

# Executive Summary

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HIGHER EDUCATION FACES a number of interrelated challenges, including underprepared students, limited access, high costs, and relatively low degree completion rates. These issues are particularly vexing because addressing one concern often leads to unintended consequences that affect the others. Policymakers and educators have attempted a range of structural and programmatic solutions, but so far the results continue to disappoint. The 6-year college graduation rate for first-time students hovers around 55%. Further, degree completion disparities exist when comparing students by race and ethnicity, class, and gender.

More recently, legislators and K–20 educators have turned to dual credit as one strategy to address these challenges. This curricular initiative offers high school students the opportunity to earn college credits while still in high school without taking a standardized test to earn the credit. This policy purports to effectively reduce the cost of college and introduce students to the rigor of college coursework to better prepare them for the demands that lie ahead, which, in turn, promotes a timely graduation. Some programs also familiarize students with the college environment, a strategy that has been shown to be especially beneficial for students' college success. Originally, these initiatives focused on high-achieving students, but additional models have emerged that expand the benefits to lower- and middle-achieving students as well. However, as the number of dual credit offerings continues to grow, the research has not kept pace.

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Thus, the purpose of this monograph is to synthesize and report the research on dual credit by addressing five primary questions:

1. What is dual credit?
2. How does dual credit differ from other precollege credit-bearing courses?
3. What are the various dual credit models?
4. What are the students' experiences in dual credit?
5. What are the benefits and challenges associated with dual credit?

We address these questions briefly next.

## What Is Dual Credit?

The definition of dual credit is inconsistent and applied to a number of different initiatives in the literature, such as *concurrent enrollment*, *joint enrollment*, or *dual enrollment*. Dual credit can also fall under other more generic terms: *accelerated learning options* or *credit-based transition courses*. However, for this monograph, dual credit refers to individual courses or a complete curriculum of courses high school students can take where they earn both college and high school credit simultaneously without having to take a standardized test to earn the credits (see the first chapter for more information on the history and definition of dual credit).

## How Does Dual Credit Differ from Other Precollege Credit-Bearing Courses?

The more established precollege courses are advanced placement (AP) and international baccalaureate (IB). Both of these programs are standardized, are offered at the high school to high-achieving students, and require participants to take a standardized test to earn college credit. Where AP offers students the option of taking specific advanced coursework, IB is a complete curriculum dedicated to developing global citizens.

Dual credit has different aims than these programs. It is not a set curriculum, but students in some programs are able to take up to 2 years of

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introductory college courses, graduating from high school with associate's degrees. Unlike AP and IB, some dual credit formats target a wide range of students, not just those who are high achieving. Also, unlike AP and IB, questions of quality plague dual credit courses, prompting some higher education institutions not to accept dual credits. This institutional decision may have resounding effects for students who then must choose to attend an institution that does not accept their credits or a less preferred institution that does. Both scenarios can lead to disappointment and regret (see the first chapter for more information on what makes dual credit distinct from other precollege credit-bearing course options).

## **What Are the Various Dual Credit Models?**

Dual credit courses vary dramatically between institutions and states. They may be individual courses or a complete high school curriculum. They can be taken at high schools, community colleges, 4-year institutions, and online, and differ by rigor, content, instruction, structure, and design within and between states. It is this variability of the offerings that is its telling characteristic (see the first chapter for more information about structure and the second and third chapters for information about dual credit programs offered at postsecondary institutions and high schools, respectively).

## **What Are the Students' Experiences in Dual Credit?**

Dual credit programs were initially designed to provide academic challenge to high-achieving high school students, but their expansion broadened the opportunities to middle- and lower achieving students. Some research suggests these initiatives help participating students gain confidence and self-efficacy so they are more likely to enroll and graduate from college than nonparticipants. However, the picture is not clear. Other studies found students who take these courses at high schools do not gain these benefits. Research on gender differences also presents mixed results—some studies suggest women

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obtain more academic gains from dual credit, whereas others contend men see greater advantages (see the fourth chapter for more information on the student experience in dual credit courses).

## **What Are the Benefits and Challenges Associated with Dual Credit?**

There are several key advantages often described in research studies and policy briefs. First, dual credit is purported to reduce the cost of college and the time to degree. Further, when courses are offered at a college campus, dual credit also serves as an introduction to the full college experience, which assists students in their college adjustment when they transition to higher education. As a result, these programs appeal to policymakers, parents, and high school students with college aspirations.

In general, students have experienced tangible benefits from their participation in dual credit. For example, research suggests that first-generation students and students from low-income backgrounds seem to garner greater advantages than students whose parents did earn a college degree or come from a higher income background. However, these underrepresented groups are also less likely to participate in dual credit and less likely to enroll in college when compared to their White, more affluent, dual credit peers.

Other research suggests the number of dual credit courses can lead to very different outcomes. For instance, for many students, the more dual credit courses they take, the more limited their options are regarding major and minor selection once they matriculate to college. Further, because of quality concerns, some institutions will not accept all (or any) dual credits, leaving students to choose between attending a preferred institution and entering college with earned credits. This reality suggests there may be an optimum number of courses that offers maximum benefits to students—providing an introduction to the college environment and rigor while not limiting their futures.

In addition, several policy studies have been conducted that note the wide variations between programs and between states. Those variables include teacher eligibility, student eligibility, institutional type, funding, content, and

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course quality. It is because of that variability that some politicians and 4-year postsecondary institutions take issue with dual credit offerings. These concerns include questions of fiscal propriety and double dipping—sometimes both colleges and secondary institutions receive monies for the same course—to issues of course quality, particularly when the dual credit courses are offered in a traditional high school setting and taught by high school instructors (see the second through fourth chapters for discussions of the benefits and challenges with each type of dual credit offering).

## **Conclusion and Implications**

In spite of any issues associated with dual credit programs, they continue to be viewed as the potential answer for a wide host of educational concerns, including the lack of student preparedness, limited college access, high college costs, and stagnant degree completion rates. Future research must explore specific program variables in order for educators, policymakers, and families to gain a better understanding of the elements that promote student success. This information will affect the development and implementation of dual credit in the future and provide assurances to postsecondary institutions and students about the value of dual credit coursework. The result will either fulfill the promise of dual credit or expose its weaknesses. Both are important lessons to learn.

# Foreword

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COLLEGE CAMPUSES ARE no longer the only places to earn college credit. Now, high school students are in a position to earn college credits before they even step onto a campus. High school programs that offer college credit range from the traditional “Advanced Placement” courses to the International Baccalaureate program to concurrent enrollment classes offered in the high school with the sponsorship of local four year or two year colleges. These types of college delivery programs offered at the high school level are the subject of this monograph—*On the Fast Track: Understanding the Opportunities and Challenges of Dual Credit* by Barbara Tobolowsky and Taryn Ozuna Allen.

I recall first learning about concurrent enrollment programs when a dissertation student of mine indicated he wanted to study whether participating in community college concurrent enrollment courses had an influence on the selectivity of institutions to which high school students were applying. Another doctoral student of mine explored the phenomenon of concurrent enrollment by looking at the effect of taking either an AP or a concurrent enrollment class in high school on a student’s subsequent college grade point average. A third student of mine compared the academic performance of students who earned college credit by taking a class in high school, as compared to taking a class at a community college (once having graduated from high school) or taking a class at a research university. In all three cases, the students found positive outcomes associated with participating in the concurrent

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enrollment course in high school. These dissertations piqued my interest in the topic—and I have become an avid reader of this research ever since. The present monograph has earned a prominent spot in my library because it does such a great job of summarizing the literature on this important topic.

This monograph explores the variety of ways that dual credit is offered, the benefits and challenges of these programs, an examination of how the programs affect different groups of students, and recommendations for practice and future research. It offers a comprehensive meta-analysis of published research about this topic that fills a void. The authors thoroughly describe the complexity of programs from delivery methods to eligibility requirements to costs. They also review the empirical literature spanning research in K-12 environments, community colleges, and 4-year universities. For readers unfamiliar with dual credit, this manuscript provides the primer needed for future scholarly inquiry. Overall, this monograph does an excellent job of synthesizing and scaffolding literature from both scholarly and more popular sources. The monograph will benefit scholars interested in educational transitions from high school to college as well as scholars interested in ways to think innovatively about education as well as minimizing costs associated with higher education.

I am pleased to add this monograph to the ASHE Higher Education Report Series and know that it will be an asset to practitioners and scholars interested in issues of access to higher education.

**Kelly Ward**  
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Series Editors

# Introduction to Dual Credit

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HIGHER EDUCATION CONSTANTLY negotiates its way through a jungle of internal and external pressures in an effort to help more students attend and graduate from college. The path is treacherous, because changes in one area may result in potentially damaging consequences elsewhere. For instance, as states reduced public support for higher education, colleges responded by increasing tuition (Woodhouse, 2015). Raised tuition affects the ability of low socioeconomic groups to attend (Adair, 2001; Engberg & Allen, 2011; Wellman, 2006) and complete college (Shulock, Callan, Finney, Kirst, Spence, & Usdan, 2010), which in turn affects their economic futures as well as the global competitiveness of the country (Palmer, Davis, Moore, & Hilton, 2010; Wagner, 2006). Arne Duncan, the former Secretary of the Department of Education (2009–2015), stated that focusing on individual concerns could obscure the true issue, which is “graduating students with high quality degrees” (Stratford, 2015, para. 1). Nevertheless, U.S. colleges must address a range of issues such as affordability and access to ensure more students graduate with postsecondary degrees.

The statistics tell the story of a “broken” system (Stratford, 2015, para. 4). Most recently, the National Student Clearinghouse reported that the 6-year college graduation rates for first-time students hover around 55% (*Chronicle of Higher Education*, 2015). Researchers have identified one reason students do not complete their degree is a lack of preparation for college-level coursework (for example, Callan, Finney, Kirst, Usdan, & Venezia, 2006). This is the reality for a majority of high school graduates who have fulfilled all requirements to attend a college only to find that they have to take remedial/developmental

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noncredit courses upon arrival at a campus (Shulock et al., 2010). In fact, 75% of community college students and approximately 50% of first-year college students attending a less selective 4-year institution are required to take remedial coursework because they are deemed unprepared for the rigors of college (Shulock et al., 2010). This is particularly an issue for first-generation students, who are the first in their families to attend college, and other groups who are underrepresented in higher education (for example, students from low-income backgrounds and students of color) (Hoffman & Webb, 2009; Kirst & Bracco, 2004; Yeado, 2013).

As more high school students aspire to go to college, policymakers have noted the importance of maintaining students' momentum and motivation (Adelman, 2006; Attewell, Heil, & Reisel, 2012). With a focus on college access and degree completion, many states address this concern by attempting to create a seamless education system (Domina & Ruzek, 2012). The hope is that through better alignment between higher education and K–12, there will be a reversal in the alarming statistics. As a result, states have created new leadership roles, collaborative councils, and policies (Perna & Armijo, 2014) to address critical challenges regarding college access and degree completion (Kirst & Bracco, 2004), yet little is known about their effectiveness on student outcomes (McLendon, Heller, & Lee, 2009).

In addition, Clifford Adelman (2006) and Joshua Pretlow and Heather Wathington (2014) among others argued that providing a rigorous high school curriculum is key to students' college success. As a result, a number of curricular innovations have also been introduced to help students in their transition to college and to a timely graduation. Three initiatives—Advanced Placement (AP), International Baccalaureate (IB), and dual credit—allow high school students to take courses that count toward both their high school and college course requirements. These programs introduce high school students to a more rigorous curriculum in order to prepare them for college demands and to promote students' college success (Adelman, 2006; Pretlow & Wathington, 2014).

Dual credit programs, in particular, have experienced an explosion over the past 40 years and continue to thrive today (Hoffman, Vargas, & Santos, 2009). Specifically, in 2010–2011, approximately 2 million high school

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students took dual credit courses and 82% of all high schools offered them (Thomas, Marken, Gray, & Lewis, 2013), which is an increase of 67% from 2002–2003 (Mangan, 2014). In contrast, Nina Thomas, Stephanie Marken, Lucinda Gray, and Laurie Lewis (2013) reported that in the 2010–2011 school year only 69% of U.S. high schools offered AP and/or IB. Thus, dual credit is more widely available than those other accelerated learning options. As a consequence, many educators have noted that dual credit is a “promising strategy” (Hofman, 2012, p. 3) in terms of state and federal completion goals (Adelman, 2004, 2006).

## **Purpose of the Book**

Barshay (2013) argues the challenge is that these courses are becoming “institutionally entrenched before we know whether they work” (para. 12). Therefore, this volume is dedicated to exploring the unique curricular innovation known as dual credit. The goal of the book is to tease out the uniqueness of dual credit offerings, policies, challenges, and benefits and to synthesize the research, to date, on this widely accepted, but underresearched initiative. In our effort to do so, we plan to address the following questions:

1. What is dual credit?
2. How does dual credit differ from other precollege credit-bearing courses?
3. What are the various dual credit models?
4. What are the students’ experiences in dual credit?
5. What are the benefits and challenges associated with dual credit?

Therefore, this book details the varied models and forms of dual credit to better understand if this innovation achieves the many policy goals linked to it.

The next section offers a brief introduction to each precollege credit-bearing option, their distinct traits, and their benefits and challenges to help explain what makes dual credit particularly instrumental in addressing the

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current national educational concerns. After discussing dual credit, in general, the chapter concludes with an explanation of the book's structure.

## Precollege Curricular Options

The three primary curricular innovations are Advanced Placement, International Baccalaureate, and dual credit. Each program is distinct and appeals to specific student populations with unique benefits and liabilities.

### *Advanced Placement*

Perhaps the best known of these three academic programs is AP, which began in the 1950s (College Board, 2003). This program offers college-level courses to high-achieving students in the high school setting (Geiser & Santelices, 2006). The design has changed very little from its inception. After taking the course, students may choose to take an exam, which was developed and is administered by College Board. The student must earn at least a three out of five on their high school AP course exam to count toward their college course requirements and place them in more advanced college courses (Warne, Larsen, Anderson, & Odasso, 2015). Significantly, research has determined that the benefits associated with taking these courses on college grade point average (GPA) and persistence are gained only by those students who pass the exams (Warne et al., 2015). Therefore, the benefits linked to these courses are limited, at best.

Moreover, although there has been a steady increase in the number of students taking AP courses, African American, Hispanic, and American Indian/Alaska native students continue to be underrepresented in these classrooms (College Board, 2014; Solorzano & Ornelas, 2004). Those minority students who take the course and elect to take the exam are less likely to score a three or higher than Whites and Asian American/Pacific Islanders (College Board). Thus, they do not garner the advantages associated with taking the courses and passing the exams. Others have noted that even though these courses are considered to be quite rigorous, they are taught in a high school setting by high school teachers so they do not introduce the students

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to college-level work or the college environment (Jenkins, 2013). Researchers (such as Vincent Tinto, 1993, and George Kuh, Robert Gonyea, and Julie Williams, 2005) found students who have a more realistic understanding of the campus atmosphere are more likely to have a successful adjustment to college. Thus, AP students are not gaining that important exposure to a college campus.

Finally, even though the standardized AP tests give higher education institutions an assurance of course quality and student competence (Geiser & Santelices, 2006), some elite institutions (for example, College of William and Mary) have decided no longer to accept AP credit as fulfilling core requirements (Berrett, 2014). They find that these courses stress retaining information and not developing cognitive thinking skills, which are deemed more valuable at the college level. Therefore, there are mixed results on who gains from the AP experience and the value of these courses toward students' success in college.

### ***International Baccalaureate***

Unlike AP, which offers students the opportunity to take specific advanced coursework, the IB offers a complete curriculum structured around a set of ideals (Rudbeck, n.d.) that are both academic and philosophical. The goal is to develop true global citizens who are academically strong, but also “principled,” “open-minded,” and “caring” individuals (IB Organization, 2013, p. 3) who want “to create a more just and peaceful world” (IB Organization, p. 1). The seeds of the IB program date back to the 1920s and 1930s, but the first actual offering was the Diploma Programme in 1968, designed for junior and seniors in high school (White, 2010). The initial impetus for these programs was to educate the children of diplomats, business leaders, and scientists who were not living in their home countries (Atkinson, 2008) and prepare them for attendance at any university. Today, in addition to the Diploma Programme, there are also the Middle Years, Primary Years, and the Career-related Programmes. Thus, IB has the potential to educate students ages 3–19 (Atkinson; Frankel, 1974). The Diploma Programme, like AP, targets high-achieving students and helps them get ahead academically by providing a

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standardized curriculum and tests, which assure colleges and universities of their academic excellence.

