the grading policy should be specifically outlined in the course syllabus or frequently asked questions (FAQ) and readily available to the students.



## Section D: Technology

*“The course takes full advantage of a variety of technology tools, has a user-friendly interface and meets accessibility standards for interoperability and access for learners with special needs” (iNACOL, 2011, p. 15).*

Section D of the iNACOL course design standards contained five sub-headings, which included 11 elements.

**Table 4**

<b>Course Architecture</b>	
The course architecture permits the online instructor to add content, activities and assessments to extend learning opportunities.	
<i>K-12 Literature</i>	<i>Adult Population Literature</i>
Barbour, Morrison, & Adelstein (2014) Rice (2012)	
The course accommodates multiple school calendars; e.g., block, 4x4 and traditional schedules.	
<i>K-12 Literature</i>	<i>Adult Population Literature</i>
Wicks (2010)	
<b>User Interface</b>	
Clear and consistent navigation is present throughout the course.	
<i>K-12 Literature</i>	<i>Adult Population Literature</i>
Barbour (2007) Barbour, Morrison, & Adelstein (2014) Morris (2002)	
Rich media are provided in multiple formats for ease of use and access in order to address diverse student needs.	
<i>K-12 Literature</i>	<i>Adult Population Literature</i>
Barbour (2007) Cavanaugh (2013) Keeler, Richter, Anderson-Inman, Horney, & Ditson (2007)	

Table 4, *Continued*

<b>Technology Requirements and Interoperability</b>	
All technology requirements (including hardware, browser, software, etc...) are specified.	
<i>K-12 Literature</i>	<i>Adult Population Literature</i>
DiPietro et al. (2008) Elbaum et al. (2002)	
Prerequisite skills in the use of technology are identified.	
<i>K-12 Literature</i>	<i>Adult Population Literature</i>
Elbaum et al. (2002) Rice (2012)	
The course uses content-specific tools and software appropriately.	
<i>K-12 Literature</i>	<i>Adult Population Literature</i>
DiPietro et al. (2008)	
The course is designed to meet internationally recognized interoperability standards.	
<i>K-12 Literature</i>	<i>Adult Population Literature</i>
Watson & Watson (2007)	Coates, James, & Baldwin (2005)
Copyright and licensing status, including permission to share where applicable, is clearly stated and easily found.	
<i>K-12 Literature</i>	<i>Adult Population Literature</i>
Elbaum et al. (2002) Halme & Somervouri (2012) Tonks, Westin, Wiley, & Barbour (2013)	
<b>Accessibility</b>	
Course materials and activities are designed to provide appropriate access to all students. The course, developed with universal design principles in mind, conforms to the U.S. Section 504 and Section 508 provisions for electronic and information technology as well as the W3C's Web Content Accessibility Guidelines (WCAG 2.0).	
<i>K-12 Literature</i>	<i>Adult Population Literature</i>
Elbaum et al. (2002) Rose, Smith, Johnson, & Glick (2015)	
<b>Data Security</b>	
Student information remains confidential, as required by the Family Educational Rights and Privacy Act (FERPA).	
<i>K-12 Literature</i>	<i>Adult Population Literature</i>
Barbour & Plough (2012) Waters (2011)	Cantrell (2013)

**Subsection: Course Architecture.** When teaching an online course, the instructor needs to be able to add content, activities, and assessments through the LMS. The LMS is an integral part of the virtual classroom, so it is of high importance to select the most effective architecture for the course (Rice, 2012). It should be a priority of the teacher to learn what the LMS can accomplish and to look elsewhere if elements required are missing (Barbour, Morrison, & Adelstein, 2014).

The LMS and the course itself should also be able to adjust for multiple calendars, such as year-round, block, and traditional. Considering the very nature of online learning, flexibility is a major selling point for online courses, giving students the opportunity to work around scheduling conflicts (Wicks, 2010). This can be extrapolated out to the school district, allowing the flexibility to work within their calendar model.

**Subsection: User Interface.** The user should be able to easily move around the online course, with a clear and consistent navigation present. Some successful online courses, such as those featured from the Wichita catalogue, offered navigational forms in the course information area (Morris, 2002). These forms outlined how to find specific items within the course. Regardless of how the information is rolled out, the navigation should be kept simple and consistent for the students (Barbour, 2007). This can be accomplished by using a template as the course is initially designed (Barbour, Morrison, & Adelstein, 2014).

