

# EXPLORING THE CRITICAL-THINKING SKILLS GAP IN COLLEGE AND CAREER READINESS THROUGH STANDARDS IN THE BUSINESS EDUCATION CURRICULUM

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## Abstract

**Problem:** Secondary education focuses on preparing all students for college and career readiness. Yet employers and higher education institutions report that secondary schools are not preparing students for college or careers with regard to critical thinking. **Purpose:** This study focused on examining the critical-thinking skills gap in college and career readiness through the use of Wisconsin Common Career Technical Standard 4C/Creativity, Critical Thinking, and Communication and Collaboration (WCCTS 4C) in business education curricula. The WCCTS 4C standard is designed to prepare students for college and career readiness and can be explicitly stated or embedded in the curriculum. **Method:** The study surveyed Wisconsin business educators ( $n = 181$ ) regarding whether they explicitly stated or embedded the WCCTS 4C standard in the curriculum. **Findings:** The majority of business education instructors reported explicitly stating and/or embedding WCCTS 4C as a student-learning outcome. Only 8% of the instructors did not state or embed the standard as a student-learning outcome.

## Introduction

Educational standards have long been used to define student-learning goals at all levels of education. Standards are meant to ensure that students have developed the knowledge and skills needed to be successful in pursuit of education, career, and life goals. Research studies reveal the crucial need to better prepare students for college and career. The American College Testing (ACT) program annually reports on the number of students meeting college and career readiness benchmarks. ACT benchmarks are scores on the ACT subject-area tests that represent the level of achievement required for students to succeed in college. In 2015, 59% of the national graduating class took the ACT; and 31% of the test takers did not meet any of the college readiness benchmarks in English, reading, mathematics, and science (National ACT, 2015). In Wisconsin, 73% of the 2015 graduating class took the ACT; and 21% of the total did not meet any of the college readiness benchmarks in English, reading, mathematics, and science (Wisconsin ACT, 2015).

Equally important to college readiness is career readiness. The Association for Career and Technical Education (ACTE) (2010) defines career readiness as developing major academic skills, employability skills, and technical, job-specific skills; but more important are students' ability to apply these skills in an authentic setting. A key finding of the Achieve (2015) national survey identified 62% of employers who think public high schools are not doing enough to

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prepare students for the workforce. The Summit on Work and Career Readiness, conducted by Junior Achievement USA (2013), stated that “graduating students are inadequately prepared to participate in a meaningful way to their employers’ success because they lack basic skills such as communication, problem solving, and critical thinking” (p. 1). More recently, *The Economist* Intelligence Unit (Closing the skills gap, 2016) reported that an “overwhelming consensus among employers is that too many graduates lack critical-thinking skills and the ability to communicate effectively, solve problems creatively, work collaboratively and adapt to changing priorities” (p. 3).

Career and Technical Education (CTE) is positioned to prepare secondary students to be both college and career ready by providing a rigorous and relevant curriculum that includes core academic skills (Common Core Standards), employability skills, and technical, job-specific skills (ACTE, 2016). Wisconsin provides CTE educators with comprehensive standards that are aligned with college and work expectations. Wisconsin CTE further strengthened its educational position by adopting the Wisconsin Common Career Technical Standards (WCCTS), which include Career Development; Creativity, Critical Thinking, Communication, and Collaboration; Environment, Health and Safety; Global Culture Awareness; Information, Media, and Technology; and Leadership. Business education is a content area within CTE and prepares students in multiple capacities for college and careers.

CTE programs are organized into 16 career clusters and serve as an instructional model that provides students with a seamless path from high school to a postsecondary education or employment (Wisconsin Department of Public Instruction, 2011). The benefits of CTE are numerous. The average high school graduation rate for students in CTE programs is 93% compared to a national adjusted cohort graduation rate of 80% (U.S. Department of Education, 2014). High school students report developing employability skills, working collaboratively with a team, and gaining experiences with real-world examples as the top three benefits and experiences of CTE classes (ACTE, 2016).

CTE students were significantly more likely to report developing problem-solving, project-completion, research, math, communication, and critical-thinking skills during high school (Lekes et al., 2007). Remarkably, more than 88% of CTE students plan to continue on to postsecondary education (ACTE, 2016). Lekes et al. (2007) reported that CTE students were significantly “more likely than their non-CTE counterparts to report developing problem-solving...communication,... and critical-thinking skills during high school” (p. 64). Lippman, Ryberg, Carney, and Moore (2015) identified social skills, communication, problem solving, critical thinking, and decision making as critical skills needed to foster youth workforce success.