Further, IB schools have in place measures that ensure accordance with the original principles. For example, each IB campus has been authorized so that “no matter where it is located, [each school] is held to the same high standard” (IB Organization, n.d.-b, para. 7). The teachers receive professional development “that encourages critical thinking, self-reflection, and dedication to lifelong learning and continuous improvement,” which are the hallmarks of this initiative (IB Organization, n.d.-a, para.1). Instructors also have earned specific certifications in teaching and learning and/or leadership guaranteeing their expertise (IB Organization, n.d.-a).

Today there are thousands of schools in almost 150 countries offering IB programs (*International Baccalaureate*, 2011), but only a small percentage of those schools are located in the United States. In 2006, only 752 high schools in the United States offered the *Diploma Programme* compared to 16,000 U.S. high schools that provided AP coursework (Koebler, 2011). Jason Koebler (2011) provides three key reasons why IB schools are less popular in the United States than in other countries. First, the programs are more expensive than AP and dual credit programs. Second, the goal of developing global citizens is not as much of a priority in U.S. schools as it is elsewhere. And, finally, and perhaps most important, there is no evidence that IB graduates succeed at a greater rate than students in AP programs.<sup>1</sup> Therefore, IB is not as widespread in America and, as a result, has less influence on the college success of students.

### ***Dual Credit***

For the purposes of this volume, *dual credit* refers to courses high school students take where they earn both high school and college credit simultaneously without having to take a standardized test to gain the credit (Adams, 2013). Although this is a relatively recent innovation, conversations about creating closer connections between secondary and postsecondary institutions date back to the 1920s. At that time, educators who supported the community college movement argued that it was important

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to facilitate students' progression from high school to college to increase student success in both (Mayo, 2012). However, structural challenges between the different educational sectors undermined any active efforts at that time.

By the time dual credit resurfaced in the early 1970s, proponents overcame the structural issues and created meaningful collaborations between postsecondary institutions and local school districts. In 1973, the Syracuse University's Project Advance was the first dual credit program (Greenberg, 1989) that offered college-level courses to high-achieving high school students (Exby, 2014). High school and college faculty adapted one-semester introductory college courses to two-term dual credit courses in biology, calculus, chemistry, English, sociology, psychology, and computer engineering (Greenberg). High school teachers taught the courses after they participated in a summer training program offered by the University.

There are two critical distinctions between this first program and dual credit today. First, the high school students had more time (two semesters) to learn the material, which is not the case for most current dual credit courses. Significantly, it was this extended period of time to cover the material that was credited as one reason for the program's success (Greenberg, 1989). Second, students did have to take an exam designed by University personnel to receive college course credit (Greenberg). Yet, in spite of quality assurances, Greenberg (1989) reports the findings from a 3-year study conducted by Wilbur and Lafay (1978) that found the dual credits did not transfer to a higher education institution for about 10% of the students and "15% received credit but not exemption from the course" (Greenberg, p. 24). This finding foreshadows the issue of transferability of course credits, which continues to haunt dual credit programs today.

Yet, since that first offering, the innovation has rapidly gained supporters for several reasons. One of the primary advantages is that participation in dual credit programs saves student's money, because in the best-case scenario the courses count for both high school and college credit. As a result, students have to take fewer college courses to graduate, reducing the cost of college. In turn, this decreases the time to degree (Karp, 2013; Krueger, 2006). Thus, dual credit seems to provide academic momentum, which has been found to

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increase the likelihood that students graduate from postsecondary institutions (Adelman, 2006; Attewell et al., 2012). Further, students gain additional benefits when colleges offer the dual credit courses. In these cases, students are exposed not only to course rigor, but they also are introduced to the college environment, which has been found to assist students in their college adjustments (for example, Pretlow & Wathington, 2014).

Finally, as dual credit models evolve, a more diverse group of students are able to enjoy the benefits associated with participation in these courses (Hughes, Rodriguez, Edwards, & Belfield, 2012). Unlike AP and IB, which have remained focused on high-achieving students, dual credit has become a strategy that helps provide career training for technical fields<sup>2</sup> as well as college access to previously underrepresented student groups (Bailey & Karp, 2003) (see the fourth chapter for more information about student outcomes associated with dual credit). As a result, these benefits have led policymakers to support dual credit in their efforts to address college completion goals. However, these courses have also been met with resistance from some higher education institutions because they question their rigor (Exby, 2014). In upcoming chapters, we discuss these critiques in greater depth. However, in the next sections, we explain dual credit terminology and briefly cover some of the reasons for the criticisms of the innovation.

## Distinguishing Dual Credit

One of the many challenges in studying dual credit is the lack of consistent terminology (see Table 1). These courses may be referred to in a number of ways. Perhaps the most generic terms for these courses are *credit-based transition programs* (Bailey & Karp, 2003) or *accelerated learning options* (Anderson et al., 2006). Thomas Bailey and Melinda Mechur Karp (2003) and Amy Berk Anderson and her associates (2006) at the Western Interstate Commission for Higher Education (WICHE) Policy Analysis and Research Unit suggest these terms apply to a range of programs, including AP, IB, middle college high schools (MCHSs), career and technical preparation, and dual credit courses. The common thread between these offerings is that each helps students earn college credits while in high school. However, because they are umbrella terms

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**TABLE 1**  
**Terminology for Accelerated Learning Options**

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<i>Type</i>	<i>Definition</i>	<i>Standardized Exams</i>	<i>Location</i>	<i>Instructor</i>
Advanced Placement (AP)	Standardized curriculum, credit based on test	Yes	High school	High school teacher
International Baccalaureate (IB)	Standardized curriculum	Yes	High school	High school teacher
Concurrent or Joint	Courses can count for both high school and college or just college. In some instances, term applies to college students taking courses at two institutions simultaneously.	No	High school, college	High school, college
Dually Enrolled	High school students take courses at two locations.	No	High school, college	High school, college
Dual Credit	A single course fulfills both high school and college requirements.	No	High school, college	High school, college

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encompassing a range of curricular innovations, we do not use them interchangeably with dual credit in this text.

Another generic term sometimes applied to college-credit bearing courses is *concurrent or joint enrollment* (American Association of State Colleges and Universities, 2002). Susan Harkins (1998) and others identify a number of types of concurrent enrollment options. One type is when high school students take courses at their high school, taught by high school teachers, which count toward their high school and college course requirements (Exby, 2014; Harkins, 1998; Sagers, 2000). This definition is similar to the one offered by the National Alliance of Concurrent Enrollment Partnerships (NACEP), the concurrent enrollment accreditor, which adds that these courses must be

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taught by *college-approved* high school teachers (NACEP, n.d.-b). This type of course offering would also fall under the definition of dual credit, which we are using in this text. The second model is when a college faculty member offers the course to high school students either at the high school or online (Harkins). This example would be considered dual credit in this monograph, if the student earned credits that would count toward both high school and college requirements.

Yet, there are other examples that would not fall under the definition of dual credit as applied in this volume. For example, Harkins (1998) suggests concurrent enrollment is also when high school students enroll in classes at a postsecondary institution where only college credits are earned (Andrews, 2001; Harkins). This type would not count toward our definition of dual credit, because the student earns only college credit. Other examples that would not apply are when a college student takes courses at two postsecondary institutions (Golann & Hughes, 2008) or when nonmatriculating students register for courses offered to students enrolled on a campus (UCLA Extension, 2014–2015). For example, a student not accepted by University of California, Los Angeles (UCLA) can sign up for a UCLA course through UCLA Extension's concurrent enrollment, if space is available. Because the students are not in high school in these examples and are earning only college credits, these models are outside the dual credit parameters used in this book.

Technically, students who are enrolled at both the high school and a college are referred to as being *dually enrolled*. However, some researchers note that these courses may not count for credit, which distinguishes dual enrollment from dual credit (Kim, 2008). In addition, if the student is taking a course on a college campus, it may count only as college credit (Hughes, Karp, Bunting, & Friedel, 2005), in which case it does not fulfill requirements in both sectors.

Therefore, to avoid confusion, we use the term dual credit exclusively in this text, even though dual credit and dual enrollment are frequently used interchangeably in the literature. Dual credit refers to courses that count simultaneously for both high school and college credit. However, it does not require students get a certain grade on a standardized end-of-course exam to get credit for the course as is necessary for AP or IB courses. Moreover, dual

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credit courses can be offered at a high school or postsecondary institution (in person or online) and may be taught by high school or college instructors.

### ***Types of Dual Credit***

Bailey and Karp (2003) broadly identify three types of dual credit programs—singleton, comprehensive, or enhanced comprehensive (see Table 2). They define a program as *singleton* if students take an individual course that satisfies both their high school and college requirements. These courses are elective courses designed to introduce students to college-level coursework, but do not consume the student’s entire high school experience. As such, they do not recreate a postsecondary experience. Instead, these courses augment the student’s secondary education and allow students to “get ahead” while in high school. Singleton programs are typically provided by the high school, and high school teachers teach the courses. AP courses are the most common singleton program, but some dual credit and tech prep programs also fall into this category. Students in these programs are typically highly motivated students who are pursuing an academic challenge.

The program is comprehensive, when the majority, if not all, of the courses, a student takes earns both high school and college credit, simultaneously. These programs provide students with specific articulated college credit

**TABLE 2**  
**Types of Dual Credit Offerings**

<i>Type</i>	<i>Definition</i>	<i>Examples</i>
Singleton	Individual elective course intended to introduce students to rigor of college courses and earn college credit	AP, some tech prep, and dual credit programs
Comprehensive	A series of courses or entire curriculum designed to introduce students to academic rigor in their last 2 years of high school	IB, some tech prep, and dual credit programs
Enhanced Comprehensive	Courses are a part of a complete curriculum of only dual credit courses that offer student support services	Middle college high schools (MCHSs), early college high schools (ECHSs)

*Source:* Bailey & Karp, 2003.

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opportunities in their final 2 years of high school. Like singleton programs, the primary goal of comprehensive programs is to introduce students to college rigor and expectations. Comprehensive programs include IB as well as some dual credit programs. Students in comprehensive programs include academically advanced and middle-achieving students.

An *enhanced comprehensive program* comprises most of a student's high school experience. In addition to the challenging coursework, these programs seek to support and address all facets of the transition to college by offering counseling, mentorship, and other student support services. Students in these programs are typically middle- to low-achieving students or from traditionally underrepresented backgrounds. This would apply to early college high schools (ECHSs) or MCHSs where the entire enterprise is focused on offering dual credit coursework and support programs specifically geared for students participating in this type of curricular experience.

### ***Areas of Variability***

Dual credit programs are perhaps the most unique of the credit-based transition programs mentioned here because there is variation not only with the other precollege initiatives but also between each other in terms of delivery, funding, student participation, instructor eligibility, and course content. Thus, dual credit may look quite different depending on the state, the school, and the student.

**Settings for Delivery.** These courses may be offered in a wide range of academic settings. Students may take these courses in a traditional high school setting, online, at a community college or 4-year institution, or in a unique high school setting that is focused on providing a dual credit curriculum starting as early as the ninth grade or as late as the student's junior year (Karp, Bailey, Hughes, & Fermin, 2004). These unique settings are early college or MCHSs (see the second chapter for research on dual credit offered through postsecondary institutions, and the third chapter for dual credit in high school settings including these innovative dual credit campuses). Significantly, courses taught at the high school are often criticized for not being college level; yet courses at postsecondary institutions may also lack rigor. In some instances, colleges may offer "fun" dual credit courses as "recruitment

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tools” to attract students to apply after high school graduation (Brown-Lerner & Brand, 2006, para. 11). Even if the courses are not used in this way, the lack of quality control regarding course content has resulted in postsecondary institutions refusing to accept some dual credits once students matriculate as first-year college students (Borden, Taylor, Park, & Seiler, 2013). Therefore, issues of course quality and course transferability are closely linked to the variability in course content and the course setting.

Into this vacuum, states have enacted policies governing dual credit offerings and a voluntary national accreditor, the NACEP (n.d.-b), has stepped in to ensure the quality of concurrent classes (NACEP). As of April 2015, NACEP is active in 46 states, 218 community colleges, 104 4-year institutions, 37 high schools and districts, and 20 state agencies or systems (NACEP, n.d.-a). Though this is an important step, this includes only a small fraction of dual credit offerings.

**Funding.** Funding for these courses varies as well (Borden et al., 2013). Some states may pick up the cost of one or all dual credit courses, and in other instances there may be reduced or waived fees for a limited number of courses (Tobolowsky & Ozuna, 2016). Both the high school and the college can receive state funds to cover the cost of the courses (Karp et al., 2004),<sup>3</sup> which has led some policymakers to express concern regarding the potential for fiscal impropriety (Zimmerman, 2012). In some instances, the students are responsible for the entire cost of these courses, which can range dramatically (for example, course fees ranged from \$85 to \$600 in our study; Tobolowsky & Ozuna, 2016). In Joshua Pretlow and Jennifer Patteson’s (2015) study, Ohio students are responsible for the cost of their dual credit classes, which range from free to \$180 a credit hour. Interestingly, Ohio policy has the higher education institution set its own course fees. This approach created a climate of competition leading some colleges “to call high schools to determine what other institutions were charging and then work with a high school to offer courses at a lower rate for [their] students” (p. 26). As a result, the costs are variable—with students at one high school potentially paying less than students at another.

Stephanie Marken, Lucinda Gray, and Laurie Lewis<sup>4</sup> (2013) used national data from 2011 and provided specific information about who pays for all or

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part of these courses: postsecondary institutions (77%), students and their families (66%), the secondary schools and districts (44%), the state (38%), and other sources (10%). The Education Commission of the States (ECS) (2015) breaks down the funding models by state. They report that the policy in nine states is for the students and their families to pay for these courses. The school district pays the bill in four states and it is a decision between the secondary school and the postsecondary institution based on the specific dual credit offering in 14 states.<sup>5</sup> Perhaps most interesting is that there is no state policy regarding funding in four states. These statistics reveal the piecemeal approach taken regarding funding for dual credit courses.

**Student Participation.** Although initially dual credit coursework was designed to advance the success of the best high school students (Edwards, Hughes, & Weisberg, 2011), there has been limited research that argues that all students (for example, underrepresented populations, middle- to lower-achieving students, low-income, remedial students<sup>6</sup>) benefit from taking these courses (Bailey, Hughes, & Karp, 2003 (see the fourth chapter for more about student outcomes associated with dual credit coursework). Consequently, dual credit is available in some form to most high school students in the United States (Krueger, 2006).

Participation in dual credit programs is delineated by admission criteria set by the postsecondary institution, the high school, or both entities (Karp et al., 2004). Most (63%) dual credit programs do have eligibility requirements (Thomas et al., 2013). Those requirements often include minimum scores on SAT or ACT, grade level, class rank, and/or high school GPAs. In some instances, students need a letter of recommendation. For some programs, students must apply for acceptance and show they are underperforming in their current high school but have potential (for example, MCHSs and ECHSs) (Smerdon et al., 2005). Borden and associates (2013) noted that 32% of the institutions offering dual credit had other requirements, which were not identified. Therefore, this shows great variability in the student eligibility requirements.

Although most dual credit policies stipulate eligibility requirements, some researchers question the assumption that students who qualify for these courses are actually ready to enroll, particularly when these courses are

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offered on a college campus (for example, Tinberg & Nadeau, 2013). Howard Tinberg and Jean-Paul Nadeau (2013) interviewed four dually enrolled students in a community college composition course at three points in the semester while analyzing the students' coursework. They found that some students showed a lack of understanding and skills and attributed that to insufficient experience and subject knowledge, which they would have gained in a traditional high school course where instructors typically take a more developmental approach to content. Nevertheless, Tinberg and Nadeau presented these findings cautiously because of the small sample and no control group. However, they suggested this does raise a potential issue that some students are unprepared to take college-level dual credit courses even though they have access to them and meet the requirements. Other researchers found that students may have the academic talent to enroll in these courses but lack sufficient maturity to manage in the less-structured college environment (Ferguson, Baker, & Burnett, 2015; Kanny, 2015).

