EARLY AND MIDDLE COLLEGE MODEL—SUMMARY OF THE LITERATURE

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WHAT ARE EARLY AND MIDDLE COLLEGES?

Early College High Schools (early colleges for short) are one of the most promising models of implementing dual enrollment. Because the term early college is used differently in different states, it is important to define the term for purposes of this literature review.

The term early college can mean anything from simply being another name for the state's dual enrollment program (as in Maine) to a very specific school model with specific requirements (e.g., Texas and other states). For purposes of this review, I consider the criteria used by most states: early colleges are focused schools (or, in some cases, programs) that blur the line between high school and college and that have an expectation that all students in the program will earn a substantial amount of college credits, frequently up to an associate degree or two years of college credit at the same time that they earn their high school diploma. Early colleges are generally targeted at students who are underrepresented in college, such as those who are first generation college-goers, economically disadvantaged or members of racial and ethnic groups underrepresented in college. Early colleges also take a more comprehensive approach than just providing students with dual-enrollment courses; they usually implement comprehensive academic and affective supports and may be expected to make other changes in curriculum, instruction, and the professional working environment.

These schools may often be called middle colleges as well, although in some states there are differences between early and middle colleges. For example, in North Carolina, middle colleges start in grade 11 while early colleges start in grade 9. Historically, some groups saw the distinguishing factor between early and middle college as the population served, with early colleges serving gifted students and middle colleges serving underrepresented students. As the model has evolved, the distinction between the two has become blurred and I use the term early college here to encompass both.

Table 1 below summarizes different key definitions of early colleges in states with some of the higher levels of early college implementation.

OVERVIEW AND METHODOLOGY OF LITERATURE REVIEW

Because early colleges are a comprehensive, generally whole-school, approach to implementing dual enrollment, the literature covers a wider range of issues than just those related specifically to college-level coursetaking in high school. Additionally, studies that look at the impact of early colleges are really looking at the impact of taking dual enrollment courses within a context of broader school changes and structures.

I used the search terms "early college", "early college high school", "middle college" and "middle college high school" in the following online databases: Academic Search Complete, ERIC, Education Source, and PsychInfo. I included peer-reviewed journal articles, dissertations, formal evaluation reports, and book chapters (when available). I reviewed the abstracts for a total of 185 references for their focus, methodology, and key findings including: 5 books or chapters; 60 dissertations; 2 general interest journals; 86 peer-reviewed journal articles; and 32 reports. I reviewed the full content of the articles or reports for the impact and cost studies, in addition to the complete articles for most of the peer-reviewed articles.

LITERATURE REVIEW FINDINGS

Despite their relatively recent expansion, there is a fair amount of research on early colleges, likely at least partially due to their innovative nature. Much of the early literature was descriptive in nature, describing programming and understanding student experiences. Approximately a fifth of the citations reviewed were program descriptions. The early college model did benefit early on from being the subject of a large-scale descriptive evaluation of the national Early College High School Initiative.

Table 1: Early College Definitions and Policies across Selected States

Characteristic	National Early College Initiative Core Principles (Berger et al., 2009)	Indiana	North Carolina	Michigan (also uses term Middle College)	Texas
Legislation/ policies	NA	Authorizing legislation, Core Principles for "endorsing" early college	Authorizing legislation for Cooperative Innovative High Schools, schools must apply to state to operate, recommended Design Elements	Authorizing legislation, schools must apply to state to operate	Authorizing legislation, schools must apply to state to be designated as an early college and must meet specific Design Elements articulated in a Blueprint
Structure	NA	Grades 9-12; generally implemented in comprehensive schools	Small schools (no more than 100/grade), often on college campuses, option for fifth year, same flexibility as charter schools	Can be stand-alone school or programs within a larger school, must offer 5th year; Recommended to be on college campus	Stand-alone schools, programs within schools, grades 9-12
Target population	Serve students underrepresented in higher education	First generation, economically disadvantaged, underrepresented minorities	First generation, at-risk of dropping out, student who benefit from accelerated instruction	NA	At-risk students and students who are underrepresented in college
Partnerships	LEA, IHE, community	Relationships with IHE, business	Partner with IHE, recommend business partnerships	Formal agreement with IHE	Formal agreement with IHE
Coursetaking expectations	1-2 years of college credit	Associate degree or 30 hours of gen. ed. coursework; core high school courses	Associate degree, technical certificate, two years of gen. ed courses	60 transferable credits, associate degree, technical certificate, registered apprenticeship, curriculum to meet h.s. graduation requirements	Associate degree, 60 transferable credits, curriculum to meet h.s. graduation requirements
Supports	Comprehensive academic and affective supports	Comprehensive academic and affective supports	Comprehensive advising and support, parental outreach	Recommended small size to create a learning community	Comprehensive supports, including individualized plans
Other	Advocate for supportive policies	Emphasis on rigorous instruction, college-going culture, leadership, data use	Emphasis on innovative and college-ready instruction, leadership and professional practice	Recommended multiple opportunities for student assessment, democratic school governance, and professional development	Leadership team, must offer TSI exam with preparation, must have college liaison, professional development

Funded by the Bill & Melinda Gates Foundation, the seven-year program evaluation explored many aspects of implementation of the early college and provided descriptive information about student outcomes (American Institutes of Research & SRI International, 2008; Berger et al., 2009; Berger, Adelman, & Cole, 2010). These reports provide a strong and extensive snapshot of the early college work through 2009. The findings suggested that early college students had positive academic outcomes and were more likely to enroll in college, particularly two-year colleges, than similar populations nationally, although this study could not account for differences in student characteristics between early college attendees and potential comparison students. Key findings relative to implementation indicated that the model was more effective when it was on a college campus, suggesting the "power of the site." Early colleges provided extensive supports but were also trying to create independent learners. The evaluation also found that collaboration between secondary and postsecondary education was not as strong as it needed to be.

As the number of early colleges has also expanded, the amount of research has significantly grown, and researchers have begun looking at more specific aspects of the early college and have also been able to look more rigorously at the outcomes. Overall, the research findings could be considered very positive with almost all articles describing positive outcomes and experiences for the participating students. There are a small number of articles that take a more critical approach, investigating what happens if students are not successful in the model or the stresses that can be associated with it. The overall positive findings from the early college model have led the federal government to regularly reference it as an example of a proven model (Benson, 2021).

Because the early college is a more comprehensive model that includes dual enrollment as only one component, the research covers a wider range of topics, including topics that are more tangentially related to dual enrollment. This literature should not be discarded, however, as the research can be considered as providing insights not only on dual enrollment but on the other factors that might be

necessary to facilitate the success of dual enrollment opportunities. For example, early college researchers have sought to understand issues such as college readiness (how to prepare students for college courses) as well as how to support students who are taking dual enrollment courses. These are issues that are critical to the successful expansion of dual enrollment but may not always be considered by traditional dual enrollment researchers.