Besides navigation, multimedia should also offer ease of use, with multiple formats available to help address student needs. This measurement is supported for multiple reasons. When working in a unique and unfamiliar environment, having a variety of media can be helpful in supporting student understanding (Barbour, 2007; Cavanaugh, 2013). Multiple formats can possibly make the content easier to access for students with complications. Both legislation and Internet watchdog groups have offered recommendations for teachers looking to maximize media for their students (Keeler et al., 2007).

**Subsection: Technology Requirements and Interoperability.** Although seemingly obvious, a review of the technology and interoperability of the course must take place. Teachers should consider all aspects of student access for the course during the design process (DiPietro et al., 2008). As the course rolls out, Elbaum et al. (2002) recommended to specify both the technology and the skill requirements to the students. Even basic general overviews and procedures, such as how to access a web browser, need to be shared before the course begins so there are no surprises for incoming students. A student orientation and transition period to allow students without the proper skillset to gain guidance and support is recommended (Rice, 2012).

Before sharing the tools and software used, it should be understood that the technology in place is appropriate for the course and that it meets interoperability standards. Teachers should not simply use the technology just because it is available to them, but instead they should make instructional technology decisions based on the nature of the content and their pedagogical strategies (DiPietro et al., 2008). These decisions should all be done through an LMS that can communicate with other systems within the institution to share data collected (Coates et al., 2005; Watson & Watson, 2007).

Designers and teachers alike must also be aware of copyright issues and understand the importance of licensing information. While it is possible to obtain copyright permissions (Elbaum et al., 2002), there are very few other options to legally use digital media. There is also, however, a push for free use under the creative commons license and that open access can be a viable solution (Halme & Somervouri, 2011; Tonks et al., 2013).

**Subsection: Accessibility.** In the previous sections, there were numerous measurements reviewing multiple means of media, resource, and course access. The reason was to guarantee that the course adhered to the law, ensuring universal access for all. This can seem daunting at first, but there are free sites that can help identify problems with accessibility (Elbaum et al., 2002).

Accessibility is not something to lightly gloss over, however, as the law can and will be put in effect. In 2007, for example, a school district denied special needs students from online courses (Rose et al., 2015). The district noted that these students were not allowed to access the course due to a difficulty in completing work independently, as well as having low reading and writing abilities. The district was eventually cited by the U.S. Department of Education's Office for Civil Rights and was forced to reverse their policy.

**Subsection: Data Security.** The area of measurement for Section D required that the course follow the law assuring that student information is confidential. Originally created in 1974, FERPA must be adhered to by most higher education and K-12 education institutions. As Cantrell (2013) pointed out, FERPA protects the student from public disclosure of private and educational records. However, new rules complicate the law. Institutions are allowed to use student records in the database for various audits, such as evaluating student training. Students can opt out, but it appears to be an all or nothing (Cantrell, 2013). A student who opts out of being used in audits under FERPA also could not be highlighted in a public newsletter for receiving an award. The rules are complicated, and instructors must be aware of the law, especially as it applies to each student.

The issue of data security is particularly difficult when it comes to online courses trying to leverage the power of popular social media sites (e.g., *Facebook*, *Twitter*, etc.). As noted by Waters (2011), Facebook does

not have a separate area for education, so students are required to enter in personal information. Like other aspects of the Internet, social media can be susceptible to numerous threats. Educators should consider social media sites that cater to K-12 (e.g., *Edmodo*, *Google Apps for Education*, etc.). These sites do not require students to enter their private information, are run by the teacher, and are designed specifically for classroom use – allowing for a safer online environment. Social networks that can provide a protected environment can provide numerous curricular, co-curricular, and extracurricular opportunities for K-12 online learning (Barbour & Plough, 2012).

### Section E: Course Evaluation and Support

*“The course is evaluated regularly for effectiveness, using a variety of assessment strategies, and the findings are used as a basis for improvement. The course is kept up to date, both in content and in the application of new research on course design and technologies. Online instructors and their students are prepared to teach and learn in an online environment and are provided support during the course” (iNACOL, 2011, p. 18).*

Section E of the iNACOL course design standards contained four subheadings, which included 10 elements.