**Instructor Eligibility.** One of the most problematic issues with dual credit courses is the lack of uniform assurance practices/policies in place regarding the quality of instruction. Even though 79% of the states have policies regarding instructor selection, training, and credentials for these courses (Borden et al., 2013), there are wide variations, because of the lack of national standards. When there are criteria, they typically require the high school instructors to meet the same standards as adjunct community college faculty (Borden et al., 2013), including a master's degree and expertise in the subject. However, Borden and his associates (2013) noted that 10 states had no policies at all.

**Course Content.** Karp and associates (2004) found that states determine which courses can be offered for dual credit. In most cases, the college or the high school will approve the course syllabus, textbooks, and/or exams. However, in some instances, the approval for the syllabi and so forth rests with the state. Because the course content is not standardized, students taking the same subject may not cover similar material. Additionally, there is no standardized test to measure student knowledge (Andrews, 2000; O'Brien & Dervarics, 2012) as there is for AP or IB courses. As a result, there is no assurance that

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two students who take dual credit coursework in the same subject will come into a college classroom equally prepared.

Also, although initially many of the offerings were designed to provide college-level content to high-achieving high school students, this is not always the case. Some specific dual credit offerings target middle- to lower performing students and others are linked to vocational students (Golann & Hughes, 2008). Thus, the course content can vary dramatically depending on the nature of the dual credit program and the students it is intended to serve.

Significantly, lack of quality control regarding these courses leads to issues with the transferability of course credit. Brian Modarelli (2014) studied the transfer of credits from dual credit programs and found “competitive” and “highly competitive” postsecondary institutions were likely to accept associate degree credits from other institutions (78%) except when the degrees (and credits) were the result of dual credit programs (19%). The more competitive the institution the less likely they were to accept the credits. In comparison to other accelerated learning options, AP credits were more likely to be accepted by the most competitive institutions (70%) followed by IB (59%) and then dual credit (33%). Modarelli concluded that this should give students pause when making their college choice decisions. It also is a concern to policymakers who advocate dual credit to students to reduce the cost and the time it would take to earn a college degree.

## Structure of the Book

This volume explores the many types of dual credit offerings linked to specific locations and delivery methods and their benefits and challenges in more depth. Although most dual credit courses are offered at community colleges, in the second chapter, we look specifically at dual credit courses offered at and by community colleges as well as at 4-year institutions. We explore the range of models, both face-to-face and online, and discuss the benefits and challenges of each, the policies and practices associated with that type of offering, issues regarding student and instructor eligibility, and credit transferability.

Although this is the most common model, it is not the only one. Therefore, in the third chapter, we explore dual credit courses offered in the high

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school, including both ECHS and MCHS models. The ECHS model has been touted by the Gates Foundation as the best structure to support the success of underrepresented students while exposing students to academic rigor through dual credit coursework. Although of late there has been less attention given to MCHSs in scholarly and popular press, they also were designed to address these same needs. This chapter also covers the policies and practices associated with these offerings, instructor eligibility, student participation, and funding.

Then, in the fourth chapter, the book shifts to discuss the students' experiences in dual credit and presents the limited research on the specific benefits and challenges for different student populations (that is, high-, middle-, and low-achieving students; traditionally underrepresented students; and male and female students) who participate in dual credit. We look specifically at the available research that links student outcomes to dual credit coursework. Unlike AP courses, these offerings have been found to assist not only the high-achieving students but also traditionally underrepresented student groups who are less likely to participate in the other credit-bearing programs.

To this point, the book has explored the current state of research, exposing the extreme variability of dual credit programs. In the final chapter, we offer recommendations for the next phase of research focused on gaining a better understanding of how these programs affect students' experiences and outcomes. The fifth chapter concludes with a discussion of the future of dual credit in terms of structure, format, and policy.

We hope our overview of the current state of research on this fast-expanding initiative will help educators in K–12 and higher education as they work to help students successfully transition into higher education, policymakers concerned with college graduation rates and for the success of all students, and researchers who can address the need for more work to be done on this highly influential, but understudied, curricular innovation.

# Postsecondary Institutions as a Gateway to Dual Credit

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**D**UAL CREDIT PROGRAMS are collaborative arrangements between high schools and institutions of higher education and are designed to promote a seamless transition from K–12 to higher education (Fowler & Luna, 2009; Karp, Calcagno, Hughes, Jeong, & Bailey, 2007; Karp & Hughes, 2008). According to the Education Commission of the States (2013a), there are two benefits to partnering with 2-year and 4-year institutions to deliver dual credit options. First, articulation agreements with 4-year colleges and universities help promote program quality and ensure the dual credits will be accepted at other baccalaureate-granting institutions. Second, dual credit programs offered at 2-year institutions provide greater accessibility because they are located near the students’ homes and may seem less intimidating than attending a 4-year institution.

Dual credit programs in community colleges and 4-year institutions vary by the location, course offerings, student participation, program quality, funding, and course costs. These programmatic characteristics are shaped by postsecondary institutions and K–12 school districts and informed by state policies. State policies establish the general guidelines for student participation, instructor eligibility, course offerings, program funding, and accountability measures (Education Commission of the States, 2015). They also delineate which education sectors may collaborate to create a dual credit program; that is, whether a high school may partner with only a 2-year institution or both

2-year and 4-year institutions (Education Commission of the States, 2013a). The more specific details regarding roles and responsibilities within dual enrollment programs are negotiated between the school districts and colleges and universities.

The development and implementation of dual credit programs has produced great variability in program characteristics (See table 3 for dual credit characteristics when the courses are offered at postsecondary institutions.). This chapter describes the key features of dual credit courses taught on college campuses (that is, public 2-year, public 4-year, and private 4-year institutions) and highlights areas of future research. The chapter concludes with a

**TABLE 3**  
**Dual Credit Characteristics of Postsecondary Institutions**

<i>Areas of Variability</i>	<i>Characteristics</i>	<i>Requirements</i>
Student Participation	Variable	Requirements vary, typically include high school grade level, GPA, standardized test, placement tests, or other requirements (such as letters of recommendation).
Instructor Eligibility	Current postsecondary faculty members	Criteria depend on the institution's requirements but typically include an advanced degree, content knowledge, and expertise.
Funding	Variable	Postsecondary institution, students, parents, or state
Benefits	Experience the full college environment, learn how to interact with faculty and staff members, increased self-confidence, campus support services	N/A
Challenges	Cost of the courses, potential exposure to safety risks, student's level of maturity, faculty preparation and selection	N/A

*Source:* Kleiner et al. (2005).

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discussion of the benefits and challenges associated with dual credit courses offered at postsecondary institutions.

## Location for Dual Credit Instruction

Dual credit courses may be taught on a high school or college campus or via online delivery (Barnett & Stamm, 2010). Most commonly, however, high school students access dual credit through classes offered at colleges and universities (Kleiner, Lewis, & Greene, 2005; Marken, Gray, & Lewis, 2013). More specifically, Stephanie Marken, Lucinda Gray, and Laurie Lewis (2013) reported 873,600 high school students enrolled in dual credit at 2-year institutions versus 259,800 high school students at 4-year institutions. Thus, when participating in dual credit on a postsecondary campus, most high school students enroll in community colleges.

In addition to campus-based classes, colleges and universities are increasingly offering dual credits online (Barnett & Stamm, 2010) through virtual schools and Massive Open Online Courses (MOOCs). According to Michael Barbour and Thomas Reeves (2009), virtual schools are accredited organizations that offer courses via the Internet. Virtual schools are typically for academically strong students, who are self-motivated and able to pace their academic progress. These schools offer courses via independent, synchronous, or asynchronous learning. In independent virtual courses, students access course resources online and learn the material on their own. Synchronous learning offers students the opportunity to participate in coordinated learning activities or discussions led by the instructor online. Asynchronous learning provides the learning materials (as independent courses do) but also uses an online management system that facilitates student-to-student and student-to-professor interactions.

Most states (32) now offer a virtual option for dual credit delivery (ECS, 2015). For example, Mississippi created the Mississippi Virtual Community College (MSVCC), a consortium of 15 community colleges that offers distance-learning courses (MSVCC, 2012), some of which count toward dual credit (Education Commission of the States, 2015). Through this consortium, students enroll in their local (host) community college

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but take the course online from one of the community college partners (MSVCC, 2012). The student's local community college offers academic support as well as other services, including advising, tutoring, and financial aid (MSVCC, 2012). Through this initiative, the local institution offers college credit, but the consortium member provides the instruction (MSVCC, 2012).

Dual Credit Texas, which is an extension of the Virtual College of Texas, is another online initiative that provides dual credit options. Through this consortium of 40 colleges, students can enroll in academic or career and technical courses (Dual Credit Texas, 2015; Virtual College of Texas, n.d.). Students in this program enroll in their local community college but earn credit through another college provider (Virtual College of Texas). Students also benefit by paying in-district tuition and receiving support from the local campus (Virtual College of Texas). The number of online dual credit models is quickly increasing, but this delivery method is relatively new and little is known about students' outcomes from these programs (Barnett & Stamm, 2010).

More recently, some 4-year institutions have partnered with for-profit companies, such as Coursera and edX, to develop dual credit MOOCs. The goal of these innovations is the same as more traditional dual credit models: increase college access and improve degree completion. Students are able to take these courses independently, with little, if any, supervision by an instructor (Davis, 2013). They may be completely online courses, but some higher education systems are using this platform to develop blended online learning dual credit programs, for example, OnRamps with the University of Texas (Davis, 2013; University of Texas at Austin, n.d.-a).

In sum, research on dual credit programs reveals diverse outlets for program delivery. Because most community colleges provide dual credit options, the majority of dual credit research has investigated this institutional setting. Additional research, however, is needed on students' experiences and outcomes on 4-year campuses. With heightened focus on online education, institutions are introducing virtual or MOOC dual credit initiatives to promote access to college, yet little is known about student and faculty experiences in online dual credit courses. Further, although online dual credit delivery offers access to college classes, it does not introduce or socialize students to college

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expectations, which is one of the intended benefits of some dual credit offerings. Therefore, more research is needed on online dual credit options to understand their role, if any, in creating a pathway to a baccalaureate degree.

## Course Offerings

Although dual credit course offerings may include academic subjects, career and technical education, or remedial education (Purnell, 2014), most high school students enrolled in dual credit courses pursue academic subjects (Waits, Setzer, & Lewis, 2005) rather than vocational or technical courses (Thomas, Marken, Gray, & Lewis, 2013). Some states (20) have implemented policies to ensure students participate in academic-only classes (Education Commission of the States, 2015), even though community colleges have historically provided an avenue for developmental/remedial education (Cohen & Brawer, 1996). Many states (21, including the District of Columbia) allow the local school district and postsecondary institution to decide if they will provide or limit remedial dual credit opportunities, and only seven states explicitly allow developmental/remedial dual credit courses (Education Commission of the States, 2015).

In terms of content, some research has identified which academic courses contribute to the students' college success. For example, English language arts, math, social studies, and science have been found to significantly influence dual credit students' access, transition, and persistence in higher education (Giani, Alexander, & Reyes, 2014). Math, in particular, proved instrumental to baccalaureate completion (Giani et al., 2014).

Though research has identified course benefits, many institutions limit the number of dual credits students may earn each term. Typically, 4-year colleges and universities, particularly private institutions, limit high school students to enrolling in one dual credit course per academic term (Kleiner et al., 2005). In contrast, only a few (5%) community colleges limit the number of dual credit courses in which students can enroll (Kleiner et al.).

Future research should investigate the relationship between dual credit subjects and student outcomes. More work is needed to understand how these specific courses prepare students for college. Additionally, studies can examine

how these classes help students in their collegiate career and also the relationship between the courses and their long-term academic and career trajectories.

## Student Participation

State policies set the parameters for students who are eligible to participate in dual credit (American Association of State Colleges and Universities [AASCU], 2002; Education Commission of the States, 2015), and local school districts and higher education institutions determine specific requirements through dual credit agreements or memoranda of understanding (Speroni, 2011). More public 4-year institutions (93%) have implemented eligibility requirements when compared to 2-year public institutions (83%) and private 4-year institutions (81%) (Kleiner et al., 2005). Student eligibility requirements typically include grade level, class rank, GPA, standardized test scores, and college placement exams (Kim, 2008; Kleiner et al., 2005). Other requirements may include obtaining a letter of recommendation, gaining parental approval, or meeting specific course prerequisites (Marken et al., 2013). (For more information on eligibility requirements by institutional type, see Table 4.)

The most common criterion for eligibility is the student's high school grade level (Western Interstate Commission for Higher Education, 2006). As a result, most dual credit students enrolled through a community college are 11th and 12th graders (Marken et al., 2013). However, in some instances,

**TABLE 4**  
**Top Admissions Requirements by Institutional Type**

<i>Institutional Type</i>	<i>Academic Eligibility Requirements</i>				
	<i>Minimum HS GPA</i>	<i>Minimum Standardized Test Score</i>	<i>Required to Pass Placement Exam</i>	<i>Minimum HS Class Rank</i>	<i>Other Eligibility Requirements</i>
Public 2-year	X	X	X		
Public 4-year	X	X			X
Private 4-year	X				X

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younger students (9th and 10th graders) can enroll in dual credit courses offered at postsecondary institutions (Borden et al., 2013), particularly community colleges (Marken et al., 2013). This is becoming more common because of the growth of the Early College High School (ECHS) movement, which can include the participation of 9th and 10th graders (see the third chapter for more on ECHS). Some states, such as Arizona and Maine, allow higher education institutions to waive grade-level restrictions and open dual credit opportunities to students in middle school (Education Commission of the States, 2015). Florida allows students as young as sixth grade to participate in dual enrollment if they meet the eligibility requirements, which include thresholds for GPA and placement exam scores (Florida Department of Education, 2014).

Students' high school GPAs may also be considered for dual credit participation, but the prevalence of this requirement in state legislation has declined over time (Education Commission of the States, 2015). Borden and associates (2013) found 13 states implemented GPA requirements in their dual credit policy, but by 2015, only 6 states required a GPA minimum for dual credit participation (Education Commission of the States). For those higher education institutions that use GPAs to determine dual credit eligibility, requirements vary and can also differ based on degree focus. For instance, Georgia and North Carolina require a 3.5 GPA, whereas others, like Maine and North Carolina, allow students to enroll with a 3.0 GPA (Education Commission of the States, 2015). Florida has two different GPA requirements for dual credit courses; students in academic courses must have a 3.0 GPA, but students in career courses must have a 2.0 GPA (Florida Department of Education, 2014).

The importance of GPA also varies by institutional type. Between 2002 and 2003, Kleiner and others (2005) reported 66% of all private 2-year, public 4-year, and private 4-year institutions included GPA as an eligibility requirement for participation in dual credit. More recent data show requirements for high school GPA have declined to 60% (Marken et al., 2013). When these data are disaggregated, the prevalence of GPA requirements is more clear cut. More public and private institutions than public 2-year institutions require a minimum GPA for eligibility (Hanover Research, 2014). Public and private

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4-year institutions were more likely to require a higher GPA range (3.25 and 3.74 GPA) than 2-year public institutions (Kleiner et al., 2005).

Finally, standardized tests (for instance, SAT or ACT) and placement exams (for example, ACCUPLACER) are also instrumental to determining student participation in dual credit. Of all the 2-year and 4-year institutions offering dual credits, 43% require a minimum score on a standardized test to be eligible to participate in dual credit (Hanover Research, 2014; Kleiner et al., 2005; Marken et al., 2013). However, community colleges also require students to pass a placement exam. This information is used to assess a student's knowledge on key subject areas to ensure students enroll in the appropriate course.

The emphasis placed on these eligibility requirements varies by institutional type. Most frequently, community colleges require eligible students to pass a placement exam, earn a minimum standardized test score, and have a minimum GPA in order to enroll in a dual credit program (Marken et al., 2013). Public 4-year institutions require a minimum GPA, minimum standardized test score, and letter of recommendation to enroll in dual credits (Marken et al., 2013). Private 4-year institutions, however, are more likely to require a minimum GPA, letter of recommendation, and other requirements stipulated by the institutions (Marken et al., 2013).

Some institutions have changed the student eligibility requirements as they have worked to balance dual credit access and program quality. This focus has resulted in admissions requirements increasing over the years. For instance, in 2002–2003, 38% of all colleges and universities required dual credit students to meet the same admissions criteria as “regular” college students (Kleiner et al., 2005, p.13). By 2010–2011, this percentage had increased to 46% (Marken et al., 2013). When considering specific institutional types, a higher percentage of 2-year public institutions require students to meet the same eligibility requirements, when compared to 4-year public and private institutions (Kleiner et al., 2005; Marken et al., 2013).