Because of the range of topics covered by the early college literature, I am focusing this review on what we have learned about early colleges in five areas: 1) student participation; 2) impacts; 2) their cost and cost-benefits; 3) various aspects of implementation; 4) students' experiences; and 5) efforts to scale up early colleges in other settings. At the end of this literature review, there is a complete list of references. The hope is that this list will be a resource for other researchers who might be interested in very specific parts of the early college experience.

Participation

By design, early colleges are focused on students who are underrepresented in college. The national evaluation found that early colleges, at least in the early years, had higher enrollments of minority students and low-income students than the districts in which they were located (American Institutes of Research & SRI International, 2008). More recent studies suggest that early colleges served students whose race and income levels were representative of the districts in which they were located; however, early colleges also had lower proportions of students with disabilities, male students, and students who had 8th grade achievement below grade level (Edmunds, Unlu, Furey, Glennie, & Arshavsky, 2020). One qualitative study examined the recruitment and admissions procedures of five early colleges in Texas and found that, although early college staff understood the target population, the admissions process favored students who were more academically inclined and motivated, primarily because those were students who were seen as best able to succeed in the model (Duncheon, 2020).

It is important to note that there is no national database on early colleges, so it is not clear how many of these schools exist, although individual states such as Texas, North Carolina and Michigan keep track of their numbers. The American Institutes of Research (AIR) has received a new grant from the Institute of Education Sciences that will cover the development of such a database so this information will likely be available within the next couple of years.

Impact

The structure of early colleges—most of which are schools of choice with more applicants than they can accommodate—lends itself more easily than regular dual enrollment to a rigorous examination of the impact of the model. There are three large-scale impact studies that used lottery-based experimental designs to examine the impact of the model on students' high school and postsecondary outcomes. The first is a seventeen-year study of more than 4,000 students who applied to 19 early colleges in North Carolina (Edmunds et al., 2012; Edmunds et al., 2020; Edmunds, Unlu, et al., 2017). The second is a retrospective study of 2,500 students in 10 early colleges throughout the country, including some from the North Carolina study (Berger, Turk-Bicakci, Garet, Knudson, & Hoshen, 2014; Berger et al., 2013; Haxton et al., 2016; Song & Zeiser, 2019) and the third is an experimental study of the P-Tech model, a specific early college model that has a strong focus on work-based learning (Rosen et al., 2020). In all three studies, students applied to attend an early college and then were randomly selected either to attend or not to attend. The studies then compared results for those accepted through the lottery (treatment group) and those not accepted (control group). All three studies have been determined to meet What Works Clearinghouse standards without reservations, which means that the results can be considered to provide valid evidence of effectiveness.

Both of the broader early college studies have relatively consistent findings with positive impacts on both high school and college outcomes. The Edmunds et al. study found early college students had fewer absences and suspensions in high school and that students were more likely to

complete the high school courses necessary for entrance into a four-year university (Edmunds et al., 2012; Edmunds, Willse, Arshavsky, & Dallas, 2013). The AIR impact study found that early colleges had a positive impact on students' English Language Arts test scores but no impact on math test scores (Berger et al., 2013). Both studies found that students were more likely to remain in and graduate from high school, although the difference was not always significant at the traditional .05 level (Berger et al., 2013; Edmunds, Unlu, et al., 2017). Both studies found that early college students were more likely to enroll in postsecondary education and receive a postsecondary credential with a larger impact on attainment of associate degrees (Edmunds et al., 2020; Song & Zeiser, 2021). Edmunds et al. also found that students completed their degree in less time and that treatment and control students had the same GPAs (Edmunds et al., 2020). The P-Tech study was not able to look at postsecondary outcomes but did find that P-Tech students earned more credits than comparison students and were more likely to pass the English-Language Arts Regents exam with a score making them eligible for college-level courses (Rosen et al., 2020).

Given early college's emphases on underserved students, these studies have also looked at results for sub-groups. Results suggest that outcomes are generally more positive for students in the target population. The Edmunds et al. study found stronger impacts for economically disadvantaged students; this population was the only sub-group that had a statistically significant impact of four-year degree attainment within six years of graduating from high school (Edmunds et al., 2020). The AIR study also found that the impact on college degree attainment was significantly stronger for low-income students, minority students and for students with higher incoming achievement (Haxton et al., 2016).

There were also four other quasi-experimental studies that looked at the impact of the small early college model in various settings, two of which suffered from small samples. Two were rigorously designed quasi-experimental studies that looked at the impact of all the early colleges in place in North Carolina at the time of the study (Lauen, Barret, Fuller, & Janda, 2017; Swiderowski, Lauen, Fuller, &

Unlu, 2021). On average, these studies came to the same conclusions as the experimental studies, including positive results for student achievement in English and suspensions (Munoz, Fischetti & Prather, 2014; Chapa, Galvan-De Leon, Sols, & Mundy, 2014) and positive impacts on postsecondary enrollment and degree completion (Lauen et al., 2017). A very recently published article from the North Carolina quasi-experimental study reported positive impacts from the early college on voting participation and reduced participation in the criminal justice system with higher impacts for black males and economically disadvantaged white students (Swiderowski et al., 2021).

Funding and Cost

When early colleges first started, Jobs for the Future, one of the early supporters of the model, contracted for a cost analysis. The estimates suggested that early colleges cost more to operate than regular high schools, particularly those associated with a four-year university (Webb, November, 2004). Since then, there have been only two other published estimates of the cost of the early college model. One was an estimate done by the Washington Institute for Public Policy (2019), which found that early colleges cost an additional $4,200 per student but the return on investment was 17:1. Similar findings came from a cost study that was part of AIR's experimental impact study that found that the early college cost more to implement than a regular high school (roughly $1,000 for each student annually) but that the return on investment was very high, on the order of $15 in returns for every $1 invested (Atchison, Zeiser, Mohammed, Levin, & Knight, 2019). This second study did have its strengths, in that it was able to connect to impact estimates that were determined experimentally; however, it did face challenges in that they were only able to use existing administrative data, which is likely to have not captured all of the relevant expenses associated with the model.

There was one additional small qualitative case study that described how early colleges were funded in one state (Leonard, 2013).

Implementation

Much of the existing research focuses on varying aspects of implementation of the early college, including supports provided to students, college readiness, the secondary-postsecondary partnerships, and a limited amount of research on instructional practices. This section presents a brief overview of this literature.

Supports. Nine papers had a specific focus on the supports that students received in the early colleges, although other papers included references to supports in the context of a larger picture. These papers were qualitative or descriptive in nature and described the type of supports that were provided to students. Both early college experimental studies explored the extent of supports students received and found that early college students reported more support than students in the control group (Berger et al., 2013; Edmunds et al., 2013).