Yet a gap exists. The success of CTE programs is overshadowed by Bromberg and Theokas’ (2016) report that “only 8% of high school graduates complete a full college- and career-preparatory curriculum” (p. 4), and “nearly 50% of graduates

complete neither a college- nor career-ready course sequence” (p. 7). In addition, Achieve (2015) reported that:

Significant majorities of college instructors at both two-year and four-year institutions believe that U.S. public high schools are not doing a good enough job preparing students for the expectations they will face in college and they identify gaps in preparation in a number of skill areas for significant proportions of their first-year students. While not quite as critical as college instructors, employers’ perceptions of the job U.S. public high schools are doing and the preparedness of recent graduates in the job market have also declined in the past decade (p. 22).

Marin and Halpern (2011) argued that the “development of critical-thinking skills is often listed as the most important reason for formal education because the ability to think critically is essential for success in the contemporary world” (p. 1). Achieve (2015) reported that students’ critical-thinking skills had the highest total dissatisfaction among college instructors (82%) of all perceived skills gaps. Employers agreed and cited critical thinking and problem solving (72%) as the most important skills for a new employee (Closing the skills gap, 2016).

## **Literature Review**

Developing critical thinking has long been a primary educational goal. At the postsecondary level, institutions often require undergraduate critical-thinking courses, “but similar classes appear to be rare to non-existent at the secondary level” (Marin & Halpern, 2011, p. 3). Critical-thinking instruction, when included at the secondary level, can follow embedded instruction where critical thinking is merged into the course content or explicit instruction where students are taught specific critical thinking skills (Marin & Halpern, 2011). The literature provides other findings related to critical thinking instruction. For example, Ennis (1989) provided a classification of instructional interventions related to different instructional approaches to teach critical thinking that included direct or explicit instruction, infusion approach, immersion approach, and the mixed approach.

Research supports that both the embedded and explicit instructional approaches can develop critical-thinking skills. Explicit instruction engages students to develop critical-thinking skills and is most effective when “instruction is structured in a manner that engages students during a period in which a particular skill is introduced, requires deliberate practice, and provides students with the opportunity to transfer their knowledge” (Marin & Halpern, 2011, p. 4). Bangert-Drowns and Bankert (1990) conducted a meta-analysis of explicit instruction of critical thinking and found consistent, favorable results to explicit instruction in critical thinking.

The embedded instructional approach engages students in critical-thinking skills within the content of the subject matter. Under this approach “critical

thinking principles are not made explicit” (Ennis, 1989, p. 5) in the subject matter content; however, students are challenged to think beyond subject matter through questioning and discussion (Marin & Halpern, 2011). Abrami et al. (2008) concluded that the least effective method was where critical-thinking skills were taught in the subject matter but were not explicitly stated as critical-thinking principles. Yet gains existed. In addition, the embedded approach has raised concern of the “transference of critical thinking procedure from one discipline to another, and to everyday situations” (Marin & Halpern, 2011, p. 2).

The embedded and explicit instructional approaches do not have to be used as separate approaches. Ennis (1989) is a proponent of the mixed approach where critical-thinking principles are made explicit in subject specific content and embedded as general critical-thinking instruction. Abrami et al. (2008) concluded, “mixed instructional approaches that combine both content and CT [critical thinking] instruction significantly outperformed all other types of instruction” (p. 1117).

### **Purpose of the Study**

The high demand *for* and perceived gap *in* developing critical-thinking skills of secondary students guided this study to investigate how secondary business educators incorporate critical-thinking standards into their business education courses. Specifically, this study examined how Wisconsin business educators incorporate Wisconsin Common Career Technical Standard 4C/Creativity, Critical Thinking, Communication and Collaboration (WCCTS 4C) into their courses and if years of teaching experience impacted the use of WCCTS 4C standard.