In contrast, in some instances, standards for student participation in dual credit have become less stringent because the purpose of these programs has expanded from addressing the needs of high-achieving students (Barnett &

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Stamm, 2010; Karp & Hughes, 2008; Kim, Kirby, & Bragg, 2006) to broadening access for middle- and low-achieving students (AASCU, 2002). The declining influence of GPA on dual credit eligibility illustrates this shift. Borden and associates (2013) found 13 states implemented GPA requirements in their dual credit policy, but by 2015, only 6 states required a GPA minimum for dual credit participation (Education Commission of the States, 2015).

Future research should explore how admissions standards are influencing student access, outcomes, and program quality. With declining focus on GPA, additional research should examine the most salient standards influencing student success. Further, as more students from traditionally under-represented student populations (that is, students of color, middle- or lower achieving students, and low-income students) gain access to dual credit programs, additional scholarly work should investigate their perceptions of the campus environment in order to better understand their unique experiences and promote their success.

## **Instructor Eligibility**

Instructor eligibility is not a major challenge at postsecondary institutions because the instructors are members of the college or university's faculty. Thus, these faculty members have already obtained the necessary educational credentials to teach in higher education institutions. Further, they have demonstrated their content knowledge and expertise through their college transcripts and research. Therefore, there are few quality concerns when dual credit courses are offered at postsecondary institutions.

The issues at these institutional types tend to be centered on who is willing and able to teach these unique student populations. As such, responsibility for teaching dual credit courses varies by program (AASCU, 2002). Faculty members are typically assigned dual credit sections by the department chair (Hughes, 2010). In some cases, all dual credit students are assigned to one course section. In some instances, college faculty may be uninterested in

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teaching high school students (Kanny, 2015). M. Allison Kanny (2015) conducted a qualitative study examining dual credit from students' perspectives of their dual credit experiences at a community college. In this study, students reported faculty members explicitly expressed their disdain for having high school students in their courses. These negative interactions worried students and prompted them to question whether they should participate in dual credit. As a result, Katherine Hughes (2010) considers it critical to identify instructors who are motivated and experienced teaching younger students.

Research on faculty members' expectations and perceptions of dual credit students enrolled in courses on college campuses is also limited. Colin Ferguson, Pete Baker, and Dana Burnett (2015) found community college faculty viewed dual credit students as highly motivated and dedicated to their coursework, yet the professors expressed concerns regarding the students' maturity. Further studies are also needed to understand how college professors are prepared to teach in dual credit programs. These studies can examine the types of professional development, if any, college faculty receive to address the educational needs of high school students enrolled in college classes.

## **Funding Dual Credit Programs**

Because dual credit programs bridge K–12 and postsecondary institutions, cost considerations are important to both educational sectors (Barnett & Stamm, 2010). Policymakers are also invested in funding dual credit programs as they make decisions that directly affect the financial support of public education and postsecondary institutions (Barnett & Stamm). However, funding streams for dual credit programs include resources from the federal government, state and local entities, and support from 2-year and 4-year institutions, private organizations, and students and families (Education Commission of the States, 2009). Other sources of financial support include federal and county grants, as well as local scholarships from communities and businesses (Friedman et al., 2011; Kleiner et al., 2005).

Funding provisions that identify and describe the reimbursements postsecondary institutions receive for dual credit students are less common in state

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policies (Borden et al., 2013). States with funding policies allow different levels of financial support for each sector of education (Bailey, Hughes, & Karp, 2002; Cassidy, Keating, & Young, 2013). These guidelines establish the extent to which high schools can receive funds for average daily attendance and colleges can collect funding for full-time enrollment (FTE) (Taylor, Fisher, & Bragg, 2014). For example, Colorado and Texas allow colleges and universities to include dual credit students as FTE in their formula funding, whereas Florida specifies that dual credit students count only as a portion of FTE (Borden et al., 2013; Texas Higher Education Coordinating Board, 2015). Future research should examine the influence of different funding models on dual credit programs, student participation in dual credit, and outcomes. It may also explore other funding streams (that is, grants, scholarships, and private foundations) and how they are shaping dual credit program course offerings and access for students.

## Course Costs

Most often, higher education institutions and students or families are responsible for covering tuition costs (Marken et al., 2013). In order to promote affordability and accessibility, institutions may discount the tuition rate. Most postsecondary institutions (56%) have implemented a tuition discount for all of the programs (Marken et al., 2013). Private nonprofit and private for-profit, 4-year institutions are more likely to discount tuition for dual credit students, when compared to public 2-year and public 4-year institutions. In some states, students may apply for waivers if they represent a targeted population for the program or qualify for need-based aid (Borden et al., 2013; Cassidy et al., 2013).

Textbooks are the second greatest expense associated with dual credit. States do not typically pay for textbooks (Cassidy et al., 2013). Instead, parents and students in any type of postsecondary institution are responsible for paying out of pocket for their books (Marken et al., 2013). This trend has increased in recent years. For example, during the 2002–2003 school year, Kleiner et al. (2005) found only 28% of postsecondary institutions

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required students and their families to pay for course texts, but more recent data reveal 60% of postsecondary institutions expect students to purchase books. These heightened financial obligations can present obstacles to accessing dual credit courses. Cassidy et al. (2013) reported course expenses can be a deterrent to dual credit participation among traditionally underrepresented student populations.

Finally, transportation is a cost affiliated with dual credit programs. States do not typically cover transportation costs. When dual credit students needed to travel, Thomas et al. (2013) found parents and students (83%) were most likely to take on the responsibility of commuting to the college campus. Schools or school districts (31%), and to a lesser extent the state (5%), also assumed responsibility (Thomas et al., 2013). Thus, high schools or school districts may provide transportation to the dual credit site, but most often students and families are required to pay out of pocket (Cassidy et al., 2013; Thomas et al., 2013). In some instances, students from low-income backgrounds may qualify for grants or reimbursements for their travel costs from their local school district (Western Interstate Commission for Higher Education, 2006).

The variability in course costs broadens or limits access to dual credit. Additional research should examine the relationship between costs and dual credit participation by institutional type and by traditionally underrepresented student populations. Further studies should also investigate how students and families strategize to manage dual credit costs and to what extent transportation is a burden to dual credit students and families, if at all.

## **Benefits and Challenges**

There are several key benefits and challenges associated with dual credit courses taught on a college campus. First, college campus-based classes offer students a unique advantage in that they are able to observe and experience the college environment and learn how to navigate the campus (that is, understand the locations of departments, faculty offices, and support services). As a result, campus-based programs introduce high school students to the social

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rhythms and physical plant of a postsecondary institution, which also helps ease students' transitions (Karp, 2007; Tobolowsky & Ozuna, 2016). Dual credit students are then able to leverage this knowledge when they begin their lives as college students.

Next, prior research showed taking dual credit courses on a college campus increased students' academic confidence, independence, and development (Allen, 2010; Burns & Lewis, 2000). The students discovered they needed to be more responsible for their learning and began to see themselves as college students when they were taking these courses at a college location (Edwards et al., 2011). Further, no longer tethered to a high school bell schedule or teachers' coddling (Immerwahr & Farkas, 2006), the college environment encouraged students to be more self-sufficient. Being in courses with older, more mature college students can also drive high school students to excel and compete with their peers.

Also, students who take dual credit classes on college campuses are able to access college resources and academic support services (Edwards et al., 2011) such as mentoring, tutoring, supplemental instruction, and counseling (Bragg, Kim, & Rubin, 2005). On-campus experiences coupled with knowledge of available support can later assist students with their transition to college (Zimmerman, 2012). With these educational gains, it is not surprising that some states allow dual credit courses to be offered only on a college campus (for example, Oklahoma, North Dakota; Allen, 2010).

In addition to student benefits, dual credit programs provide higher education institutions with significant advantages. For instance, colleges and universities can generate future enrollment because students who earned dual credits at a particular campus may want to continue their coursework at the institution (AASCU, 2002). Also, under certain circumstances postsecondary institutions may be able to generate revenue from dual credit tuition (AASCU). Finally, colleges and universities are able to heighten their brand visibility in schools and in the community (AASCU). As students enroll in more dual credits, they become more familiar with the institution from which they are earning their credits. This familiarity may lead students to consider their local community college or 4-year institution as a viable postsecondary option.

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Coupled with these benefits are several challenges. The first area of concern is the cost associated with dual credit classes. Under some funding policies, both K–12 schools and institutions of higher education are reimbursed for dual credit students. This funding strategy means the state (that is, taxpayers) is paying twice for the same student (AASCU, 2002). A related issue with dual credit is the cost to participate in these programs. Students and families are most often responsible for tuition, textbooks, and transportation to the college campus. These costs vary by program but can be expensive, especially for low-income families. In addition, coordinating transportation to a college campus can be time and resource intensive.

The next critical challenge is related to the age of dual credit students. The postsecondary institutions are responsible for ensuring the health and safety of these minors (AASCU, 2002), who may be exposed to college activities that could jeopardize their well-being (for example, underage drinking) (AASCU). Dual credit partners may consider offering special orientation sessions for students and families to provide insight into campus safety issues and highlight campus resources (for example, police escorts to their car or blue-light call boxes).

Another challenge related to younger students on a college campus is the student's maturity and peer-to-peer interactions. Recent research has demonstrated traditional community college students hold negative perceptions of high school dual credit students (Heisterman, 2011; Kanny, 2015). In a qualitative study, Matthew Paul Heisterman (2011) found many traditional community college students became angry and resentful toward the dual credit students in their classroom, because they perceived them as immature and responsible for decreasing the quality of their courses.

The final area to address relates to college faculty who teach dual credit. Colleges and departments will have to determine how dual credit will count when calculating teaching loads (AASCU). Faculty members may also have concerns about how teaching dual credit classes will influence their research productivity and teaching evaluations. Future tenure and promotion decisions are based on the professors' research, teaching, and service and serving as the instructor for dual credit courses may create unintended negative consequences in meeting tenure expectations.

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## Conclusion

The popularity of dual credit has exploded in recent years, particularly courses offered at postsecondary institutions. These 2-year and 4-year institutions offer academic courses and vocational training with the intent of introducing students to college and promoting access and persistence. Yet, the proliferation of these programs has led to a variety of models with distinct features, including: course delivery, course offerings, program oversight, student and faculty eligibility, program quality, and how dual credit courses are funded (that is, by the state, college or university, or students and parents). These different program features present challenges and opportunities for higher education institutions.

# Dual Credit in High School Settings

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**A**LTHOUGH COMMUNITY COLLEGES are the most common sites for dual credit courses, 64% of high school students take these courses in a high school setting<sup>7</sup> (Marken et al., 2013). This location is convenient for students, which can increase course access for more students (Edwards et al., 2011). It is also less intimidating, which can heighten a student's willingness and comfort with asking for help from instructors or campus support services when needed (Edwards et al., 2011). However, the type and structure of the high schools and the nature and quality of the courses vary greatly. This chapter discusses three high school settings—traditional high schools, middle college high schools, and early college high schools—and the benefits and challenges of offering dual credit at these different locations.

## Traditional High Schools

There is limited research on dual credit courses offered at traditional high schools. One reason is that research exploring accelerated transition programs at a high school often focus exclusively on Advanced Placement (AP) and/or International Baccalaureate (IB) and not the type of dual credit courses we are discussing in this text. However, we (Tobolowsky & Ozuna, 2016) conducted one of the few studies that exposed different traditional high school dual credit models (see the first chapter for more information about dual credit models). One type of high school program was for the students to take dual

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credit courses with their classmates in a traditional high school setting within their regular school day. Teachers already assigned to the school taught these courses. A few other participants experienced another option, which was for several feeder high schools to send their students to a central high school to take dual credit courses. The student population in these classes included students from a number of different high schools, and the teachers were either high school or community college faculty.

These are examples of singleton programs intended to “enrich the high school curriculum by offering an opportunity to take a college-level class” (Bailey & Karp 2003, p. 9) (see the first chapter for more on types of dual credit programs). These types of dual credit courses do not introduce students to the college environment, which is one of the critiques of this model (Bailey & Karp, 2003). Because of the size and nature of our study, we did not draw these types of conclusions. In fact, there is limited research that explores how specific high school locations affect the students’ success.

However, there has been some research that compared the success of students who took dual credit in a high school with those who enrolled in a community college. For instance, the Community College Research Center (2012) reported that students in Florida who took dual credit courses at the high school campus were less likely to enroll in a college/university (63% high school dual credit students versus 72% community college dual credit students), pursue an undergraduate degree (23% high school dual credit students versus 29% community college dual credit students), and earn a bachelor’s degree (11% high school dual credit versus 16% community college dual credit students) than students who took dual credit at a college campus. Perhaps more interesting is that the high school dual credit students scored essentially the same as their nonparticipating peers on each of these measures (63% dual credit participants versus 61% nonparticipants for postsecondary enrollment; 23% participants versus 24% nonparticipants for pursuing a degree; and 11% participants and nonparticipants for earning a degree). This finding suggests that the advantage of taking dual credit courses is related to taking those courses on a college campus (in other words, being exposed to the college environment) (Borden et al., 2013; Edwards et al., 2011). Yet, with so many variables at play (such as course content, instructor quality, and

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others) in this study, it is hard to know how the location contributed (or did not contribute) to these students' success. Therefore, it is critical that future research explore how the location of any dual credit offering affects the students' college experiences controlling for the instructor's training, the course subject, and other variables (see the second chapter for more on dual credit courses offered at postsecondary institutions).

### ***Student Participation***

Students in dual credit are generally required to be enrolled in a certain grade level, have a minimum GPA, and, in some instances, pass college placement tests to participate, but this varies by state and course subject. These requirements do limit course participation; thus not addressing some critical policy concerns (such as college access) often linked to dual credit participation. However, many high schools target high-achieving students who can easily meet these standards (Radunzel, Noble, & Wheeler, 2014). Limited research has addressed, specifically, how individual dual credit courses fit into the overall curricular plan for high-achieving students who also have the option of participating in AP or IB. However, we found in our study that many of our academically strong participants were also taking AP courses or chose to take these courses instead of AP, because they could earn the credit without taking an exam (Tobolowsky & Ozuna, 2016). They found dual credit an easier alternative. Hans Andrews (2004) also reported dual credit was taking the place of honors classes and AP in many high schools based on his review of a number of dual credit programs across the country (see Table 5 for dual credit characteristics when courses are offered at traditional high schools).

### ***Instructor Eligibility***

Thomas Bailey and Melinda Mechur Karp (2003), Justine Radunzel, Julie Noble, and Sue Wheeler (2014), and others have articulated concerns about course rigor in terms of dual credit, particularly those courses offered at the high school. These questions relate directly to issues with teacher quality. Because of the lack of consistent policies regarding instructor eligibility, the responsibility for instruction of dual credit courses at the high school varies greatly. Stephanie Marken, Lucinda Gray, and Laurie Lewis (2013) found that

**TABLE 5**  
**Dual Credit Characteristics of Traditional High School Dual Credit Programs**

<i>Areas of Variability</i>	<i>Characteristics</i>	<i>Requirements</i>
Student Participation	Typically high-achieving students	Requirements vary, may include grade level, minimum GPA, college placement exams
Instructor Eligibility	High school and community college instructors	Criteria for eligibility varies by states, institutions, and local education agencies
Funding	Variable	School district, parents, postsecondary institution, or state
Benefits	Earn college credits from single course and low cost	N/A
Challenges	Fails to expose students to college-level rigor and college environment	N/A

*Note:* N/A = not applicable.

high school personnel teach these courses 34% of the time, both high school and college faculty are responsible for them 45% of the time, and college faculty teach them 21% of the time. With instructors coming from different sectors, researchers (Borden et al., 2013) note that there are differences in teacher quality and training, but there is no study that investigated this issue specifically in regard to high school-located courses<sup>8</sup> and how the teachers' varying qualifications affected the students' college success.

Although there are no uniform criteria for teachers in dual credit classrooms, Marken and associates (2013) noted that 87% of all institutions require the high school instructor meet the minimum qualifications of college faculty. Borden and associates (2013) found a wide range of policies in place regarding high school teacher eligibility. For example, 10 states have no policies about instructor eligibility at all whereas some states require all instructors to meet the accrediting agencies criteria (for example, Kentucky and Southern Association of Colleges and Schools standards) (Borden et al., 2013). In

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14 states, instructors must have subject matter expertise based on the degree attained and/or the number of courses taken in that subject (Borden et al.). In general, state policies remain somewhat general, if there is a policy, to allow institutions and localities some latitude in setting their own rules and regulations (Borden et al.).