Partnerships. Nine papers had a primary focus on partnerships. These studies were all qualitative or used a combination of surveys and interviews to understand the nature of the relationships between the high school and college. Most of these studies tried to identify factors that were associated with successful collaboration. For example, one study identified themes from interviews that suggested that success factors included a history of collaboration, collaboration that was seen as in the organizations' self-interest, a favorable political climate, an appropriate cross section of members, a shared stake in the process and outcomes, shared decision-making, concrete goals and objectives, and a shared vision (Bush, 2017).

College Readiness. Nine papers had a primary focus on college readiness with half of the articles using some quantitative measures of college readiness, finding that early college students were either better or similarly prepared as students who entered college via a traditional route. For example, one study compared performance on reading and math end-of-course exams for early college students with comparison students, controlling for background achievement. The study found that early college

students were more prepared in reading but not in math (Chapa et al., 2014), which is similar to the findings from the AIR study (Berger et al., 2013). Three of the studies also explored conceptualizations of college readiness, with the general consensus that college readiness needs to be considered as a multifaceted approach (Duncheon & Munoz, 2019; Edmunds, Arshavsky, et al., 2017; Reynolds, 2017). One article used data from an experimental study and found that early college students were more likely to be ready for college on a variety of factors; this article also described strategies that early colleges were using to promote students' college readiness (Edmunds, Arshavsky, et al., 2017).

Other implementation issues. Researchers have also engaged in some exploration of other issues associated with implementation. The national evaluation conducted classroom observations of high school and college classes, focusing on instruction. Approximately half of the lessons showed high rigor although only a third showed high support for rigor from the instructors with support lower from the college instructors (American Institutes of Research & SRI International, 2008). One dissertation looked at perceptions of instruction and three papers looked at literacy instruction or experiences.

Leadership in the early college was a popular dissertation topic with eight doctoral candidates and two peer-reviewed articles qualitatively exploring leadership styles or characteristics of leaders. For example, one dissertation examined the characteristics of middle or early college principals (Rich, 2012).

Student experiences

As noted earlier, a substantial portion of the research focuses on understanding and describing students' experiences, particularly for African-American students or Hispanic/Latino students. Twenty-two studies, almost all of which were based on qualitative student interviews, focused primarily on students' experiences, although other papers may have included descriptions of student experiences as part of a larger discussion. These articles generally highlighted the positive experiences that students had as part of the early college. For example, one article described how the early college helped Black males conceptualize themselves more as scholars (Adams, Robinson, & Lewis, 2020). One article

reported results from a survey conducted as part of the North Carolina experimental study, examining differences in experiences between early college students and control students attending regular high schools. This article found that early college students reported more support, higher expectations, better relationships with staff and more rigorous and relevant instruction (Edmunds et al., 2013). One article reported on Latina students' experiences in an early college, describing how the staff and the small size of the school supported the creation of social capital, although some teachers did have low expectations for students (Locke, Maxwell, & Tello, 2017).

Some studies did identify challenges for students. One study described how a key challenge was managing a demanding college schedule while in high school (Allen, 2016). Another reported that early college students were more likely to experience stress and had fewer social experiences than students who entered college via a more traditional route (Oliver, Ricard, Witt, Alvarado, & Hill, 2010). A third study found that a poor experience in a college-level science class made early college students less likely to take subsequent science classes (Alaie, 2011).

There is a small amount of research that explores students' experiences once they leave the early college and enroll in further postsecondary education. One study interviewed three early college graduates, who all felt they were academically and socially prepared, and did not believe that they were missing anything because of their participation in the early college (Woodcock & Beal, 2013). The Edmunds et al. experimental study did look at students' academic performance in college and found there was no difference in GPA between early college and control students (Edmunds et al., 2020). However, there has not yet been any large-scale examinations of students' post-early college experiences.

Scaling up early colleges

Given the positive outcomes of the small early college model, there has been considerable interest in attempting to scale up the model to serve larger numbers of students. The U.S. Department

of Education has funded five large-scale efforts to implement early college strategies in comprehensive high schools; two of those efforts—one implemented in Texas and Colorado and one in Michigan and Connecticut—have completed evaluations.[1] Both efforts sought to change comprehensive high schools by fostering a more college-going culture, changing instructional practices, increasing student support, expanding the number of students taking dual enrollment courses, and changing the way school staff worked together.

Overall, the evaluations found that it was challenging to implement the changes required by early colleges in comprehensive high schools. The evaluation of the Early College Expansion Project, which was implemented in Texas and Colorado, found no impacts on the percentage of students successfully completing a college preparatory course of study and no impact on the number of Carnegie units earned in college-level courses, although there were already very high rates of students taking college-level courses (close to 90% in Texas). In Texas, treatment schools had lower high school dropout rates than comparison schools, but the opposite was seen in Colorado (Edmunds, Klopfenstein, Lewis & Hutchins, 2018). The evaluation of the STEM Early College Expansion Project was only able to rigorously examine outcomes of the work in Michigan. Findings from that quasi-experimental study showed that the model was able to expand access to college courses and increase the number of credits earned by students, although there was no significant impact on dropout rates (Edmunds, Dudley, Hutchins, Arshavsky, & Lewis, 2019).

RECOMMENDATIONS FOR FUTURE RESEARCH

Based on the currently published research, I have identified several gaps for future research around early college including: 1) understanding more about the short- and long-term impact of the model, including any potential trade-offs; 2) further examining the cost and funding mechanisms for

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[1] The first effort, in North Carolina, was not completed because of the bankruptcy of the implementing agency. The report for another effort in the Columbus Ohio area will be finished by the end of June 2021, and the final effort, in Indiana, is underway.

early colleges; 3) exploring early college students' experiences in postsecondary and career once they leave the early college; 4) trying to determine which aspects of the model are most important to its success; 5) examining the impact, cost, and implementation of different types of early college models; and 6) conducting more nuanced explorations of equity within the model. These topics apply to the early college model in its entirety; there are many other research questions that still need to be addressed that focus on specific components of the early college model (e.g., effective instructional practices to prepare students for dual enrollment courses; examining student support strategies; teaching students self-advocacy).

The short- and long-term impact of early colleges

Although the early college impact literature is relatively strong because of the existence of several high quality experimental and quasi-experimental studies, there is still some information that is missing. In terms of short-term outcomes, there has been less attention paid to the impact of the model on outcomes that go beyond existing administrative data, such as social-emotional outcomes or academic identity. These factors could be considered as mediating factors influencing longer-term outcomes and understanding more about them might also help illuminate the mechanisms by which the early college model is having positive impacts.

The existing studies have not yet looked at longer-term outcomes, such as earnings and employment, which would serve as a clear indication of the success of the model. Both the Edmunds et al. and AIR experimental studies have been funded to look at the longer-term impacts so these data will likely be available in the next two to four years.