**Table 5**

<b>Assessing Course Effectiveness</b>	
The course provider uses multiple ways of assessing course effectiveness.	
<i>K-12 Literature</i>	<i>Adult Population Literature</i>
Fulton (2002) Morris (2002)	
The course is evaluated using a continuous improvement cycle for effectiveness and the findings used as a basis for improvement.	
<i>K-12 Literature</i>	<i>Adult Population Literature</i>
Elbaum et al. (2002) Zucker & Kozma (2003)	
<b>Course Updates</b>	
The course is updated periodically to ensure that the content is current.	
<i>K-12 Literature</i>	<i>Adult Population Literature</i>
Ebert & Powell (2015)	

Table 5, *Continued*

<b>Certification</b>	
Course instructors, whether face-to-face or virtual, are certificated and "highly qualified." The online course teacher possesses a teaching credential from a state-licensing agency and is "highly-qualified" as defined under ESEA.	
<i>K-12 Literature</i>	<i>Adult Population Literature</i>
Yang & Rice (2015)	
<b>Instructor and Student Support</b>	
Professional development about the online course delivery system is offered by the provider to assure effective use of the courseware and various instructional media available.	
<i>K-12 Literature</i>	<i>Adult Population Literature</i>
Barbour, Morrison, & Adelstein (2014) Cavanaugh (2013) Zucker & Kozma (2003)	
The course provider offers technical support and course management assistance to students, the course instructor, and the school coordinator.	
<i>K-12 Literature</i>	<i>Adult Population Literature</i>
Barbour, Kinsella, Wicks, & Toker (2009) Elbaum et al. (2002)	
Course instructors, whether face-to-face or virtual, have been provided professional development in the behavioral, social and when necessary, emotional aspects of the learning environment.	
<i>K-12 Literature</i>	<i>Adult Population Literature</i>
DiPietro et al. (2008)	Roman, Kelsey, & Lin (2010)
Course instructors, whether face-to-face or virtual, receive instructor professional development, which includes the support and use of a variety of communication modes to stimulate student engagement online.	
<i>K-12 Literature</i>	<i>Adult Population Literature</i>
DiPietro et al. (2008)	
The provider assures that course instructors, whether face-to-face or virtual, are provided support, as needed, to ensure their effectiveness and success in meeting the needs of online students.	
<i>K-12 Literature</i>	<i>Adult Population Literature</i>
Elbaum et al. (2002) Morris (2002)	
Students are offered an orientation to taking an online course before starting the coursework.	
<i>K-12 Literature</i>	<i>Adult Population Literature</i>
Elbaum et al. (2002) Rice (2012)	

**Subsection: Accessing Course Effectiveness.** To properly assess effectiveness, the design should allow for multiple means of evaluation of the course itself, be it peer review, student feedback, or course evaluations. While students and families can be part of the evaluation process, teachers should also discuss their courses together, which will allow for unique peer feedback (Morris, 2002). Evaluations should look similar to traditional classrooms for some aspects (i.e., achievement, completion rates), but also have parts unique to online (e.g., effectiveness of technology, course design interactivity) (Fulton, 2002).

However, evaluation process should not be a one-time event. A continuous improvement cycle should be used for effectiveness and improvements (Barbour, 2005). Successful virtual schools use continuous internal and external evaluations to make sure a high standard is maintained (Zucker & Kozma, 2003). Post-course, anonymous feedback from the students, as well as peers, should be taken into consideration at the end of every course (Elbaum et al., 2002).

**Subsection: Course Updates.** Once the evaluations have been completed, the course should be updated periodically to keep content current. This can be challenging if the educator is working with an inflexible or an out-of-date infrastructure. The Clark County School District (CCSD) VHS, which has more than 100,000 students enrolled in blended and online courses, understood the importance of updating for their massive population, and ended up providing an excellent example for others to follow (Ebert & Powell, 2015). The CCSD VHS overcame challenges with updating by ensuring all digital content was in HTML code. This allowed the design team to easily evaluate and change content when required. Continuously updating policies, content and professional development became a part of the school's best practices for student and school success.

**Subsection: Certification.** The subsection of certification checks that the instructor is both certified and highly qualified, as noted in the Elementary Secondary Education Act (ESEA) of 2001. Numerous states, such as Idaho, take qualification a step further by offering a K-12 online teaching endorsement (Yang & Rice, 2015). For example, Boise State University's program took the K-12 online teaching standards set forth by iNACOL, the International Society for Technology Education, and the National Education Association, as well as the highly qualified teacher standards, and created a competency-based program specifically for educators teaching in an online environment. Partnering with virtual schools and the state's online supplemental program, educators gain a unique hands-on experience.