### ***Funding***

Again, there is no specific information about course costs associated with classes offered at the high school. The students in our study (Tobolowsky & Ozuna, 2016) did not pay for the courses that they took at their high schools but may have had costs associated with courses taken at other locations. However, it is important to note that we only reported the students' perceptions of those costs. They may have faulty memories. Therefore, future research needs to be done that explores who shoulders the burden of these course costs and whether that affects the students' decisions to take dual credit courses at the high school.

### ***Benefits and Challenges***

The benefits associated with dual credit courses offered at the high school are similar to all dual credit options: low to no cost and the ability to earn both high school and college credit from a single class (Hoffman et al., 2009; Tobolowsky & Ozuna, 2016). Also, students are more comfortable taking these courses in familiar surroundings and are able to avoid any course costs or transportation challenges that occur as a result of taking courses at other locations (Edwards et al., 2011).

However, there are two primary criticisms leveled at high school-located dual credit offerings. One concern is that these courses do not introduce students to the rigor of college-level coursework, because the courses are offered at the high school and frequently taught by high school teachers (Edwards et al., 2011; Radunzel et al., 2014). The second challenge is that these classes do not expose students to the college environment, which has been deemed critical to students' college success (Zimmerman, 2012). Thus, these courses are less likely to aid students in their transition to higher education than dual credit courses offered on college campuses.

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## Middle College High Schools

The Middle College High School (MCHS) movement began in 1974 with a single school set on the LaGuardia Community College campus in New York City (Barnett, 2006). Today, there are around 50 MCHSs (some with more than one campus) in 16 states (Middle College National Consortium, n.d.-a<sup>9</sup>). From the outset, the goal of these enhanced comprehensive programs was to provide an innovative educational experience for “underserved” students (Middle College National Consortium, n.d.-b) who may have dropped out or were close to dropping out of a traditional high school (What Works Clearinghouse, 2007).

Barry Williams and Dorothy Kendall Kearns (2006) addressed the irony of offering college-level coursework to students who had dropped out of or were struggling in high school. Yet, research on the Guilford County MCHSs confirmed that “this environment [for example, being located on a college campus, offering innovative pedagogy, and providing intrusive supports] helps them acclimate to higher standards and become engaged in school again” (Williams & Kearns, 2006, para. 3). As a result, students from these programs are more likely to graduate from high school and enroll in college than nonparticipating peers (Lords, 2000). However, there is some conflicting evidence to this point.

The What Works Clearinghouse, supported by the Department of Education, reviews studies that meet their standards (that is, “randomized controlled,” “quasi-experimental with a matched comparison group,” “regression discontinuity designs,” and “single-case designs”) (What Works Clearinghouse FAQ, n.d., para. 2) on topics to provide evidence-based best practices to educators. Based on their analysis of a single study that met their standards, they determined that “students attending middle college high schools [were] no more likely than their counterparts in a traditional high school program to stay in school or graduate” (Viadero, 2009, p. 5). This finding highlights the lack of research on MCHSs as much as it questions their success.

It should be noted that MCHSs are often linked with ECHSs in the literature and very little research exists on MCHSs alone. There are two primary reasons for the lack of clear definitional distinctions (Barnett, Maclutsky, &

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Wagonlander, 2015). The first is that the models are very similar (Barnett et al., 2015), so studies use the terms interchangeably. This leads to the second reason, which is that MCHSs are considered the forerunner of ECHSs (Yi, 2012). Jobs for the Future started their ECHS initiative in 2002 with the support of the Gates Foundation and others to address similar issues (in similar ways) as the MCHS. As a result of that support, a number of MCHSs converted to ECHSs (Modarelli, 2014; Yi, 2012). We discuss the differences between these two models shortly.

Nevertheless, MCHSs are associated with four characteristics. First, these “alternative” schools (What Works Clearinghouse, 2007, p. 1) are typically located on college campuses (Allen, 2010), which allow them to provide their students easy access to the college’s resources and courses. Further, they expose the high school students to a wider range of students, faculty, and social and academic opportunities by virtue of their proximity to the college campus (Allen, 2010; Lerner & Brand, 2006). Second, each high school has no more than 100 students in each grade (often fewer) (What Works Clearinghouse), focusing more resources on intensive student supports than occurs at a traditional high school. Third, the schools are considered educationally innovative, because of the use of unique pedagogies (for example, team teaching, collaborative learning techniques) and more innovative methods for course assessments than tests (for example, portfolios) (What Works Clearinghouse). Fourth, these schools offer the opportunity to take college courses, but it is not a requirement. It is on this point that MCHSs differ from the ECHSs<sup>10</sup> (Barnett et al., 2015). Therefore, students attending some of these campuses do not always graduate with dual credits. However, if the students do take college coursework, it is at no cost to them.

Research (for example, Pianelli, 1995) suggests that some of the MCHS campuses have links to vocational education. More recently, Nina Thomas, Stephanie Marken, Lucinda Gray, and Laurie Lewis (2013) noted 34% of MCHSs reported that students took career and technical dual credit courses. In the mid-1990s, the Houston Independent School District partnered with the Houston Community College District to develop such a program (Pianelli). It was a 6-year program starting with ninth-grade students and extending into the first 2 years of college. The traditional high school courses

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(for example, math, science, English, social studies) were approached in an interdisciplinary way and connected to the real world through field trips, community service, and internships. The electives included courses in tech systems, business, and computer science. The courses met state requirements and were, therefore, transferable to any 4-year institutions in the state.

Teresa Mayo (2012) studied two MCHSs in Kentucky that were set on technical college campuses. The students split their days between high school classes and college coursework. Therefore, the structure of the MCHS at these campuses was quite different from the general characteristics associated with this model. Further, the students were not identified as high school students in those college classrooms. They were expected to follow the same rules and regulations as any other student on the technical campus. There were no significant differences in their GPAs from the regular technical students at one of the schools and they had a higher GPA at the other. Mayo found that although these students were uninvolved in their traditional high schools, now as MCHS students they were “actively engaged in their learning at the college level” (p. 40). This included asking questions in class, making class presentations, preparing multiple drafts of a paper, working with other students in and out of class, and working harder than anticipated to meet the instructor’s expectations. Therefore, in spite of the results of the What Works Clearinghouse review, other studies did find MCHSs provided effective strategies to engage underserved students. These inconsistent findings clearly demonstrate the need for further research on students’ experiences and outcomes in MCHSs.

### ***Student Participation***

Of all dual credit models, the MCHSs were the first to focus on assisting traditionally underrepresented (particularly first-generation) students in their college preparation (Modarelli, 2014). These schools concentrated on reducing the number of high school dropouts and increasing students’ college aspirations (Modarelli), which is quite different from most dual credit programs that target high-achieving students instead (Bailey, Hughes, & Karp, 2002). As a result, some studies focused on the distinct criteria that MCHSs use to select students. Seal (2004) noted that a MCHS located on the LaGuardia

Community College campus accepted students who dropped out of high school but showed potential for college-level work. Other MCHSs rely on recommendations from the high school counselor or teachers (Cunningham & Wagonlander, 2000), and/or high standardized test scores and low grades (Borsuk & Vest, 2002) (see Table 6 for dual credit characteristics when courses are offered at MCHSs).

### *Instructor Eligibility*

There is no evidence that there are consistent requirements for all teachers in MCHSs. Cunningham and Wagonlander (2000) describe the faculty hiring process at one New York and one Michigan MCHS. In both instances,

**TABLE 6**  
**Dual Credit Characteristics of Middle College High School Programs**

<i>Areas of Variability</i>	<i>Characteristics</i>	<i>Requirements</i>
Student Participation	Traditionally underrepresented student populations	Requirements typically include an application, interview, low GPA, high standardized test scores, portfolios
Instructor Eligibility	High school or college instructors	Criteria for eligibility varies by state and program
Funding	Varies by state and program	Includes federal and private grants and/or state funding
Benefits	Facilitate successful transitions to college, reduce high school dropout rates, raise college aspirations, reduce college costs, offer more challenging classes, and provide exposure to the college environment	N/A
Challenges	Course and instructor quality, accommodating an MCHS on a community college campus, expensive	N/A

*Note:* N/A = not applicable.

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faculty decisions are in the hands of faculty committees who review the candidates' portfolios, observe in person or on videotape the applicant working with students or presenting a lesson, conduct reference checks, and interview potential employees. At the Michigan school, the committee will then make recommendations to the secondary school superintendent, who will make the final decision.

More generally, as with other dual credit offerings, Borden and associates (2013) report that instructors usually have or are working on their master's degrees and are certified or in the process of being certified in the subject they teach. However, they have not had any formal training in teaching, particularly if the courses are taught at the high school (Klopfenstein & Lively, 2012). Thus, the skill of the instructors has been criticized (Klopfenstein & Lively) particularly because a priority at MCHS is to use innovative pedagogies and the teachers may not be trained to do so.

### ***Funding***

Because this type of dual credit option is often discussed with ECHSs, it is difficult to tease out specific funding structures or costs associated with MCHSs. In one small-scale study, Mayo (2012) explored two MCHSs in Kentucky to better understand the qualities that distinguish them from each other. She found that funding varied between the two institutions, but both relied to some extent on grants (federal and private) and/or state funding. The range of support between two institutions in one state suggests there may be other disparities between MCHSs nationally. However, future research is needed to better understand the status of MCHSs, if they continue to exist apart from ECHSs, in today's financial climate.

### ***Benefits and Challenges***

Yi (2012) reports that these programs offer a wide range of benefits, including: "(a) facilitating the transition between high school and college," (b) "reducing high school dropout rates," (c) "raising the student's motivation and goal to attend college," and (d) "enhancing opportunities for underserved student populations" (p. 33). These benefits complement others that many dual credit programs offer, such as reducing college costs and the time to graduation,

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providing a more challenging high school curriculum, and, when possible, introducing students to the college environment (see Allen, 2010; Bailey et al., 2003). More specifically, although many of these students were challenged in their previous high schools, Corina Borsuk and Bette Vest (2002) found that students attending a MCHS in California had raised their GPA from an average 2.48 (at their traditional high school) to 3.46 (at the MCHS) and were attending school at a higher percentage than students within the district (more specifically, the district average was 92% but the average for students at MCHSs was 96.6%).

There is limited research on MCHSs, but some criticisms have surfaced regarding this model. For instance, these programs are thought to benefit students who were not successful at their traditional high schools (Modarelli, 2014); however, if students are unsuccessful at MCHSs, these programs may serve a fatal blow to their academic confidence (Lords, 2000). Further, a key challenge associated with these programs is structural. Not all community colleges can accommodate locating a MCHS (or ECHS) on its campus (Barnett et al., 2015). Therefore, expansion of these programs has been slow and has now resulted in being redesigned into ECHSs, which has a lot of philanthropic support at present. Both are expensive enterprises, because of the small class sizes and intensive supports (Langley, 2009). Not to mention the fact that innovative practices are often subject to challenges from supporters of the status quo (Kisker, 2006).

## Early College High Schools

ECHSs, like MCHSs, are committed to the success of underrepresented students. However, unlike the MCHS, the goal of ECHSs is that graduating students might leave high school with up to 60 college credits. With these objectives in mind, the first ECHS, a collaboration between Bard College and the New York City Department of Education, opened its doors in 2001 (Barnett et al., 2015). Over the years, with support from Jobs for the Future, the Gates Foundation, and other philanthropic organizations, the number of ECHS schools has increased (Berger, Adelman, & Cole, 2010). In 2014,

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Michael Webb and Carol Gerwin reported that there were approximately 280 ECHSs across the United States, some of which were redesigned MCHSs, serving over 80,000 students.

Just as with the first ECHS, collaboration between postsecondary institutions and communities remains a key principle of these schools (Mickens, 2008). In fact, research notes that ECHSs partner most often with community colleges (65%), followed by 4-year institutions (24%), or with both types of institutions (11%) (Berger et al., 2010). That collaboration extends to location. Most ECHSs (53%) are set on a college campus (Berger et al., 2010) or near one, much like the MCHSs, and that connection to the college campus “facilitates student access to the range of opportunities on campus, increases student motivation, and allows students to accelerate their education” (Allen, 2010, p. 5). However, in some instances, ECHSs share space with traditional high schools and in others they are located in office buildings. These settings have some inherent challenges, because they lack facilities available at a college. Smerdon and colleagues (2005) note that even the classrooms and restrooms may prove challenging in noneducational spaces. However, often, these settings are temporary quarters until adequate facilities are located. Typically, the issues are resolved over time.

Another key element of the ECHS model is that students must take courses that earn college credits (Allen, 2010; Modarelli, 2014; Smerdon et al., 2005,) unlike MCHSs where it is only an option. Smerdon and associates (2005) report that some ECHSs may allow students to earn college credits either throughout the duration of their entire high school experience from ninth grade through their senior year or just in the final 2 years of high school (Webb, 2004).<sup>11</sup> Regardless of the model, all ECHSs focus on providing a rigorous academic experience for students. Thus, another fundamental element of these enhanced comprehensive programs is that they offer intensive supports to assist students as they tackle the academically demanding program (Mickens, 2008). Thereby, better positioning students to succeed.

Even with its expansion, research on ECHSs has been limited, but promising. Recent studies have found that students who graduate from ECHSs are more likely to enroll in college (Struhl & Vargas, 2012) and earn college degrees (An, 2013a; Berger et al., 2013) than underrepresented

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students who did not attend an ECHS. However, the Gates Foundation and Jobs for the Future are responsible for much of the work into this initiative (Allen, 2010; Berger et al., 2005; Lerner & Brand, 2006); therefore, future research by others less invested in the movement is critical.

### ***Student Participation***

Unlike some of the other dual credit programs, ECHSs target students under-represented in higher education. In some instances, Smerdon and associates (2005) found that they choose to recruit students with “academic and social difficulties” (p. iii). As a result, they often use unique criteria for admission when compared to other dual credit programs. These criteria may include being from a minority race/ethnicity in higher education, being an English language learner, coming from a low socioeconomic status background, being drug free, being a high school dropout (Smerdon and others), and having first-generation status (Berger et al., 2010). Typically, they required applications (Edmunds, 2012), essays, and interviews as part of the process (Berger et al., 2010). In some states (for example, North Carolina), they used lotteries to select students from a larger pool of candidates who met the admissions criteria (Edmunds, 2012) (see Table 7 for dual credit characteristics when the courses are offered at ECHSs).

### ***Instructor Eligibility***

As with the other dual credit models, instructors may be high school personnel or college instructors (Smerdon et al., 2005). Allen (2010) identified four models of instruction associated with ECHSs. They are:

*1) high school teachers with adjunct status teach the courses at the high school; 2) college faculty teach high school students at the high school; 3) college faculty teach a group of high school students on a college campus; and 4) high school students, either individually or in small groups, attend traditional college courses. (pp. 5–6)*

In most cases, the instructors have or are in the process of earning master’s degrees and are state certified or are getting alternative certification (Smerdon et al., 2005). However, some schools have a small instructional staff

**TABLE 7**  
**Dual Credit Characteristics of Early College High Schools**

<i>Areas of Variability</i>	<i>Characteristics</i>	<i>Requirements</i>
Student Participation	Traditionally underrepresented student populations	Requirements typically include an application
Instructor Eligibility	Criteria for eligibility varies by state and program	High school or college instructors
Funding	Varies by state and program	Includes federal and private grants and/or state funding
Benefits	Facilitate successful transitions to college, reduce high school dropout rates, raise college aspirations, reduce college costs, offer more challenging classes, and provide exposure to the college environment	N/A
Challenges	Course and instructor quality, accommodating an ECHS on a community college campus, expensive	N/A

*Note:* N/A = not applicable.

handling all the course offerings, which suggests they may not have subject area qualifications (Smerdon et al.). Thus, many of the same concerns about teacher qualifications surface with this model of dual credit as with the others.

### ***Funding***

The intensive support, small size, innovative approaches, and specific plant requirements make these “expensive propositions[s]” (Smerdon et al., 2005, p. v). As a result, a number of philanthropic groups (for example, the Gates Foundation, the Ford Foundation, Carnegie Corporation of New York, the Kellogg Foundation) support these schools through grant funding. An additional source of support is through state grants (Leonard, 2013). However, many of these grants are for a limited period of time, so some schools have been forced to close when funding ended (Leonard, 2013).