Even though studies have overall found positive impacts, it will be important to look at outcomes that could determine whether there are any trade-offs from the truncated, more intense educational experience represented by the early college. For example, graduating early college students enter college at a younger age, which might lead to lower levels of social adjustment. Additionally, early

college students may not have access to the variety of extracurriculars or electives in comprehensive high schools; as a result, it is possible that they may not have had the same opportunity to develop skills in areas such as the arts, foreign languages, technical fields, or athletics. Impact studies should look at the extent to which early college students are missing any of these skills.

It is helpful to note that many of the small early colleges use lotteries that could form the basis of small randomized controlled trials by individuals doing dissertations or small-scale research projects. Although the large-scale studies have been expensive, it would be possible to do much less expensive experimental studies in individual early colleges or in early colleges in a region that could explore some of these other impacts.

Cost, cost-benefit, and funding of early colleges

Research on the cost of early colleges is very limited and has so far been restricted to a review of administrative data. No one has yet done an examination of the cost of the early college model using the ingredients method, which is seen as the goal standard for cost studies (Institute of Education Sciences, 2020; Levin & Belfield, 2015). An ingredients cost study is being conducted of North Carolina's model as part of an IES-funded evaluation of the state's dual enrollment program that is being led by the same team that did the randomized controlled trial so this information should be available in the next two years; however, this type of study should be replicated in different states.

The cost studies done to date have suggested that the early college does cost more than a regular high school experience, which is not unexpected given that the model includes several additional resource-intensive components, such as the cost of dual enrollment courses, a fifth year (as required in Michigan), or specialized staffing. Nevertheless, these studies have also shown the that additional costs are outweighed by the benefits of the model. As estimates of the costs are updated and particularly, as the impacts are updated to include longer-term outcomes, it would be important to similarly update the cost-benefit analyses.

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Given the extra costs associated with early colleges, it would be important to provide states with guidelines of different ways to fund early college. To date, there has been no systematic examination of how early colleges are funded.

Early college students' postsecondary experiences

Most of the current research on students' experiences has focused on their time in the early college. There is very little that looks at how students experience the transition to college or on how guidance and supports may need to be revised to accommodate the different high school experiences these students are bringing with them. Research in this area should continue to explore the extent to which students are prepared for various aspects of the postsecondary experience, including their academic readiness, their social readiness, their ability to navigate the logistical factors of colleges, and their organizational and time management skills.

There are several unique factors associated with early college students' transition to postsecondary education. First, because the students earn so many different credits, colleges and universities may not know how to treat students, whether as incoming freshman or as transfer students. If they are treated as transfer students, they may lose access to the many services that freshmen get. As a result, it will be useful to explore how universities treat entering early college students and which approach might be the most useful.

There is evidence to suggest that, even though early college students can earn up to two years of college credit while in high school, the average savings in time to degree at a four-year institution is slightly less than one semester (Edmunds et al, 2020). It will be useful to examine why this is happening. For example, there could be challenges with students transferring their credits. To test this hypothesis, researchers could look at the transferability of dual enrollment credits earned by college students and the extent to which those credits can be applied to college majors. Alternately, students may not want

to shorten their time in college and may want to experience the full four years. Qualitative interviews with students to understand their motivation could help illuminate some of these issues.

Determining which aspects of the model are most important

Early colleges are much more comprehensive than regular dual enrollment, as college-level courses are placed within a broader school environment. As shown in Table 1, early colleges include a variety of different components such as student supports, instructional changes, and explicit instruction in college readiness skills. The impact studies that have been done to date test the overall impact of the early college model; they have not been able to identify which components of the model are necessary or most useful for students' success. Efforts to scale up the model in various settings would benefit from studies that attempt to tease out the relative importance of different components of the early college.

Formally testing the importance of different aspects of a comprehensive model requires large-scale studies that can systematically vary implementation of specific components. These types of studies are rare and extremely expensive. Nevertheless, researchers could do some exploratory analyses that collect data on implementation of specific components and connect those data to outcomes. These types of analyses would not be definitively causal, but they could still provide suggestive information about specific components that might then be more rigorously tested. As the number of early colleges grow, this kind of research becomes more possible.

Impact, cost, and implementation of different early college models

Much of the existing research on early colleges has been done on the small school model that focuses on preparing students for transfer to a four-year institution. There are a burgeoning number of alternative models that have different goals and/or different structures. For example, there are some early college models, such as P-Tech, that have more of a career-oriented focus with an emphasis on technical credentials. Outside of the existing P-Tech study, there have not been any impact studies that focus specifically on these models. Because these models have different emphases than those that

might focus primarily on attainment of an associate degree or transfer to a four-year institution, it is likely that the postsecondary and workforce outcomes for these models will be different.

In addition to looking at models with a career-focus, there should also be additional research that focuses on the different structural approaches to early college implementation. As described above, there have been some evaluations of efforts to implement early college strategies in comprehensive high schools, but these studies have only been able to look at high school outcomes. It would be useful to see if these efforts have had any longer-term impacts.

Additionally, one of the more likely models for scaling up is the academy model in which a subset of students receive an early college-like experience in a high school. This model is being implemented in Indiana and Michigan, among other states. There is an evaluation of an ongoing Education Innovation Research grant project in Indiana that is testing the impact of this model, but additional research should be done that explores the impact of this specific design. Examining the impact of the academy version of the model may also help shed light on the additional issue of whether a critical aspect of the early college model is its location on a college campus or if the environment can be replicated successfully in non-college settings.

Issues of equity

Given that most early colleges are, by design, focused on students who are underrepresented in college, issues of equity are regularly considered throughout the literature. As described earlier, the impact studies all include sub-group analyses that look at outcomes for the model's specific target populations and much of the qualitative literature on students' experiences centers the lived experiences of students of color.

One interesting finding in the Edmunds et al. study is that students of color outperform or perform similarly to white students on some outcomes in the early colleges. For example, 85.5% of underrepresented minority students (Black, Hispanic/Latino, Native American) graduated from high

school compared to 85.0% of non-underrepresented students (Edmunds, Unlu, et al., 2017) while 25.0% of underrepresented students graduated from a four-year college compared to 25.1% of non-underrepresented students (Edmunds et al., 2020). This suggests that there may be issues of motivation or multiple identities. As a result, studies may want to take a more nuanced approach to sub-group analyses, perhaps using techniques such as cluster analyses to understand students' overlapping identities.

Conclusion

Early colleges present both advantages and disadvantages for researchers seeking to look at dual enrollment. First, the fact that these are often schools of choice allows researchers to conduct rigorous impact studies that take advantage of cases when schools used random selection as part of the admissions process. This situation has led to multiple high quality, rigorous impact studies that provide unbiased estimates of the impact of the model. Second, the comprehensive design of the early college provides a context that allows researchers to explore the broader factors associated with implementation of dual enrollment. Early college researchers are paying attention to topics such as readiness, supports, instruction, staffing, partnerships and many other issues.