### **Design of the Study**

A descriptive research design with a survey was used to collect data from Wisconsin business education teachers. Descriptive statistics were used to summarize and describe the data that show how business educators responded to a closed-ended question if they incorporate WCCTS 4C into their courses. A z-test for proportions compared the number of participants who reported explicitly stating WCCTS 4C with the number of participants who reported embedding WCCTS 4C. A chi square test of independence was conducted to determine the impact of teaching experience on the use of embedded or explicit use of WCCTS 4C. This study followed the procedures of a quantitative study.

### **Population**

The population for this study consisted of Wisconsin teachers with a business education (250/1250) teaching assignment as of June 12, 2014. Wisconsin Department of Public Instruction, a public web site, provides a public record of currently practicing teachers holding a business education license 250/1250. The information includes the school district and mailing address for each teacher.

This list was used to obtain the email address for each participant based on the identified school district. A total of 687 participants were verified through school district email addresses.

### Limitations

Limitations are the conditions beyond the control of researchers that may influence interpretations of the study. Limitations in this study include (1) number of participants, (2) self-reporting survey, and (3) limited generalizability since results are from only Wisconsin business educators.

### Findings

Surveys were completed by 225 (28%) teachers. Of the 225 surveys, 44 were partially completed and excluded from the data analysis. Thus, the findings are based on 181 completed surveys. Figure 1 reflects participants' years of teaching experience.

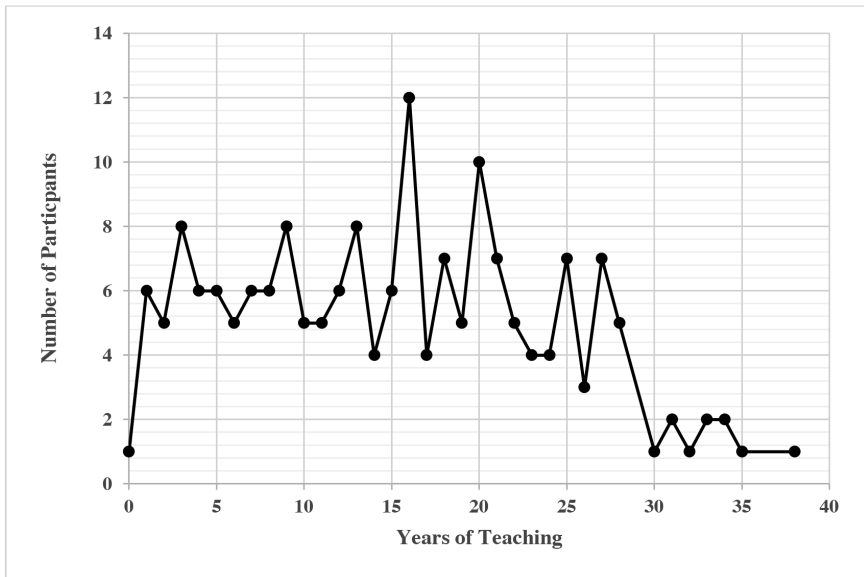


Figure 1. Participants' Years of Teaching Experience.

### Research Question 1

*How are secondary business educators incorporating Wisconsin Common Career Technical Standard 4C/Creativity, Critical Thinking, and Communication and Collaboration into their courses?*

Standards-based instruction provides content guidelines for planning, delivering, and assessing student learning. One such standard, WCCTS 4C, is

designed to prepare students for college or career readiness. Standards can be explicitly stated as student learning outcomes or embedded in course content. Participants responded to the following close-ended question: *In any of your business education curriculum, do you explicitly state (standard is stated as a learning outcome) Wisconsin Common Career Technical Standard: 4C/Creativity, Critical Thinking, and Communication and Collaboration?* Responses showed that 61% of Wisconsin high school business educators did not explicitly state WCCTS 4C as a student learning outcome in courses.

Standards may be stated explicitly in business education curriculum, and they can also be embedded. In the latter, WCCTS 4C is not explicitly stated as a student learning outcome but instead is taught in the curriculum. Participants responded to the following closed-ended question: *In any of your business education curriculum, do you embed (standard is stated as a learning outcome) WCCTS 4C?* Fully 86% of Wisconsin high school business educators embedded the standard as a student learning outcome.

Several respondents indicated they both explicitly stated and embedded WCCTS 4C in their business education courses. Participants were asked to indicate in which courses they explicated, stated, or embedded WCCTS 4C from the following course list: *Accounting, Basic Business/Business Law, Career Development, Computer Applications/Computer Programming, Management, Marketing/Entrepreneurship, Personal Finance, Web Design, and other.* Figure 2 provides a comparison of business educators who explicitly state versus embed WCCTS 4C in the cited courses.