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### ***Benefits and Challenges***

Most research on this initiative is the work of Jobs for the Future, so likely there is a strong element of advocacy in their findings. Nevertheless, ECHSs have been found to expose students to the college environment and give them belief in their academic abilities, which are critical components to student success (Berger et al., 2010). Further, Jobs for the Future (n.d.-a) reports on their website that nationally 90% of their students graduate high school as opposed to 78% of nonparticipating peers. In addition, 30% of ECHS students graduate from high school with an associate's degree or a college certificate. Also, more ECHS graduates enroll in college versus nonparticipating peers (71% versus 68%). When you consider that these institutions purposefully serve students who are underrepresented in higher education, these are powerful data regarding the success of ECHSs<sup>12</sup> (Jobs for the Future, n.d.-b).

However, the research suggests some implementation challenges. For instance, initially the goal was for students to graduate with 2 years of college credit, but that was not always possible, so that core principle was revised downward to reflect the completion of a year's worth of college coursework. Berger and others (2010) found in their review of 5 years (2002–2008) of ECHS evaluations (including site visits, interviews with leaders and alumni, school and student surveys, and data from Jobs for the Future and state and district websites) that 1 year of college coursework was overly optimistic, as well. They report that 73% of the ECHS students reported taking one college class by their senior year. Therefore, they recommend this is an area that needs additional attention to meet the goals of ECHSs.

Berger and others (2010) note another discouraging finding in their review. First-generation students who attended ECHSs had lower high school and college grades, "lower educational aspirations, and felt less positively about EC[H]Ss than other students" (American Institutes for Research & SRI International, 2009, p. 345). This is particularly disturbing, because this is one of the key demographics ECHSs were intended to help succeed. However, as stated previously, other research does reflect that students who attended ECHSs were more likely to graduate from high school and attend college than nonparticipating students (for example, Nodine, 2009). These conflicting reports reflect the need for more research from objective sources.

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As stated earlier, another key challenge relates to the long-term fiscal viability of these programs. As foundation supports end, some schools have had to close. Further, these are challenging schools to establish because of the unique principles at their core, such as community partnerships, innovative teaching pedagogies, and intensive supports. These tenets require significant human and financial resources be put into place, which Leonard (2013) notes could affect their “scalability” (p. 5).

## Conclusion

This chapter focused on the dual credit courses offered at high schools. There is considerable variability between and within these models. Courses can be offered to high school students at their institution or at a central high school during the school day or on weekends. The instructors can be high school or college faculty who may be required to have minimal subject-level qualifications at the time they teach the courses. In some instances, the courses target high-achieving students in much the way the other accelerated learning options (for instance, AP and IB) do; however, there are other innovations (for instance, the MCHSs and the ECHSs) that focus primarily on student groups who are underrepresented on college campuses. The MCHS gave rise to the ECHS movement in the early 2000s, which has slowly grown with the support of Jobs for the Future and the Gates Foundation, among others. These are the most innovative of the dual credit models for the students they target and the intensive supports they supply to help students succeed in college. However, they are challenging to implement as well as expensive, so without financial support, they are not yet self-sustaining models.

## The Students' Experiences in Dual Credit

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WHEN DUAL CREDIT programs initially began, they targeted high-achieving high school students much like Advanced Placement (AP) courses. Dual credit was considered one strategy that allowed gifted students to overcome boredom and explore new ideas and topics more thoroughly, while maximizing their final year in high school (Barnett & Stamm, 2010). These programs also created an opportunity for academically strong students to get a head start on their college curriculum (Edwards & Hughes, 2011; Karnes & Chauvin, 1982; Karp & Hughes, 2008). Thus dual credit offered two key advantages to these gifted students: they reduced their time to degree and saved money on the cost of college (Bailey & Karp, 2003).

As student populations in higher education diversified with the enrollment of students of color, first-generation college students, and low-income students, educators and policymakers alike were concerned that not all student groups were succeeding at the same rate (Engle, Bermeo, & O'Brien, 2006). Recent data reveal discrepancies in 4-year degree completion rates. The U.S. Department of Education (2014a) reported 46.2% of Asians, 43% of Whites, 29.8% of Hispanics, and 20.8% of Blacks graduated within 4 years of starting a bachelor's degree. Research on first-generation college students' degree completion revealed even lower rates of completion. In a study by the Higher Education Research Institute, Linda DeAngelo, Ray Franke, Sylvia Hurtado, John Pryor, and Serge Tran (2011) reported 27.4%

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of first-generation college students earned their bachelor's degree within 4 years. However, 42.1% of their peers whose parents earned a college degree graduated within 4 years (DeAngelo et al.). The outcomes are further complicated when the students are also low income (Institute of Higher Education Policy, 2010). To counter these sobering statistics, dual credit emerged as an ideal vehicle to help provide college access to these traditionally underserved student populations (Bailey & Karp, 2003), as well as other student groups (that is, high-, middle- and lower achieving students).

As a result, research began to explore the differential benefits of dual credit on a wide range of students who were now participating in these unique programs. Thus, the purpose of this chapter is to synthesize the research on the students' experiences in dual credit programs, specifically historically under-represented students populations, and identify who benefits and in what ways they benefit from participation in these courses.

## High-, Middle-, and Lower Achieving Students

This section presents the dual credit models designed to serve high-, middle-, and lower achieving students. It also presents relevant research on these students' experiences within dual credit programs.

### *High-Achieving Students*

Dual credit is the most common strategy to accelerate high-achieving students' time to degree (Bailey & Karp, 2003; Hoffman, Vargas, & Santos, 2009). Educators and policymakers have focused on this student population because they realized that students who met high school graduation requirements early may disengage academically their senior year. Dual credit programs can counter a student's inclination to disconnect from their high school experience and motivate academic engagement through the final year of high school (Bailey et al., 2003).

Although dual credit offerings were designed with these students in mind, research on high-achieving students' experiences and outcomes in dual credit programs is limited. One prior study revealed dual credit programs offer these

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gifted students academic challenge, sometimes for the first time in their educational career (Andrews & Marshall, 1991). Hans Andrews and Robert Marshall (1991) examined a dual credit program for honors students in their junior and senior years of high school, where students earned college credit through Illinois Valley Community College. They reported students found their dual credit experience to be valuable because they were able to earn college credits, gain personal ownership over their learning, and obtain insight on college expectations.

In another study, Wendell McConnaha (1996) conducted a qualitative examination of the psychoeducational experiences of 20 gifted high school students who were enrolled in the University of Chicago Laboratory High School and simultaneously earning dual credits through the University of Chicago. The study sought to understand the characteristics and motivations of students who enrolled in the program, their positive or negative perceptions of the program, and how dual credit influenced the ways they perceived themselves. The findings revealed students in the dual credit program were highly motivated with strong academic self-concepts. However, the students' primary motivations were external factors (that is, based on the encouragement of counselors, parents, and peers) as well as the perception that college credit would look good on their transcript when applying to a 4-year institution. They were less likely to mention internal factors (that is, the student's internal motivation) influenced participation. McConnaha found mixed results between the students' decisions to participate in and their satisfaction with the courses and social life. For example, students felt the amount of time they were able to dedicate to former activities, including athletics and school events, was limited as a result of their participation in this program. Further, most students felt compelled to focus more on their assignments from the university, rather than their high school, because they hoped that making good grades in the dual credit classes would be viewed more favorably by college admissions committees. However, some participants admitted this focus caused them some problems in their high school classes and with their high school instructors. The time constraints also affected the participants' relationships with their friends who felt abandoned because they were no longer able to spend as much time together.

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**Benefits and Challenges.** These programs were intended to help provide a more challenging curriculum to academically engage high-achieving students near the end of their secondary school experience. They served as an antidote to “senioritis” (An, 2013b). As the number of courses has increased dramatically over the past decade, some academically strong students now choose to take these courses rather than other credit-bearing accelerated learning options like AP, because they earn college credit without having to pass a standardized test (Tobolowsky & Ozuna, 2016). Even though dual credit programs were originally designed to challenge high-achieving high school students, there is scant literature on their experience in these classes. There may be an assumption that these students would excel academically without the help of dual credits. More research is needed to further explore these students’ long-term academic outcomes and how completing a college degree in a more timely manner may influence students’ graduate or professional aspirations.

Additional scholarship may also explore the relationship between high achievement and other social identities (that is, race/ethnicity, gender, or income status) and participation in dual credit. Prior research indicates students of color and low-income students encounter challenges gaining access to dual credit programs (Museus, Lutovsky, & Colbeck, 2007), and future studies can examine the experiences of high-achieving students of color and their enrollment patterns in dual credit. In addition, researchers have found mixed results regarding the outcomes for male and female students (Eklund, 2009; Ganzart, 2012; Karp et al., 2007; Pretlow & Wathington, 2014). Because men, and particularly men of color, are underrepresented in higher education, future studies should investigate high-achieving men and their participation in dual credit.

### ***Middle- and Lower Achieving Students***

Initially, middle- and lower achieving high school students (defined as students with a “C” cumulative GPA and with little to no intention of pursuing a higher education; Mattis, 2008) were denied access to dual credit courses (Bailey, Hughes, & Karp, 2002). Arthur Greenberg (1988) enumerated several reasons for excluding these “average” students from dual credit programs.

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First, these students were not believed to be smart enough to engage in college-level coursework. Second, critics were wary of rewarding less than stellar high school academic performance. Moreover, there was concern that expanding access to middle-achieving high school students would increase course costs and administrative bureaucracy. Finally, Greenberg highlighted economists' arguments against broadening access to dual credit, which was that it was important to ensure a workforce for lower status jobs (such as janitors and store clerks). In other words, if all students take dual credit and end up earning college degrees, there will be an insufficient number of workers to take on these low-wage, but necessary jobs.

However, in spite of these arguments, many policymakers and educators believed that providing access to dual credit programs for middle- and lower achieving students would improve school completion rates (Lords, 2000; Pierce, 2001; Plucker, Chien, & Zaman, 2006). Other reasons to broaden access to these programs have emerged. Some educational leaders believed lower achieving students would benefit from higher academic expectations (Andrews, 2004; Bailey et al., 2002). Research shows academic rigor in high school better prepares students for college-level coursework and expectations and has a long-term effect on students' college degree completion (Adelman, 2006). Thus, these increased expectations could motivate students to work harder and excel in high school and in college. Finally, in the past, many high schools had to terminate programs or courses because of economic and budget challenges (that is, science laboratories, arts programs, or foreign language courses) (Bailey et al.), but dual credit increases course options for students. Consequently, there are many benefits attributed to dual credit, including improving student motivation as well as their access and success in a postsecondary institution (Bailey et al.).

Many dual credit programs now focus on middle- or lower achieving students in order to introduce students to college classes and campuses and promote college going (Bailey & Karp, 2003; Bailey et al., 2002; Barnett & Hughes, 2010; Edwards & Hughes, 2011; Hoffman, 2003; U.S. Department of Education, 2007a). Enhanced comprehensive programs such as early college high schools (ECHSs) or middle college high schools (MCHSs) were designed to specifically address the unique needs of these student populations

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while providing intensive student support services such as advising, counseling, and mentoring (U.S. Department of Education, 2007b). (For more information on MCHSs, see the third chapter.)

Limited research has addressed the educational experiences and outcomes of middle- and lower achieving students in dual credit programs (Bailey & Karp, 2003). Some studies have found that dual credit students start to see themselves as capable of college work, which can further strengthen their desire to pursue a college degree (Karp, 2007; Medvide & Blustein, 2010). This shift in a student's mindset reveals dual credit programs can offer validation (Rendón, 1994) of their abilities while helping them develop a higher sense of self-efficacy. As these students enter the college environment, they may doubt their abilities to be a college student. However, if they participated in dual credit programs that provided holistic supports and mentorship (for example, ECHSs and MCHSs), the students are more likely to let go of their misgivings and persist (Barnett & Stamm, 2010; Brigham, 1989; Edmunds, 2012; Rendón, 1994). Mattis (2008) similarly found high school guidance counselors observed a maturation in middle-achieving dual credit students. The counselors reported growth in students' self-confidence and a sense of pride in successfully completing dual credit courses and earning college credit (Mattis, 2008).

One of the key challenges for middle-achieving students is gaining access to dual credit programs. In a qualitative study of guidance counselors in Virginia, Marjorie Mattis (2008) found middle-achieving students were often overlooked in receiving information from school districts on dual credit programs. The guidance counselors acknowledged high-achieving and lower achieving students received additional support services from schools, but middle-achieving students did not receive the equivalent level of support or resources. The guidance counselors further noted middle-achieving students may be academically talented students who are bored and unchallenged by the course curriculum. As a result, the guidance counselors believed the students grew complacent and did not do their best work, thus affecting their academic achievement.

In addition to the possibility of being overlooked, middle- and lower achieving students encounter obstacles to dual credit access because

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educational leaders are concerned with whether these students are adequately prepared to take on college-level work. The U.S. Department of Education (2004) sought to investigate strategies for promoting college transitions among middle- and lower achieving students in the Accelerating Student Success project. This qualitative study included focus groups and telephone interviews with instructors and administrators working in enhanced comprehensive dual credit programs and found that although instructors and administrators believed they should expand access to dual credit, they expressed concerns about the accessibility of courses (U.S. Department of Education). These educational leaders believed dual credit programs should include a sustained, multiyear curriculum and support system to develop the necessary academic skills (that is, time management and study skills) in an effort to ease students' transition to college.

The middle- and lower achieving students who do gain access to dual credit coursework are able to learn more about the role of being a college student (Garcia, 2014; Karp, 2007). Dual credit programs introduce students to the norms, attitudes, and behaviors that are necessary for being a successful college student. Melinda Karp (2007) conducted a qualitative examination of a dual credit program in New York and interviewed 26 students three times over the course of their first semester. Karp found students beginning their dual credit experience did not have a clear understanding of the role of a college student. By the end of the semester, 65% of the participants had gained this knowledge, particularly if they viewed their dual credit courses as college level (Karp, p. 31). Simply placing students in the program did not automatically translate into a better understanding of what it means to be a college student. Rather, they needed to actively negotiate their prior conceptions with their dual credit experiences to reach a new and richer view of student life.

In addition to learning more about the role of a college student, prior research has revealed students also make academic gains in dual credit programs. In a study of underachieving students of color in California, these courses improved the students' high school GPAs (Brigham, 1989). Further, Juan Gurule (1996) found underachieving students were also more likely to graduate from high school and complete their college degree, compared to their peers who did not take dual credits.

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Educational leaders have recommended three key elements for programs targeting middle- and lower achieving students (U.S. Department of Education, 2004). First, these programs should include remediation, when necessary, and demonstrate a pathway to higher education. Next, these dual credit programs should offer individualized support and instruction. Programs should focus on students' strengths and interests, while offering intensive support services. Finally, programs should provide students with college-going information, including college admissions requirements and financial aid information.

**Benefits and Challenges.** As dual credit courses become more available to middle- and lower achieving students, the goal is to promote college access and support the transition to college. Broadening access to these students is also seen as an avenue for exposing them to college life and the role of a college student, thus promoting their postsecondary success. These benefits are intended to serve as academic momentum (Adelman, 2006) that propel the students to a postsecondary degree.

In addition to these benefits, several challenges have emerged. Notably, enhanced comprehensive programs were created with extensive and individualized support. The programmatic needs of these models require long-term financial support to ensure their sustainability. More research is needed to investigate dual credit participation and long-term success of lower achieving students. Finally, despite increased efforts to expand access to these programs, it remains a key concern. Additional research is needed to develop an effective strategy for informing middle- and lower achieving students and families about dual credit.

## Traditionally Underrepresented Student Populations

Elisabeth Barnett and Leisa Stamm (2010) assert dual credit programs improve students' college aspirations and motivate them to meet high expectations. The programs also decrease school dropout rates because students begin to assume the role of college student and see themselves as capable of college

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work (Barnett & Stamm, 2010). Further, these courses reduce the amount of remedial work required when students get to college because they are gaining necessary college readiness skills and knowledge while enrolled in dual credit (Barnett & Stamm, 2010). Despite these benefits, traditionally underrepresented students encounter varying levels of access and success in dual credit programs. Traditionally underrepresented students typically include racial and ethnic minorities, first-generation college students, and low-income students (Bragg et al., 2005; Green, 2006). This section provides an overview of the demographic trends with traditionally underrepresented student populations and describes relevant research on their experiences in dual credit programs.