On the flip side, their comprehensive nature can also be a disadvantage. For example, the impact studies indicate that the model in its entirety is effective; these research studies should not be necessarily construed to demonstrate the effectiveness of dual enrollment by itself.

References Reviewed (cited ones have asterisks).

Citation	Type	Primary Topic
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*Adams, T. R., Robinson, D. E., Lewis, C. W. (2020). Developing scholar identities: A Case Study of Black Males in an Early College High School. *Journal of African American Males in Education, 11*(1), 6-22.	Peer reviewed	Academic identity
Adams, T. R., Williams, B. K., Lewis, C. W. (2020) "That's the point of going": A qualitative inquiry into the experiences of Black males at an Early College High School. *Journal of Advanced Academics,* 31(1), 14-34.	Peer reviewed	Student experiences
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*Alaie, A. (2011). Early College High Schools: Lessons learned in the college science classroom. *Urban Education. 46* (3) 426-439.	Peer reviewed	Outcomes
Alford, D. (2016) Support for success: The self-perceptions of early college high school students regarding support systems. Dissertation Abstracts International Section A: Humanities and Social Sciences, Vol 77(1-A). Lamar University - Beaumont, Educational Leadership,	Dissertation	Supports in the ECHS
Allen, A.& Roberts, J. K.(2019). Space and place in rural program implementation: A look at two Early College programs in Ohio. *Rural Educator, 40* (1), 29-44	Peer reviewed	Program implementation
Allen, A. & Roberts, J. K. (2017) Evaluating implementation of the Early College Model through a theory of change. *International Journal of Educational Reform, 26*(3) 250-257.	Peer reviewed	Policies
*Allen, T. O. (2016). Managing expectations and striving to succeed: A portrait of a Latino male student's experience in an Early College High School. *Journal of Applied Research in the Community College, 23* (2), 93-105.	Peer reviewed	Student experiences
Alvarado, B. & Peebles-Wilkins, W. (2003) Social Work in Early College High Schools? Children & Schools, Vol 25(3) pp. 131-134.	Peer reviewed	Social workers
*American Institutes of Research, & SRI International. (2008). *2003-2007 Early College High School Initiative Evaluation: Emerging patterns and relationships*. Washington DC and Arlington, VA: Authors. Retrieved from www.air.org/sites/default/files/downloads/report/ECHSI_Synthesis_Report_FINAL_0.pdf	Report	Program implementation and outcomes
Anthony, J. (2013). A study of Black adolescent males' literacy experiences in Middle College High School. PoQuest LLC, Ph.D. Dissertation, Capella University.	Dissertation	Literacy
Arshavsky, N., Edmunds, J. A., M., L. C., Corritore, M. (2014) Success in the college preparatory mathematics pipeline: the role of policies and practices employed by three high school reform models. *School Effectiveness & School Improvement, 25* (4) 531-554.	Peer reviewed	Program implementation
Assar, K. E. (1991) Dimensions of Diversity: The Fenway Middle College High School Comes to Bunker Hill Community College. Unpublished report.	Report	Program description

Citation	Type	Primary Topic
Atchison, D., Zeiser, K. L., Mohammed, S., Knight, D.; Levin, J. (2020) The Costs and Benefits of Early College High Schools. *Education Finance and Policy*, https://doi.org/10.1162/edfp_a_00310	Peer reviewed	Cost of ECHS
*Atchison, D.; Zeiser, K.L.; Mohammed, S., Levin, J. & Knight, D. (2019) The Costs and Benefits of Early College High Schools. American Institutes of Research. https://eric.ed.gov/contentdelivery/servlet/ERICServlet?accno=ED60624 2	Report	Cost of ECHS
Barnett, E., Maclutsky, E., & Wagonlander, C. (2015) Emerging early college Models for traditionally underserved Students. *New Directions for Community Colleges, 169*, 39-49.	Peer reviewed	Early college designs
Beall, K. A. (2016). Early College High School: Closing the Latino achievement gap. ProQuest LLC, Ed.D. Dissertation, University of California, Los Angeles.	Dissertation	Supports in the ECHS
Becker, J. (2019) Bard College: An ecosystem of engagement. *Journal of Community Engagement & Higher Education; 11* (1) 38-52,	Peer reviewed	Civic engagement
Benson, G., McClendon, S.C. (2008) Engaging a Systemic Partnership to Increase College Access and Success. *Metropolitan Universities; 19* (4), 57-62	Peer reviewed	Program description
*Berger, A. R., Cole, S. Duffy, H., Edwards, S., Knudson, J., Kurki, A., Golden, L., Lundeen, J., Poland, L., Rojas, D., Shkolnik, J., Stone, C. K., Turk-Bicakci, L., Yoon, K.S., Adelman, N., Cassidy, L. Keating, K., & Nielsen, N. (2009). *Fifth annual Early College High School Initiative evaluation synthesis report. Six years and counting: The ECHSI matures.* Washington, DC: American Institutes of Research. https://eric.ed.gov/contentdelivery/servlet/ERICServlet?accno=ED51409 0	Report	Implementation and outcomes
*Berger, A., Adelman, N., Cole, S. (2010) The Early College High School Initiative: An overview of five evaluation years. *Peabody Journal of Education, 85* (3) 333-347.	Peer reviewed	Program implementation and outcomes
*Berger, A., Turk-Bicakci, L., Garet, M., Song, M., Knudson, J., Haxton, C., Zeiser, K., Hoshen, G., Ford, J., Stephan, J., Keating, K.,& Cassidy, L. (2013). *Early college, early success: Early College High School Initiative Impact Study.* Washington, DC: American Institutes of Research. https://eric.ed.gov/contentdelivery/servlet/ERICServlet?accno=ED57724 3	Report	Impact
Berksteiner, E. J. (2013). *Leadership styles at Middle- and Early-College Programs: A quantitative descriptive correlational study.* ProQuest LLC, Ed.D. Dissertation, University of Phoenix.	Dissertation	ECHS Leadership
Born, T. (2006). Middle and early college high schools: Providing multilevel support and accelerated learning. *New Directions for Community Colleges, 135*, 49-58	Peer reviewed	Supports in the ECHS
Bradshaw, G. (2018) *A qualitative study to determine how to close the Hispanic students achievement gap with Early College High School as a resource.* ProQuest LLC, Ed.D. Dissertation, Northcentral University.	Dissertation	Supports in the ECHS