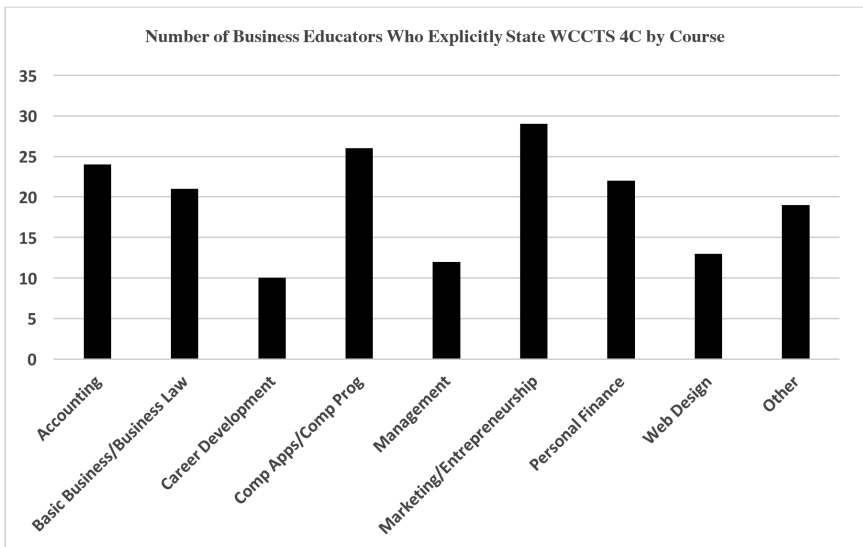
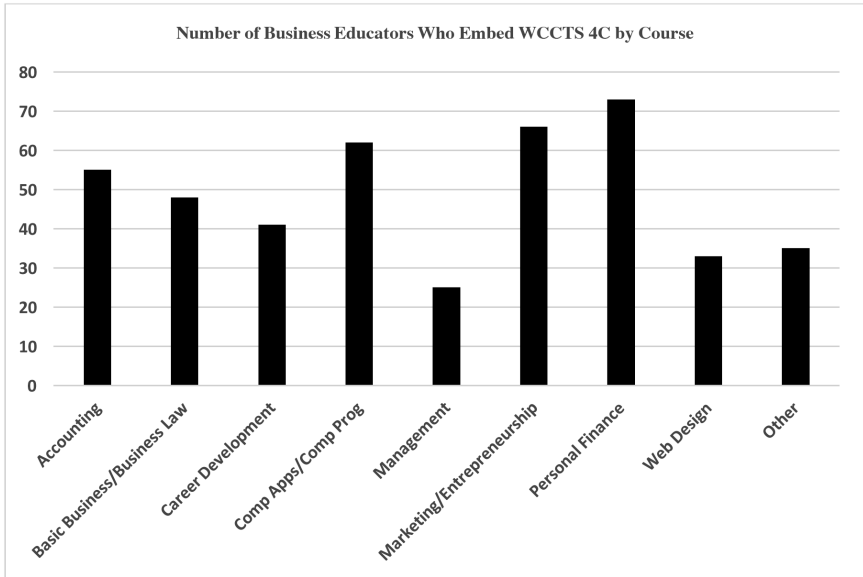
Business education teachers reported they explicitly stated WCCTS 4C more often in Marketing/Entrepreneurship and Computer Applications courses and embedded WCCTS 4C more often in Personal Finance and Marketing/Entrepreneurship. A two-sample z-test was conducted to determine the significance between the percentages. Results showed that participants who reported explicitly stating WCCTS 4C standard and participants who reported embedding WCCTS 4C standard differed significantly [(0.469613),  $z = 10.53$ ,  $p = .001$ ].

## Research Question 2

*What is the impact of teaching experience on the use of explicitly stated or embedded use of Wisconsin Common Career Technical Standard 4C/Creativity, Critical Thinking, and Communication and Collaboration?*

Table 1 shows the teachers' years of teaching experience and the number of business educators who reported explicit or embedded use of WCCTS 4C.