### ***Racial and Ethnic Groups***

Between 2002 and 2012, the percentage of Whites, Hispanics, and Asian/Pacific Islanders enrolled in higher education increased whereas the percentage of Blacks declined (U.S. Department of Education, 2015). Despite the increased diversification of K–16 schooling, students of color remain underrepresented in higher education and those who enroll encounter obstacles that challenge their persistence toward a postsecondary degree (U.S. Department of Education). Dual credit is one strategy for overcoming these achievement gaps, yet these students are also underrepresented in dual credit programs (Kim et al., 2006; Museus et al., 2007; Pretlow & Wathington, 2004). In an effort to increase student success and degree completion, school leaders and policymakers have specifically focused on expanding dual credit programs and reaching out to these student populations (Karp & Hughes, 2008).

Research on racial and ethnic student subgroups reveals White students outpace Black and Latino students in gaining access to dual credit programs (Museus et al., 2007; Pretlow & Wathington, 2014; Prophete, 2013; Wallace, 2006). For example, Josh Pretlow and Heather Wathington (2014) examined dual credit outcomes for students in Virginia following a state policy change to promote outreach and access. The researchers investigated high school students who graduated between 2004–2006 to determine if the policy change broadened dual credit access, participation, and enrollment. Pretlow and Wathington found enrollment in at least one dual credit course

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increased for all students but White students remained overrepresented in dual credit programs. In 2004, White students constituted 66.2% of the graduating class, but represented 81.6% of the dual credit population. Black students represented 23.7% of the graduating class and only 13.1% of the dual credit population. The participation of Latino students was particularly devastating as this population constituted 4.5% of the graduating class but less than a third of 1% (.31%) participated in dual credit. After the policy change in 2005, these trends persisted and representation of these student populations remained virtually the same.

These findings are in line with prior research conducted by Sam Museus, Brenda Lutovsky, and Carol Colbeck (2007). They conducted a quantitative study at all 2- and 4-year institutions regarding dual credit participation in Pennsylvania. They surveyed institutional representatives regarding the number of students enrolled in dual credit programs at their college or university as well as the demographics of these students (for example, race, ethnicity, gender, and income status). The researchers found White and Asian students' participation in dual credit was disproportionately higher than Blacks and Latinos. White students accounted for 78% of the total public school enrollment, but represented 90% of the dual credit students. Asian students represented 2% of the total public school population, but represented 3% of dual credit students. However, Black students represented 15% of the high school population and only 5% of dual credit students. Similarly, Latino students made up 5% of the total public school secondary enrollment, but only 2% of dual credit students.

Research also shows inequitable educational gains as a result of dual credit participation (Struhl & Vargas, 2012; Taylor, 2015). More specifically, White students stand to gain greater long-term benefits when compared to students of color (Struhl & Vargas, 2012; Taylor, 2015). Ben Struhl and Joel Vargas (2012) conducted a quasiexperimental study in Texas and found White students who completed at least one dual credit class were 2.21 times more likely to enroll in college when compared to their White peers who did not complete dual credit. In contrast, African American students were 1.60 times more likely to enroll in college when compared to their African American peers who

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did not complete dual credit. These data suggest dual credit improved access opportunities for both groups of students, but White students benefitted more from these programs.

**Benefits and Challenges.** Limited research reveals mixed outcomes for different racial and ethnic groups upon matriculation in dual credit programs. For example, M. Allison Kanny (2015) identified benefits and liabilities in her qualitative study with five Latino high school seniors who participated in dual credit classes at a local community college. She found the Latino students benefitted from being exposed to the college environment because they learned about the “hidden curriculum” (that is, unspoken college expectations and practices). She also reported students learned how to manage the newfound independence and college responsibilities over the course of the term.

However, Kanny (2015) also noted three challenges: low grades, inability to transfer credits, and negative interactions with peers. Even though they could rationalize their bad choices (such as skipping the final) leading to poor grades in the dual credit classes as valuable lessons, some of her participants still had to contend with the aftermath of those decisions. Though they took these courses, in part, to impress college admissions committees, they worried that their poor grades in the courses would end up negatively affecting the strength of their college applications and overall GPAs. In addition, they learned that not all the courses would transfer, leaving them to question why they had been advised to take those courses. She also reported that these students felt that the “regular” community college students and faculty did not welcome them in the classes, because of their “immaturity” (Kanny, p. 66).

In summary, the present research on racial and ethnic groups reveals the most prominent challenge is access to dual credit programs. White and Asian students are overrepresented in dual credit, whereas African American and Latino students remain underrepresented. Even when students of color participate in dual credit, their White peers gain greater academic benefits (for example, enrollment in college). Further, the impact of low grades in dual credit courses may jeopardize their college careers. Future research is needed to investigate and identify the barriers confronting students of color who are interested in pursuing dual credit. Additional work can also explore why the long-term benefits are inconsistent between racial and ethnic groups.

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### ***First-Generation College Students***

First-generation college students, or students whose parents have not attended college (Nuñez, Cuccaro-Alamin, & Carroll, 1998), have gained increasing attention in higher education research (Terenzini, Springer, Yaeger, Pascarella, & Nora, 1996). National data on first-generation college students reveal these students tend to be older, married, with lower incomes and more dependents (Nuñez et al., 1998) than traditional college students. As the number of first-generation students continues to increase (Soria & Stebleton, 2012; Strayhorn, 2006), they face considerable odds enrolling and completing college (Choy, 2001; Lohfink & Paulsen, 2005; Pike & Kuh, 2005). For instance, they typically lack information on how to select a postsecondary institution as well as the process for applying to college (Saenz, Hurtado, Barrera, Wolf, & Yeung, 2007). They are less likely to take college admissions tests (for example, ACT or SAT) (Warburton, Bugarin, Nuñez, & Carroll, 2001), and when they do take one of these tests, they tend to score lower than their peers with college-educated parents (Chen & Carroll, 2005; Wirt et al., 2001). Once first-generation college students are enrolled, they often take remedial courses and earn fewer college credits than their non-first-generation college peers (Chen & Carroll, 2005).

Taking more rigorous coursework is one successful strategy for promoting college access and persistence among first-generation college students (Wirt et al., 2001). Dual credit programs offer a pathway for first-generation college students to enroll in academically challenging courses, learn about college early, and earn college credits. Most of the first-generation college student research has quantitatively examined the effects of dual credit on certain student outcomes (such as GPA and dual credits earned) (Woodcock & Beal, 2013). For example, Kanny (2014) examined the relationship between dual credit participation and students' first-year GPAs and campus engagement. She found first-generation college students to be one of the student populations that benefitted most from dual credit, especially related to educationally enriching experiences and grades. Brian An (2013a, 2013b) also investigated the effect of dual credit on first-generation college students' college readiness, college GPA, and degree attainment. An (2013b) found first-generation college students were less likely to require remediation if they earned dual credits

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and more likely to obtain a postsecondary degree when compared to their non-participating peers and students whose parents are college educated (An, 2013a, 2013b).

Other research on first-generation college students in dual credits is focused on their experiences in Early College High Schools (ECHSs), because ECHSs were designed to specifically address the academic and social needs of these students (Vargas, 2013). (For more information on ECHSs, see the third chapter.) A few of these studies have examined first-generation college students' experiences within these programs (Ongaga, 2010; Woodcock & Beal, 2013). In JoDee Baker Woodcock and Heather Olson Beal's (2013) study on ECHS graduates, first-generation college students identified several benefits to participating in the program and earning dual credits. These advantages included enrolling in classes with older students, which made the class more challenging; having the ability to participate in courses that were of interest; and gaining college knowledge so students knew what to expect when they enrolled in a 4-year institution. First-generation college students also appreciated the heightened independence they had as a result of a more flexible class schedule. The participants identified two reasons ECHSs were not for everyone. First, they found some of their peers could not manage their newfound independence, instead choosing to skip class. Second, attending an ECHS requires a lot of time, dedication, and sacrifice because of the academic demands of these schools.

**Benefits and Challenges.** Research on the experiences of first-generation college students reveals several key academic benefits as a result of participating in dual credit programs. The benefits include increased academic challenge while in high school as well as better preparation and less remediation when enrolled in college. Studies have also shown these student subpopulations earn higher first-year and cumulative GPAs in college, and they are more likely to persist and obtain their postsecondary degrees.

The two potential barriers for traditionally underrepresented students, specifically first-generation college students, are specific to the ECHS model. These dual credit programs provide students with greater flexibility in their schedule, which can be a challenge for students who struggle to manage

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their time wisely. Second, ECHSs are intense programs, often eliminating extracurricular activities in lieu of demanding college courses. This model may be difficult for students who are unwilling to forego the traditional high school experience (Tobolowsky & Ozuna, 2016). Researchers should further investigate the perceptions and experiences of ECHS stakeholders, including students, parents, teachers, and administrators, in order to inform campus practices.

### ***Low-Income Students***

Low-income students are those students whose family income is in the bottom quintile or 20% nationally (U.S. Department of Education, 2014b). Jon Erickson and Nathan Monell (2014) suggested this figure comes to less than \$36,000 a year. The representation of low-income students in higher education has declined in recent years. In 2011, low-income students represented 53.5% of recent high school completers enrolled in 2-year or 4-year institutions (U.S. Department of Education). However, by 2013 that number declined to 45.5% (U.S. Department of Education). Decreasing participation may be the result of concerns about student loan debt as well as the need to work to cover living expenses and dependent children (Gault, Reichlin, & Roman, 2014). Yet, obtaining a baccalaureate degree is more critical than ever because it provides an avenue to social mobility (Executive Office of the President, 2014). Dual credit programs are one pathway for introducing low-income students to college coursework, thus supporting their college access and persistence.

Recent research has revealed low-income students gain benefits from participating in or completing dual credits (An, 2013a, 2013b). In a quantitative study, An (2013a) used data from the National Education Longitudinal Study to investigate the influence of dual credit on low-income students' degree completion. He compared students from low-income families to middle-class and affluent families and determined dual credit had a significant positive effect on these students' degree attainment. It increased the students' probability of earning any type of postsecondary degree by 8% and obtaining a bachelor's degree by 7%. An (2013a) noted that these increases could be the

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result of a number of influences (that is, family, peer, and school personnel); however, he suggested dual credit may play a significant role for students within this socioeconomic bracket.

An (2013b) also investigated the relationship between students' socioeconomic status and academic performance (that is, first-year GPA) and college readiness (that is, likelihood of remediation). In this quantitative study, An used Beginning Postsecondary Students Longitudinal Study (BPS:04/09) and the 2009 Postsecondary Education Transcript Study (PETS:09) and found dual credit students earned a GPA that was 0.11 points higher than their peers who did not participate in dual credit. Participants also demonstrated a decreased need for remediation. When compared to nonparticipants, they were 6% less likely to need remedial courses.

Other researchers found similar results. For example, Karp et al. (2007) and others discovered that low-income students who complete dual credits are better prepared for college and earn higher GPAs in their first year than nonparticipating peers (An, 2013b). Karp and associates (2007) found dual credit had a greater effect on low-income students' first-year GPA, as well as cumulative GPA, when compared to dual credit high-income students (Karp et al., 2007). Moreover, An (2013b) investigated the effect of dual credit on low-income students and found it decreased the likelihood of remediation.

Despite the benefits low-income students reap from participating in dual credit programs, access remains a key issue (Hoffman et al., 2009; Meade & Hofmann, 2007; Museus et al., 2007). Museus and his associates (2007) examined low-income students' participation in dual credit by researching enrollment by poverty level. Students who received free or reduced-price lunch determined school districts' poverty level. The researchers found an inverse relationship between school district poverty levels and student participation in dual credit. School districts with the lowest levels of poverty had the highest representation in dual credit programs.

**Benefits and Challenges.** Research on low-income students who earn dual credits highlights the academic benefits of their participation. These advantages include increased likelihood to earn a postsecondary degree and

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higher GPA. Students were less likely to require remediation in college. More research is needed to understand how and why dual credit participation provides these academic gains.

These benefits aside, a key challenge emerged: access to dual credit. This is a critical barrier low-income students continue to confront. Further research is needed to understand the most effective and efficient strategies for promoting access to dual credit programs. Additionally, researchers should consider investigating the cause of the obstacles blocking low-income students' paths to dual credit.

## Gender Differences

Historically, research focused on the “gender gap” has illustrated the heightened representation of men in academic and professional fields (Lee & Ransom, 2011). However, more recently women have begun to outpace men in their enrollment and persistence in college. Mark Hugo Lopez and Ana Gonzalez-Barrera (2014) reported female high school graduates who immediately enrolled in college have increased over the past 20 years. In 1994, 55.4% of females compared to 44.6% of males enrolled in college in the fall after high school graduation (U.S. Department of Education, 2014c). More recently, in 2012, the proportion of females immediately enrolling increased to 56.8%, but the percentage of young men decreased to 43.2% (U.S. Department of Education, 2014c). This trend is expected to continue, and in 2024, the U.S. Department of Education (2014c) estimates female representation will constitute approximately 59% of the total enrollment in higher education institutions. The gender gap is particularly sobering for African American and Hispanic males who remain underrepresented in higher education (Lee & Ransom, 2011; Saenz & Ponjuan, 2009, 2011). In this section, we present research on the relationship between gender and dual credit outcomes.

Research examining the dual credit experiences and outcomes of female and male students has yielded mixed results. In terms of access, several

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researchers found female students are more likely to participate in dual credit programs (Eklund, 2009; Karp et al., 2007; Karp et al., 2008; Pretlow & Wathington, 2014). In Virginia, Joshua Pretlow and Heather Wathington (2014) discovered different levels of dual credit participation among male and female students. Female students represented 55.9% of dual credit students, whereas male students accounted for 44.1%. After a policy to increase access was implemented, female and male participation in dual credit essentially remained the same.

Some studies found female students gain greater benefits from participating in dual credit programs, while others have found these programs give an advantage to male students. Ganzart (2012) found all dual credit students enjoyed higher GPAs and an increased graduation rate, but female students with dual credits had higher first-year GPAs compared to their male counterparts. Ganzart also reported female students surpassed males in graduation rates. This finding is noteworthy because it reveals a long-term positive effect of participating in dual credit; yet these findings were not statistically significant, thus warranting future research.

In their report on dual credit in New York and Florida, Karp and others (2008) reported differing results. In New York, dual credit did not significantly affect outcomes for men or women. The authors attributed this result to the smaller sample size of New York participants (2,303 student versus 299,685 students in Florida sample). However, when Karp and others (2008) researched the larger Florida sample they found male students benefitted more from dual credit programs when compared to female students. More specifically, dual credit programs had greater effect on first-year GPA, cumulative GPA, and persistence into their second term of college when compared to their female peers (Karp et al., 2008).

### ***Benefits and Challenges***

The research examining men and women who participated in dual credit has produced highly variable findings. Although some studies indicate female students benefit more than men, others have found the reverse. In some instances, however, researchers did not find the benefits of dual credits to be significant for either group. More research should address the unique

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experiences of these student groups to provide a more in-depth portrait of their challenges and benefits in dual credit programs.

## **Dual Credits After Matriculation**

Some previous research noted the effects of dual credit after a student takes one or maybe two dual courses (Community College Research Center, 2012); however, our study (Tobolowsky & Ozuna, 2016) found that the number of dual credits earned can dramatically affect the college experience as well. We investigated the first-year experiences of 12 female students who enrolled in a Texas university with dual credits. The participants entered the university with between 15 to 78 dual credits, which influenced the students' academic and social transitions to college. Students who enrolled with fewer than 30 dual credits acclimated more easily to their new environment. Students who earned more than 30 dual credits, however, encountered challenges. The high number of dual credits led students to immediately enroll in advanced courses in their academic major, which created social difficulties when trying to connect with the older peers in their classes. Students with more than 30 dual credits also quickly advanced their time to degree, but with limited time on campus, students were unable to take advantage of other academic or professional opportunities (e.g., pursuing a minor or participating in an internship program).

### ***Benefits and Challenges***

Clearly, many students benefit from getting a head start on their college coursework, saving them considerable money and time. However, we found that students can take too many dual credit courses, which affects the quality of their college experience and potentially their future careers. This area is ripe for future research to help determine the optimum number and type of dual credit courses. Also, work should explore male students' enrollment patterns and their effect on the students' college transitions to see if gender plays any role in these decisions and the students' satisfaction with the ramifications of dual credits in college.