Citation	Type	Primary Topic
Brewer, D.J.; Stern, S. & Ahn, J. (2007) An introduction to "Early College". *Education Finance and Policy, 2* (2), 175-187.	Peer reviewed	Program description
Bridges, J. M. (2017). *Bridging special education services from secondary to postsecondary life: A case study of one Early College High School district in South Texas*. ProQuest LLC, Ed.D. Dissertation, Texas A&M University - Kingsville.	Dissertation	Transition to postsecondary education for students with disabilities
Bridges, J. M.; Maxwell, G. M. (2015). Early College High Schools: A proposed solution to secondary transition services. *Journal of Case Studies in Education, 8.* Retrieved from https://files.eric.ed.gov/fulltext/EJ1110965.pdf	Peer reviewed	Transition to postsecondary education for students with disabilities
Brisk, M. E. (1996) *The multicultural Middle College High School: An attempt at creating an innovative bilingual high school*. Providence, RI: Brown Univ., Education Alliance for Equity in the Nation's Schools, New England Desegregation Assistance Center. https://eric.ed.gov/contentdelivery/servlet/ERICServlet?accno=ED42333 5	Report	Bilingual education
Bruce, L. M. (2007). *Perceptions, motivations, and achievement of African American students enrolled in a middle college high school.* Dissertation Abstracts International Section A: Humanities and Social Sciences, Vol 68(4-A), pp. 1394.	Dissertation	Student experiences
*Bush, V. B. (2017) Building as we go: Secondary schools, community Colleges, and universities in partnership--The Early College High School Initiative. *Community College Journal of Research and Practice, 41* (10), 623-638.	Peer reviewed	Partnership
Calhoun, Y., Snodgrass Rangel, V., & Coulson, H. (2019) Educational resilience at risk? The challenges of attending an Early College High School. *Urban Review, 51 (*2), 301-325.	Peer reviewed	Resilience
Carroll, K. C. (2007). *Student experiences and sense-of-self at an early college high school.* Dissertation Abstracts International Section A: Humanities and Social Sciences, Vol 67(9-A), 2007. pp. 3276. University of North Carolina at Greensboro	Dissertation	Student experiences
Carter, A. L. (2012) *Collaborative leadership practices among Ohio's Early College High School principals and their post-secondary partners.* ProQuest LLC, Ph.D. Dissertation, Bowling Green State University.	Dissertation	Partnership
Caruthers, L., Poos, B., Friend, J. (2021). Transitory voices: The journey from urban high Schools to an Early College Academy Program. *Urban Education, 56* (2), 289-317.	Peer reviewed	Student experiences
Cerrone, K. L. (2012) *Investigating the transition experiences of Early College High School seniors to college STEMM majors: A case study.* ProQuest LLC, Ph.D. Dissertation, University of Akron.	Dissertation	Transition to postsecondary education for STEMM majors
Chambers, S. (2012) Innovation in the Early College Model: Hartford Magnet Trinity College Academy. *Contemporary Issues in Education Research, 5* (2), 127-130.	Peer reviewed	Program description
*Chapa, Marisa, Galvan-De Leon, Vanessa, Solis, Judith, Mundy, Marie-Anne (2014) College readiness. *Research in Higher Education Journal, 25*.	Peer reviewed	College readiness/ Impact

Citation	Type	Primary Topic
Cherney, I., Douglas, L., Fischer, E., & Olwell, R. (2020) Early College High School/Dual enrollment 2.0: Evidence-based approaches to engage youth and families for educational, career, and community development. *Metropolitan Universities, 31* (2), 18-32.	Peer reviewed	Implementation of ECHS
Cole, S., Duffy, H., Keating, K., & Berger, A. (2012) Student experiences in Early College Schools. In *Pressing forward: Increasing and expanding rigor and relevance in America's high schools.* Smerdon, B. & Borman, K. M., (Eds); pp. 151-168; Charlotte, NC, US: IAP Information Age Publishing.	Book	Student experiences
Cravey, I. (2008). *Voices of choice: An ethnography of the Early College High School student.* Dissertation Abstracts International Section A: Humanities and Social Sciences, Vol 69(2-A), Stephen F. Austin State University	Dissertation	Student experiences
Cullen, C. (1991). Membership and engagement at Middle College High School. *Urban Education, 26* (1), 83-104.	Peer reviewed	Partnership
Cunningham, C. L. & Wagonlander, C. S. (2000) Establishing and sustaining a Middle College High School. *New Directions for Community Colleges, 111*, 41-52.	Peer reviewed	Program description
Devathosh, U. N. (2019) *The impact of a blended curriculum and selected demographic factors on early college students' academic achievement in chemistry*. Dissertation Abstracts International Section A: Humanities and Social Sciences, Vol 80(6-A)(E), Texas Southern University	Dissertation	Technology
Duncheon, J. C. (2020). "We are exposed to that college environment": Exploring the socialization of Early College High School students. *Community College Review, 48* (2), 173-194.	Peer reviewed	Socialization
*Duncheon, J. C. (2020). What students do Early College High Schools Serve? Unpacking social constructions of the target population. *Education Policy Analysis Archives, 128* (173)	Peer reviewed	Student population
*Duncheon, J. C. & Muñoz, J. (2019). Examining teacher perspectives on college readiness in an Early College High School context. *American Journal of Education, 125* (3), 453-478.	Peer reviewed	College readiness
Duncheon, J. C. & DeMatthews, D. E. (2018). Early College High School principals: Preparing historically underrepresented students for college success. *NASSP Bulletin, 102* (4), 269-290.	Peer reviewed	ECHS leadership
Edmunds, J. A. (2012). Early colleges: A new model of schooling focusing on college readiness. *New Directions for Higher Education, 158,* 81-89*.	Peer reviewed	Program description
Edmunds, J. A. (2016) Early college puts youth on a college track. *Phi Delta Kappan, 97* (5), 38-42.	Journal	Impact
*Edmunds, J. A., Bernstein, L., Glennie, E., Willse, J., Arshavsky, N., Unlu, F., Bartz, D., Silberman, T., Scales, W. D., Dallas, A. (2010) Preparing students for college: The implementation and impact of the Early College High School Model. *Peabody Journal of Education, 85* (3), p348-364.	Peer reviewed	Impact
*Edmunds, J. A., Klopfenstein, K., Lewis, K. & Hutchins, B.C. (2018). *Transforming comprehensive high schools into Early Colleges: The impacts of the Early College Expansion Partnership*. Greensboro, NC: The SERVE Center, University of North Carolina at Greensboro.	Report	Impact of scale-up ECHS