**Subsection: Instructor and Student Support.** The final subsection of the iNACOL rubric included six areas of measurement focused on instructor and student support. It is imperative that professional development take

place for teachers (Barbour, Morrison, & Adelstein, 2014), as online courses require unique skills not found in traditional settings (Cavanaugh, 2013). The VHS program, for example, used a required 26-week online professional development and design course. Teachers work exclusively in the LMS to train and build their own course (Zucker & Kozma, 2003).

After the professional development, continuous support is needed (Barbour et al., 2009). Support should be available in a variety of formats for both teachers and students alike. Support should also be specific to the unique online environment. Technical and course management help, for instance, can come through training, system administration, and just taking the time to play within the LMS itself (Elbaum et al., 2002).

Other aspects to consider are preparation for behavioral, social, and emotional challenges of an online setting, communicating to stimulate engagement, as well as succeeding in the online environment. Successful teachers should be active in their own course to identify students in need and know the proper actions to take, as well as modeling and encouraging proper communication that is both content and non-content related (DiPietro et al., 2008). While some teachers are naturally adept with these techniques, these items can be included in teacher preparation courses. The Preparing Online Instructors program, for example, is a six-week online training course for online instructors (Roman et al., 2010). A survey conducted of 40 instructors who went through the training showed that the vast majority felt that the training was necessary to increase their technological skills, as well as their pedagogical orientations for online instruction. The Wichita online public schools program also created training for online instructors, which had teachers working in the LMS designing, as well as collaborating, with their peers (Morris, 2002). While support continued on after the training program, teachers felt proficient enough to carry on independently. Finally, a strong administrative team should be in place to offer support in numerous areas (i.e., registration, policies, training) to help ensure success (Elbaum et al., 2002).

The last area of measurement promoted students being offered an orientation for taking an online course before the class began. As mentioned earlier, Rice (2012) specifically mentioned an orientation for all students to get them acclimated using online instruction. The need for orientations was also previously noted by Elbaum et al. (2002), who recommended an orientation, which included a welcome letter and an information packet.



## DISCUSSION

While the 2011 update to the iNACOL standards has support among contemporary literature, one area of concern was potential omissions from the standards. Support, assessment, and instruction were all covered by the standards. It should be noted that the iNACOL standards are described as ‘national standards for quality online courses,’ and not specifically quality online course design. The omission of the term ‘design’ indicated that a quality online course might include elements that went beyond strict online course design issues. For example, ‘Section E: Course Evaluation and Support’ contained several elements that were inconsistent with a strict focus on online course design:

- E4: Course instructors, whether face-to-face or virtual, are certificated and “highly qualified.” The online course teacher possesses a teaching credential from a state-licensing agency and is “highly-qualified” as defined under ESEA.
- E5: Professional development about the online course delivery system is offered by the provider to assure effective use of the courseware and various instructional media available.
- E7: Course instructors, whether face-to-face or virtual, have been provided professional development in the behavior, social and when necessary, emotional aspects of the learning environment.
- E8: Course instructors, whether face-to-face or virtual, receive instructor professional development, which includes the support and use of a variety of communication modes to stimulate student engagement online.
- E9: The provider assures that course instructors, whether face-to-face or virtual, are provided support, as needed, to ensure their effectiveness and success in meeting the needs of online students.
- E10: Students are offered an orientation to taking an online course before starting the coursework.

With this in mind, it is important to note that the standards did not directly address any elements that may be included in ‘quality online courses’ related to the concept of student motivation.

McCombs and Vakili (2005) discussed the 14 *Learner-Centered Psychological Principles* (American Psychological Association, 1997), which were grouped into four factors: cognitive and metacognitive factors, developmental and social factors, individual-differences factors, and motivational and affective factors. The motivational and affective domain included three principles:

*“Principle 7: Motivational and emotional influences on learning*

- What and how much is learned is influenced by the learner’s motivation. Motivation to learn, in turn, is influenced by the individual’s emotional states, beliefs, interests and goals, and habits of thinking.

*Principle 8: Intrinsic motivation to learn*

- The learner’s creativity, higher order thinking, and natural curiosity all contribute to motivation to learn. Intrinsic motivation is stimulated by tasks of optimal novelty and difficulty, relevant to personal interests, and providing for personal choice and control.

*Principle 9: Effects of motivation on effort*

- Acquisition of complex knowledge and skills requires extended learner effort and guided practice. Without learners’ motivation to learn, the willingness to exert this effort is unlikely without coercion,” (p. 1585).

Tying these principles to K-12 online education, the authors recognized the connection between online learning and self-directed learners, a connection that is made through motivational strategies.