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## Conclusion

Over the past 30 years, dual credit programs have rapidly increased. All 50 states offer dual credit options (Education Commission of the States, 2015). These programs were originally intended to add increased rigor to high school curricula not challenging enough for high-achieving students. Now, most states have dual credit strategies to specifically broaden access and offer dual credit courses to traditionally underrepresented students (such as students of color, low-income students, first-generation college students, and academically lower achieving students) (Bragg et al., 2005). Despite these efforts, most dual credit participants are White and affluent (Greenberg, 1989; Museus et al., 2007). These students also stand to gain greater benefits from dual credit programs, compared to students of color, first-generation college students, and low-income students. These findings make it particularly critical that educational leaders and policymakers carefully consider access and outcomes for underrepresented student populations as they implement future dual credit policies and programs.

# Summary and Implications for the Future

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THE GOAL OF the book was to synthesize research on dual credit programs because they are fast becoming thought of as one of the key solutions to the nation's college access, cost, and completion problems. Despite its popularity, prior research on this curricular innovation has been limited and often contradictory. Although some studies reveal academic benefits (such as introducing a more rigorous curriculum in high school and saving students time and money in their pursuit of college degrees), others highlight critical challenges associated with dual credit programs. For example, questions regarding quality have emerged because of these programs' variability and the lack of national standards. The transferability of dual credits also has become an issue for many entering college students who took dual credit coursework. When courses do not transfer, students do not save money or time toward their degrees. There is also concern that students can take too many courses, which affects college transitions and major and career decisions. As a result, research on dual credit calls into question whether these programs actually promote access and preparation or address issues of cost and completion as originally thought.

Educators have noted that as programs proliferate around the country, the scholarship regarding them has fallen short. The limited scope of previous research makes it difficult to draw firm conclusions about which models provide advantages and/or disadvantages for which students, further

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complicating the dual credit picture. Therefore, in the next section, we offer some recommendations for future research and implications for the future of these programs.

## **Recommendations for Research**

Much of the research and policy analyses on dual credit programs offers either a macro or micro perspective. For instance, there are a number of studies that provide an overview of the distinct policies regarding teacher eligibility, cost, student eligibility, and other elements, by state. Other research focuses on dual credit in an individual school or by a single course, which has limited relevance to the field because of the unique aspects of that offering or that setting. Previous research took important first steps to expose the many variations of these courses, but now it is time to take the next step and explore how these differences affect student outcomes.

Following is a list of specific areas that warrant further investigation.

### ***High School-Based Research***

More research should explore the nuanced relationship between programmatic characteristics and specific student outcomes in order to further inform dual credit programs and policies. For instance, there is limited information on the dual credit experience at a traditional high school and at a high school center. These courses may be part of the students' regular schedule or offered on a Saturday. They may be taught by high school or community college faculty. Each of these variables could produce very different results. Therefore, we recommend future research explore each of these high school models to identify how the nuances affect the students' experience and their college success. Future research questions may include the following: How does the high school course offered in one high school versus the central high school model differ in student outcomes and course quality? How does the environment within these models affect student learning? What is the college trajectory of students who participate in different high school dual credit programs?

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### ***College-Based Research***

Prior research demonstrates most dual credit programs occur through campus-based credit programs at community colleges, and students typically gain the greatest benefits from enrolling in classes on a college campus (Karp, 2007). However, there is limited research on students who take dual credit courses on 4-year campuses. Although it is assumed that these courses are the most rigorous, there is very little research that explores dual credit at this location. Potential studies could include comparison studies about student experiences on 4-year campuses versus community colleges and high schools, the student experience with a 4-year college-based course, and differences in student outcomes by location. These studies would help tease out the unique contributions of each of these settings to the students' success.

### ***Instructor and Course Quality***

We suggest additional research on what has been the primary critique of dual credit programs—instructor and course quality. There are some studies that looked specifically at a chemistry class (White, Hopkins, & Shockley, 2013) or one writing class (Tinberg & Nadeau, 2013), but the distinct course designs limit the usefulness and generalizability of this work. Therefore, research that looks at several courses in specific disciplines would provide a better sense of what aspects proved helpful to discipline-specific students in their college preparation. Because dual credit students often get to advanced-level courses early in their college careers, it would be important to explore how these students do in these courses in comparison with students who followed a more traditional route. Further study could also investigate how instructors are prepared to teach these unique courses and how that preparation affects the success of their students, the challenges and opportunities they encounter in promoting college-level rigor with high school students, and their perceptions of student readiness through dual credit courses.

### ***College Access and Degree Completion***

Future scholarly work should also investigate the stipulated college access and degree completion outcomes of dual credit programs. These are explicitly stated goals of dual credit, and it is important for research to explore whether

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those outcomes are being met in different dual credit models, states, and student populations. Potential questions may address if students are better prepared for college and if they are enrolling and graduating at greater rates than nonparticipants. Additionally, research should examine these outcomes for students across the country. Previous studies have examined student outcomes in states such as New York and Florida, but scholars (Karp et al., 2007) have criticized this work, particularly Florida, because the state has adopted more rigorous requirements for student participation, which might account for their positive results. Future research questions might include: What is the relationship between college attendance and/or graduation and the academic strength of the student in high school? Does dual credit contribute anything unique to their success? Are students who are underrepresented on college campuses doing better than predicted after participating in dual credit? Additional research is needed to understand the detailed experiences of traditionally underrepresented students in each of these types of programs to develop the best strategies for ensuring equity and equality for diverse student populations.

### ***Policy Studies***

Dual credit is a structural innovation as much as a curricular one. It requires meaningful collaborations between sectors and the adoption of a different educational model that promotes a more streamlined process between K–12 and higher education that will assist students on their educational journeys (Karp, 2015). However, this is a revolutionary reform and dramatic changes are rarely easily adopted. Therefore, research that explores the collaborations themselves and how they were accomplished and what form they take may help other school districts and postsecondary institutions as they tackle the completion and retention issues on their campuses and in their states.

In addition, state-level dual credit policies are evolving. Therefore, it is critical that research keeps up with the changing political landscape. Large-scale studies that look broadly at the policies and the outcomes are necessary to gain insights into which elements of dual credit are most beneficial as these programs change over time.

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### ***Transitions to College***

Forthcoming studies should investigate dual credit students' K–16 transitions, including their college choice process, transition to college, and first-year experience. In our study (Tobolowsky & Ozuna, 2016), we interviewed first-year college students with dual credits and were surprised to find students with as few as 3 and as many as 86 dual credits upon matriculation. Both quantitative and qualitative research is needed to better understand how the number of credits earned and the types of courses taken within a specific dual credit program format affect the students' early college experiences.

Qualitative work exploring the experiences of the students, teachers, and administrators of these programs can identify aspects that hinder and help students in their success. Other studies can also qualitatively evaluate dual credit students' academic and social outcomes upon matriculation in a 4-year college or university and address the following questions: How do dual credit students develop a sense of belonging on campus? and How do students engage with their peers and faculty members? If a goal of dual credit programs is to socialize students to the college experience, further research should explore how the lessons learned in these programs manifest once enrolled.

### ***Postbaccalaureate Outcomes***

Finally, researchers can consider investigating the postbaccalaureate outcomes of dual credit students. Although dual credit programs can decrease the time to degree, our study (Tobolowsky & Ozuna, 2016) revealed students with more than 30 credit hours felt stifled in their academic path and were unable to maximize their college experience with academic minors or internship experiences. These findings highlight a major concern: Are dual credit programs accelerating students too quickly? Further studies are needed to determine how dual credits influence students' graduate or professional aspirations and enrollment, if at all.

Broadly stated, more quantitative research is needed to determine how the distinct variables associated with these courses (such as their location, student participation, course delivery, instructor eligibility, and funding) contribute to student success (that is, college enrollment, college graduation, and career choice). More qualitative work is needed to explore, in depth, the student

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experience: How do different student groups experience the wide range of dual credit offerings? How do the students describe their experiences in these very different environments?

## Future Considerations for Dual Credit

This section identifies and describes the future challenges and opportunities we foresee for dual credit programs as a result of this literature review.

There are five factors that we expect to propel growth in dual credit programs. First, the increasing need for a college degree and an educated workforce is a key driver in the growth of dual credit programs. The United States lags behind other countries in degree completion, and dual credit programs are an option to boost college graduation rates. Depending on the program model, dual credit programs offer substantial academic and social benefits. They challenge academically gifted students to accelerate through their coursework and more quickly pursue their degree. Middle- or lower-achieving students also benefit as these programs facilitate academic momentum that propels them to college. Further, by decreasing the time to degree students and families can save money on tuition.

It is this economic benefit of dual credit that is the second reason we anticipate future growth in these programs. College costs and student loan debts are of increasing concern to students and families, particularly from traditionally underrepresented backgrounds. The latest figures released reflect that the average college graduate in 2013 emerged with \$28,500 in student loan debt (Bidwell, 2014), which is an increase of approximately 24% from a decade earlier (Almanac of Higher Education, 2014; Bidwell, 2014). As a result of this reality, we have seen heightened focus on providing students with free tuition in community colleges.

Oregon just passed a bill that provides free community college tuition, at the expense of \$10 million to the state. This money will be applied to tuition costs not covered by other aid received by full-time students. Low-income, full-time students whose total tuition bill is paid for by state or federal grants will receive \$1,000 annually for books, course materials, and/or housing

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(Blumenstyk, 2015). In order to participate, students must have lived in Oregon for at least a year, graduated from high school within 6 months, and maintain a 2.5 GPA (Fox, 2015). The intention is to facilitate enrollment and graduation of all students, including low-income students (Blumenstyk). This initiative and others with a similar focus will further support the expansion of dual credit, because most of these courses are offered on community college campuses.

The lack of a required exam is the third key driver in the proliferation of dual credit programs. Some students may be reluctant to enroll in a course (for example, AP) where their future college credits hinge on one test. Therefore, dual credit will continue to be a popular alternative for students. However, even though students may be hesitant to pursue AP courses and tests, these programs offer standardization and quality control, two challenges dual credit programs continue to confront. As a result, we anticipate AP will remain a relevant acceleration option for high school students.

Fourth, dual credit programs will continue to grow with the rise of massive, open online courses (MOOCs) offered by for-profit companies, such as edX and Coursera (Davis, 2013). These companies provide an online platform for high school students to enroll in free, online classes, some of which count as college credits. Recently, 10 school systems and universities (State University of New York, Tennessee Board of Regents and University of Tennessee system, University of Colorado system, University of Houston system, University of Kentucky, University of Nebraska, University of New Mexico, University System of Georgia, and West Virginia University) partnered with Coursera to develop technology to address their specific educational technology needs, which may herald a new phase in the development of dual credit programs. Currently, the University of Kentucky is working with Coursera to develop MOOCs for students preparing to take college-level chemistry courses or the AP test. The University of Texas at Austin recently developed OnRamps, a “pioneering dual-enrollment program” (University of Texas at Austin, n.d.-b) that offers hybrid courses in five subject areas: English, precalculus, statistics, geoscience, and computer science. High school students receive instruction on their home campuses by highly trained high school instructors. OnRamps couples innovative pedagogies, such as

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inquiry-based and project-based learning, with engaging technology to prepare students for the rigor of college and gain digital expertise, which is critical for college and success after college. It also plans to engage a wide range of students thus increasing the diversity of the college-going population (University of Texas at Austin, n.d.-a). Although MOOCs have their critics with concerns that include high dropout rates (Liyanaguanawardena, 2013) and lack of rigor (Peterson, 2014), they may provide an avenue to earn college credit to a broader student population. Since access to dual credit programs is a demonstrated challenge, particularly for underrepresented student populations (Hoffman et al., 2008), dual credit MOOCs may be a successful strategy to address this concern. If so, then, in the near future, it is likely that there will be a surge in the number of these types of offerings.

Finally, we anticipate dual credit programs to be further influenced by entrepreneurs and their related foundations. For example, ECHSs emerged with funding and endorsements from the Gates Foundation, Ford Foundation, and others. These philanthropic organizations invested millions of dollars to promote early access to college credits. At present, ECHSs are growing at a relatively slow pace, but if there continue to be substantial financial investments in this initiative that should lead to the further development of these innovative programs.

Besides the benefits mentioned previously, we also foresee two challenges associated with the future of dual credit. One primary area of concern is the lack of quality control (for example, course rigor, instructor eligibility, and course transferability) in these programs. At this point, a dual credit program oversight organization or entity does not exist. States, local education agencies, and institutions of higher education are faced with the task of ensuring program quality, which has led to mixed results. The lack of quality control is particularly challenging when dual credit students seek to transfer their course credits. Dual credits are more likely to be accepted when students choose to attend in-state institutions, with a higher potential for problems arising for those attempting to leave the state for college. The inability to transfer dual credits can influence a student's college choice process, major and/or minor selection, and long-term college success. This is a sobering reality that must be addressed, especially for a program designed to facilitate student success.

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The second obstacle affecting the future of dual credit programs is the related costs, especially for enhanced comprehensive programs. MCHSs and ECHSs include intensive support systems to ensure students become college ready and subsequently enroll and persist in a postsecondary institution. Research shows these programs should hire and train outstanding faculty as well as offer students individualized instruction and precollege enrichment activities. These are expensive elements. We have seen if private funding withdraws its support, programmatic costs, coupled with decreased funding to community college partners, has led to some schools closing. This can limit the development of MCHSs and ECHSs in the future.

## Conclusion

These challenges lead to limited implications for practice at this point in the history of dual credit. The lack of any uniform standards complicates research on dual credit, much less using findings to help make data-driven decisions. Currently, it is unclear which specific program elements help which students at which locations. Yet, it seems unlikely that national standards will ever become a reality. Rather, the various formats and models may proliferate further, as evidenced by the most recent permutation of using MOOCs to deliver dual credit courses. Over time, as in a free market economy, some models will gain favor and others will fade away. What seems clear is that the goals that led to the rise of dual credit—access, cost, and college completion—will continue to spur its growth in the years to come.

# Notes

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1. No research has been done to compare the success of IB students to that of students who take dual credit as defined in this volume.

2. The federal government supported the development of dual credit courses for career and technical education (CTE) students with the passage of the Carl D. Perkins Career and Technical Education Act in 1984, which was reauthorized in 1998 and 2006. However, Haag (2015) states that there is a culture within CTE programs that does not expect students to be focused on college attendance. Thus, the structure and implementation of these programs are very different from other dual credit offerings.

3. In other instances, the high school or the college may lose funding that is linked to attendance numbers, because dual credit students may not count toward their total enrollment figures (Karp et al., 2004).

4. These data from the 2011 Postsecondary Education Quick Information System (PEQ-UIS) are based on 1,520 responding institutions from all postsecondary sectors (public and private, 2-year and 4-year institutions).

5. Another issue regarding funding policy is if the state pays both the secondary and postsecondary institution for the same students. This is called “double dipping” and is one reason these programs are not universally supported by state legislators (Bailey et al., 2002; Kim, 2008).

6. Although 20 states are unequivocal that dual credit students cannot take remedial coursework, 21 states have no policy, and 7 states permit students to participate in both dual credit and developmental coursework (ECS, 2013b). The rationale, according to ECS, is that college preparation courses should not be delayed until college.

7. Marken and others (2013) do not distinguish dual credit enrollment, so it is unclear how many of these students are taking AP or IB courses within this percentage.

8. There is research about individual course offerings in the high school, but they did not explore teacher qualifications (for example, Jacob White, Robert Hopkins, II, and Denise Shockley (2014) explored a dual credit chemistry course in terms of student performance and course completion rates.)

9. Because there is blurring of the lines between MCHS and ECHS, the numbers are not clear. Some schools may have the ECHS name, but are listed with the Middle College Consortium.

10. At ECHS, the courses must be transferable, counting for both high school and college credit (Middle College National Consortium, n.d.-a), so students often graduate high school with an associate’s degree in hand.

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11. Some ECHS models include an additional year of high school, so that students are able to graduate from high school with more college credits. They cannot be eligible to graduate as a senior and must still take at least one high school course in their fifth year. These 5-year programs are beneficial for students who do not intend to attend college and are also helpful for the college-going students because they reduce the costs of college. However, the challenges associated with these programs include reducing the time for major and career exploration and affecting college choice options, because of credit transferability issues (Barnett et al., 2015).

12. It should be noted that there is no date associated with these data and that there are other findings on the website that offer different figures. We chose the more modest statistics.

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