Citation	Type	Primary Topic
*Edmunds, J. A., Willse, J., Arshavsky, N. & Dallas, A. (2013). Mandated engagement: The impact of Early College High Schools. *Teachers College Record, 115* (7), p1-31.	Peer reviewed	Impact
*Edmunds, J. A., Arshavsky, N., Lewis, K., Thrift, B., Unlu, F. & Furey, J. (2017). Preparing students for college: Lessons learned from the Early College. *NASSP Bulletin, 101* (2), 117-141.	Peer reviewed	College readiness
*Edmunds, J. A., Dudley, W. N., Hutchins, B.C., Arshavsky, N., & Lewis, K. (2019). *Improving high schools through STEM Early College strategies: The impact of the STEM Early College Expansion Partnership (SECEP).* Greensboro, NC: SERVE Center at University of North Carolina at Greensboro	Report	Impact of scale-up ECHS STEM
*Edmunds, J. A.; Unlu, F., Furey, J., Glennie, E., & Arshavsky, N. (2020) What happens when you combine high school and college? The impact of the Early College Model on postsecondary performance and completion. *Educational Evaluation and Policy Analysis, 42* (2), 257-278.	Peer reviewed	Impact
*Edmunds, J. A.; Unlu, F., Glennie, E., Bernstein, L., Fesler, L., & Furey, J. (2017). Smoothing the transition to postsecondary education: The impact of the Early College Model. *Journal of Research on Educational Effectiveness, 10* (2), 297-325.	Peer reviewed	Impact
*Edmunds, J. A., Bernstein, L., Unlu, F., Glennie, E., Willse, J., Smith, A. & Arshavsky, N. (2012) Expanding the start of the college pipeline: Ninth-grade findings from an experimental study of the impact of the Early College High School Model. *Journal of Research on Educational Effectiveness, 5* (2), 136-159.	Peer reviewed	Impact
*Elias, A. (2018). *A comparative study of economically disadvantaged and English Language Learner graduates completing advanced/dual credit Courses in Early College High Schools and traditional high schools in South Texas.* ProQuest LLC, Ed.D. Dissertation, Texas A&M University – Kingsville	Dissertation	College readiness
Esquivel, H.R. (2019). *A phenomenological study: The associate degree pathway experiences of 12th grade Hispanic male Students in an Early College High School Program.* ProQuest LLC, Ed.D. Dissertation, Concordia University (Oregon)	Dissertation	Student experiences
Farrell, T. L. (2009). *The Early College High School and student self-perceptions of college readiness*. ProQuest LLC, Ed.D. Dissertation, University of Houston-Clear Lake.	Dissertation	College readiness
Fischer, E. & Olwell, R. (2018) What higher education can learn from Early College High School Programs. *Academic Leader, 34* (3). 3-7.	Peer reviewed	Program description
Fischetti, J., MacKain, S. & Smith, R. (2011). Mr Watson, come here . . .: The performance of early college students in their first year at the university and the challenge to P-16 education. *Improving Schools, 14* (1), 48-64	Peer reviewed	College readiness
Furness, R. K. (2017). *Digital college readiness: A multi-case study of Early College High School graduates' perceptions of the demands and opportunities to learn.* ProQuest LLC, Ph.D. Dissertation, Texas State University - San Marcos.	Dissertation	Digital literacy

Citation	Type	Primary Topic
Garcia, N., Jones, D.; Challoo, L.; Mundy, M. & Isaacson, C. (2018). A study of Early College High School students' persistence towards attaining a bachelor's degree. *Research in Higher Education, 34.*	Peer reviewed	Outcomes
Gates Rice, L. (2016). *Principals' perceptions of the early college high school experience in selected North Carolina early college high school*. Dissertation Abstracts International Section A: Humanities and Social Sciences, Vol 77(5-A)	Dissertation	ECHS Leadership
Gilson, C. M. (2019) Case study of a new engineering Early College High School: Advancing educational opportunities for underrepresented students in an urban Area. *Journal of Advanced Academics, 30* (3). 235-267.	Peer reviewed	Program description
Glennie, E. J.; Mason, M., Edmunds, J. A. (2016) Retention and satisfaction of novice teachers: Lessons from a school reform Model. *Journal of Education and Training Studies, 4* (4), 244-258.	Peer reviewed	ECHS staff
Glick, M. (2006) Teaching Early College High School at LaGuardia Community College. Boston, MA: Jobs for the Future, Boston, MA. https://eric.ed.gov/contentdelivery/servlet/ERICServlet?accno=ED491904	Report	Program description
Greene Nolan, H. (2020). Rethinking the grammar of student-teacher relationships. American Journal of Education,126 (4) 549-572.	Peer reviewed	Student-staff Relationships
Harper, D. J. (2012). *Graduates' and faculty's perceptions of an urban community college-based Early College High School Program*. ProQuest LLC, Ph.D. Dissertation, Walden University.	Dissertation	Student and faculty perceptions
Hartwell, J.A. (2010) *Administrators' perceptions regarding middle college/early college academic support strategies and student performance*. Dissertation Abstracts International Section A: Humanities and Social Sciences, Vol 70(8-A), 2010. pp. 2821.	Dissertation	Supports in the ECHS
*Haxton, C., Song, M., Zeiser, K. Berger, A., Turk-Bicakci, L.. Garet, M.S.; Knudson, J, & Hoshen, G. (2016). Longitudinal findings from the Early College High School Initiative Impact Study. *Educational Evaluation and Policy Analysis, 38* (2), 410-430.	Peer reviewed	Impact
Healy, J. J. (2009). *A case study of students entering an early college high school: Changes in academic behavior perceptions.* ProQuest LLC, D.Ed. Dissertation, University of Oregon	Dissertation	Transition to high school
Heidemann, V. M. (2010). *Evaluation of academic policy formulation and implementation Transmountain Early College High School, El Paso, Texas*. ProQuest LLC, Ed.D. Dissertation, The University of Texas at El Paso.	Dissertation	Partnership
Herrington, T. M. (2021) *Lived experiences of early college high school students at a rural high school in Southeast Texas.* Dissertation Abstracts International Section A: Humanities and Social Sciences, Vol 82(4-A)	Dissertation	Student experiences
Hoffman, N., Vargas, J., Santos, J. (2009) New directions for dual enrollment: Creating stronger pathways from high school through college. *New Directions for Community Colleges, 145*, 43-58.	Peer reviewed	Early college designs