This was further supported by Cheng and Jang (2010), who mentioned in their research that motivation was an integral part of education. Using a self-determination theory as a way to view motivation, their study highlighted that the perceived satisfaction in autonomy, relatedness, and competency directly affected student motivation. The study also suggested understanding why a student was taking the course and to use the information for motivation. Once again, the perceived interactions were important to student satisfaction. Further, Kim, Park, and Cozart (2014) also found a connection between self-efficacy, emotions, and motivation in their study of 72 online high school students in a mathematics course. Results showed how different emotions of the students impacted overall learning, with anger, boredom, and enjoyment significant predictors of achievement. If the iNACOL *National Standards for Quality Online Courses* go beyond a strict focus on online course design, elements related to student motivation are conspicuously absent.

## CONCLUSIONS AND IMPLICATIONS

The five sections of the iNACOL *National Standards for Quality Online Courses* were reviewed in detail. The elements were aligned to current literature in an attempt to begin the process of validating these standards – a process that has never been undertaken, even though the standards have been widely adopted by schools, districts, and even several states. The results indicated the elements did align. For example, ‘Section A: Content’ as a whole aligned with current literature. While the subsection

‘Course Overview’ and ‘Introduction’ aligned with solely K-12 literature, ‘Academic Content Standards and Assessments,’ ‘Legal and Acceptable Use Policies,’ and ‘Instructor Resources’ were supplemented with adult population literature.

‘Section B: Instructional Design’ found connections to K-12 literature at a more consistent pace than Section A. Subsections ‘Instructional and Audience Analysis,’ ‘Course, Unit,’ and ‘Lesson Design,’ ‘Communication and Interaction,’ and ‘Resources and Materials’ were all strongly supported by K-12 literature. Only the subsection related to ‘Instructional Strategies and Activities’ required the use of adult population literature for additional support of specific elements. ‘Section C: Student Assessment’ contained three subsections, all of which were strongly supported by K-12 literature. The subsections on ‘Feedback’ and ‘Assessment Resources and Materials’ solely used K-12 material in relation to the elements. Only the first subsection (i.e., Evaluation Strategies) relied on adult population literature for supplemental support.

‘Section D: Technology’ was supported mainly by K-12 literature. However, subsections on ‘Technology Requirements and Interoperability’ and ‘Data Security’ did require supplemental adult population literature for support. The other subsections were all fully supported by K-12 literature for each element. Finally, ‘Section E: Course Evaluation and Support’ was supported by K-12 literature, with the exception of one element from the subsection related to ‘Instructor and Student Support.’ While the literature into K-12 online learning course design is still developing, most elements were supported or supported somewhat by K-12 online learning literature, although not necessarily K-12 online learning research. Those elements only somewhat supported found additional alignment with broader online learning literature related to adult populations.

As noted above one of the main limitations of this attempt to achieve the content validity of the iNACOL *National Standards for Quality Online Courses* was the lack of literature, and in particular the lack of research, related to K-12 online course design (Barbour & Reeves, 2009). When attempting to supplement with adult population literature, the challenge was trying to locate appropriate higher education literature with a search focused primarily on K-12. This, in turn, limited the scope of higher education research used. A final issue was that of length of the manuscript. Even when the editors of the *Journal of Online Learning Research* graciously allow for a greater word limit utilizing their online format, the authors still needed to take overall length into consideration when describing the literature support for each element. The iNACOL standards contain 52 total elements, which only allowed for a cursory review to be presented in this manuscript.

However, in the process of examining standards in relation to the literature there appeared to be some redundancy in the elements. It also became

clear that certain elements could be considered for consolidation as this literature review occurred. Further, the literature indicated that student motivation was directly tied to student support and satisfaction. However, while the current standards implied a need for motivational elements (e.g., satisfaction), there was not a clearly identified standard to examine criteria for motivation.

The 2011 iNACOL *National Standards for Quality Online Courses* cover a wide breadth of topics for K-12 online courses. The literature review and accompanying suggestions were an important first step, but further research is required. For example, a more comprehensive review of the standards through the lens of K-12 online literature would be useful given the constraints of length. The review of each element is much briefer than what could have been done without space considerations. Within this large scope of elements lies an opportunity to review and revise the standards even further, specifically with regard to a more direct focus on course design. The next phase in this on-going study of the iNACOL *National Standards for Quality Online Courses* will be to examine the content validity of the standards by having experts from various aspects of the field of K-12 online learning to provide systematic feedback on the standards themselves, as well as the findings from this first phase of validation.

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