A chi square test of independence was conducted to determine if a significant association existed between years of teaching and the use of explicitly stating or embedding WCCTS 4C or years of teaching and not explicitly stating or embedding WCCTS 4C. The results [(df) = 4.85,  $p > .05$ ; P-value is 0.5631 > 0.05] indicated there was not significant evidence that years of teaching experience



*Figure 2: Comparison of Number of Business Educators Who Embed Vs. Explicitly State Wisconsin Common Career Technical Standard 4C by Course.*

had an impact on explicitly stating or embedding WCCTS 4C. A summary of participants' responses for Research Question 2 appears in Table 2.

**Table 1**  
**Years of Teaching and Use of Explicit or Embedded**  
**Wisconsin Common Career Technical Standard 4C.**

Years Teaching Experience	Total Number of Participants	Percentage of Business Educators that Explicitly Stated or Embedded Standard	Percentage of Business Educators that Did Not Explicitly State or Embed Standard
0-5	62	58%	42%
6-10	60	70%	30%
11-15	58	55%	45%
16-20	76	66%	34%
21-25	52	63%	37%
26-30	32	66%	34%
30+	16	50%	50%

**Table 2**  
**Business Educators Explicitly Stating or Embedding**  
**Wisconsin Common Career Technical Standard 4C.**

Number of Participants	Percentage of Business Educators that Neither Explicitly Stated or Embedded	Percentage of Business Educators that Both Explicitly Stated and Embedded	Percentage of Business Educators that only Explicitly Stated	Percentage of Business Educators that only Embedded	Percentage of Business Educators that Both Explicitly Stated and Embedded or that Either Explicitly Stated or Embedded
n = 181	8%	33%	6%	52%	92%

**Summary of Findings**

This study investigated how Wisconsin business educators implement WCCTS 4C and sought to determine whether years of teaching experience impacted the practice of explicitly stating versus embedding the standard.

- Only 8% of business educators reported neither explicitly stating nor embedding WCCTS 4C.
- One third of business educators reported both explicitly stating and embedding WCCTS 4C.
- Over 50 % of business education instructors reported they were more likely to embed WCCTS 4C as a student learning outcome rather than explicitly stating the standard as a student learning outcome.

- Years of teaching experience did not influence whether teachers explicitly stated or embedded WCCTS 4C.
- The majority of business education instructors explicitly stated and/or embedded WCCTS 4C as a student learning outcome in all business education courses.

## Recommendations

Wisconsin Common Career Technical Standards for business education are explicitly stated or embedded in business education curricula, suggesting creativity, critical thinking, communication, and collaboration are being taught in the business education classroom. Results of this study suggest critical-thinking standards are more likely to be embedded rather than explicitly stated as a learning outcome in business education high school courses. Marin and Halpern (2011) conducted studies that compared explicit and embedded instructional modes and found students receiving explicit instruction showed much larger gains than those in the embedded instruction group (p. 1). Since larger gains in student learning are directly related to explicit instruction and the results of this study indicate business educators are more likely to embed standards in instruction, the author recommends that business educators explicitly state standards in business education curricula. This can provide greater opportunities for students to improve creativity, critical-thinking, communication, and collaboration skills.

Notably, business educators in this study reported that they both explicitly stated *and* embedded WCCTS 4C in all business education courses. While larger gains in student learning occur when standards are explicitly stated, Marin and Halpern (2011) identified both explicitly stating and embedding critical-thinking standards as learning outcomes in business education courses constitutes “best practice” (p. 2). Thus, business educators are encouraged to explicitly state and embed critical-thinking standards in business education curricula to provide students the greatest opportunity to develop critical-thinking skills.

## Conclusion

Standards have long been used to define student-learning outcomes in secondary education to ensure that students develop the knowledge and skills necessary for success in college and careers. Wisconsin standards for career and technical education (CTE) provide a common set of standards that develop career skills, knowledge, and dispositions. Although the literature reveals that secondary graduates do not possess the necessary skills and knowledge to enter college or the workforce, strong evidence exists that CTE graduates are better prepared for college and careers than secondary graduates overall. Best practices of teaching critical thinking include a combination of explicit and embedded learning outcomes in courses. The results of this study indicate that Wisconsin

business educators follow best practices by both explicitly stating and embedding Wisconsin Common Career Technical Standard 4C/Creativity, Critical Thinking, and Communication and Collaboration into their courses, thereby ensuring that their students are college and career ready.

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