Citation	Type	Primary Topic
Hoffman, N., Vargas, J. (2005). *Integrating Grades 9 through 14: State policies to support and sustain Early College High Schools.* Boston, MA: Jobs for the Future. https://eric.ed.gov/contentdelivery/servlet/ERICServlet?accno=ED48616 1	Report	Policies
Holding-Jordan, K.L. (2018). *Perceptions of effective teaching practices in early college high schools: A juxtaposition of the perceptions of students and their college instructors.* Dissertation Abstracts International Section A: Humanities and Social Sciences, Vol 78(10-A)(E),	Dissertation	Instruction
Houston, A.V., Byers, S. M., Danner, D. (1992). A successful alternative to traditional education: Seattle Middle College High School at Seattle Central Community College. *Journal of Negro Education, 61*, 463-470.	Peer reviewed	Program description
Howley, A., Howley, M. D., Howley, C. B. & Duncan, T. (2013). Early college and dual enrollment challenges: Inroads and impediments to access. *Journal of Advanced Academics, 24*(2) 77-107.	Peer reviewed	Partnership
Hungerford-Kresser, H. (2010). Navigating Early College: Literacy experiences and identity negotiations of Latina⁄o Students. *Journal of College Literacy & Learning, 36*, 3-13.	Peer reviewed	Literacy
Hutchins, B.C., Arshavsky, N. & Edmunds, J. A. (2019) Why some early college high school students do not transition to a 4-year college: An exploration of perceived barriers and schooling experiences on students' transition plans. *Psychology in the Schools, 56* (7), 1117-1138.	Peer reviewed	Transition to postsecondary
Jacobs, J. (2016) High school of the future. *Education Next, 16* (3), 44-50.	Peer reviewed	Program description
Jett, N. & Rinn, A. N. (2020) Student experiences and outcomes of Early College: A systematic Review. *Roeper Review, 42* (2), 80-94.	Peer reviewed	Student experiences
Jobs for the Future (2006). *Smoothing the path: Changing state policies to support Early College High School. Case studies from Georgia, Ohio, Texas, and Utah.* Boston, MA: Author. https://eric.ed.gov/contentdelivery/servlet/ERICServlet?accno=ED49418 7	Report	Policies
Jobs for the Future (2009). *A portrait in numbers*. Boston, MA: Author. https://eric.ed.gov/contentdelivery/servlet/ERICServlet?accno=ED50474 5	Report	Program description
Jordan, A. J. (2017). *Early College High Schools: The efficacy of African Americans*. ProQuest LLC, Ed.D. Dissertation, Wingate University.	Dissertation	Outcomes
Jordan, W.J., Cavalluzzo, L., & Corallo, C. (2006) Community college and high school reform: Lessons from five case studies. *Community College Journal of Research & Practice, 30* (9), 729-749.	Peer reviewed	Program description
Kaniuka, T. S. & Vickers, M. (2010). Lessons Learned: How Early College High Schools offer a pathway for high school reform. *NASSP Bulletin, 94* (3), 165-183.	Peer reviewed	Supports in the ECHS
Kearse, D. (2013) *An evaluation of the Savannah Early College Program: An action oriented research approach.* ProQuest LLC, Ed.D. Dissertation, Fielding Graduate University.	Dissertation	Student experiences

Citation	Type	Primary Topic
Keelen, C,R. (2019). *Reading and writing instruction in the early college through the lens of critical pedagogy.* Dissertation Abstracts International Section A: Humanities and Social Sciences, Vol 80(6-A)(E)	Dissertation	Literacy
Kirkham, L. P. (2017) *An examination of Indiana Early College High School students who attended Purdue University between 2006 and 2015.* Dissertation Abstracts International Section A: Humanities and Social Sciences, Vol 78(5-A)(E).	Dissertation	Transition to postsecondary
Kisker, C.B. (2006). Integrating high school and the community college. *Community College Review, 34* (1), 68-86.	Peer reviewed	History of early colleges
Kulak, A., Dougher, S., Lupro, M. M. & Taylor, S. (2018) Modify and adjust: Senior inquiry as a transformative whole-school program for race and social justice. *JGE: The Journal of General Education, 67* (1/2), 122-135.	Peer reviewed	Equity focus
*Lauen, D.L., Fuller, S., Barrett, N. & Janda, L. (2017). Early Colleges at scale: Impacts on secondary and postsecondary outcomes. *American Journal of Education, 123* (4), 523-551.	Peer reviewed	Impact
Le, C. (2012). *Launching Early College districtwide: Pharr-San Juan-Alamo's "College for All" strategy*. Boston, MA: Jobs for the Future. https://eric.ed.gov/contentdelivery/servlet/ERICServlet?accno=ED537264	Report	Scaling up early colleges
Le, C. & Frankfort, J. (2011). *Accelerating college readiness: Lessons from North Carolina's Innovator Early Colleges.* Boston, MA: Jobs for the Future. https://eric.ed.gov/contentdelivery/servlet/ERICServlet?accno=ED520005	Report	Program description
Leonard, J. (2013) Negotiated issues in an Early College Partnership: Description and understanding through interorganizational theory. *Current Issues in Education, 16* (3), 1-19.	Peer reviewed	Partnership
*Leonard, J. (2013). *Funding Early College High School: Hold harmless or shared commitment*. Education Policy Analysis Archives, 21 (46), 1-19.	Peer reviewed	Funding
Lieberman, J. (1985). Combining high school and college: LaGuardia's Middle College High School. *New Directions for Teaching & Learning, 24*, 47-57.	Peer reviewed	Program description
Lieberman, J. (1986) *Middle College: A ten year study*. New York: LaGuardia Community College	Report	Program description
List, J. S., Bryant, Brent (2009) Integrating Interactive Online Content at an Early College High School: An Exploration of Moodle, Ning and Twitter. Meridian (10979778); 2009, Vol. 12 Issue 1	Peer reviewed	Technology
Locke, L. A., Stedrak, L. J., & Eadens, D. (2014). Latina students, an Early College High School, and educational opportunity: A case study. *Journal of Cases in Educational Leadership, 17* (1), 59-71.	Peer reviewed	Student experiences
Locke, L.A. & McKenie, K.B. (2016) "It's like giving us a car, only without the wheels"; a critical policy analysis of the early college programme. *International Journal of Leadership in Education*, *19* (2), 157-181.	Peer reviewed	Equity focus

Citation	Type	Primary Topic
*Locke, L. A., Maxwell, G., & Tello, M. (2017). "...you don't come to this school...to show off your hoodies": Latinas, community cultural wealth and an Early College High School. *The Qualitative Report, 22*(9), 2404-2427.	Peer reviewed	Equity focus
Loflin, J.W. (2014). Aerobic capacities of Early College High School Students. *Community College Journal of Research and Practice, 38* (11), 1008-1016	Peer reviewed	Physical fitness
Mansell, N. (2012) *Dual credit: Traditional and Early College High School in a rural north central Texas town.* ProQuest LLC, Ed.D. Dissertation, Texas A&M University - Commerce.	Dissertation	Enrollment in dual credit
Martin Valdez, M. (2009). *The role of Early College High School in P-16 success: A case study of students' perceptions of Mission Early College High School effectiveness*. ProQuest LLC, Ed.D. Dissertation, The University of Texas at Austin.	Dissertation	Operational effectiveness
Martinez, E. (2021). *The development of a principal's conceptual framework within an early college high school.* Dissertation Abstracts International Section A: Humanities and Social Sciences, Vol 82(1-A). The University of Texas at El Paso,	Dissertation	ECHS Leadership
Mayo, T. (2012). *Kentucky Middle College High Schools: Analysis of academic achievement and educational plans of Middle College High School students in Kentucky*. ProQuest LLC, Ed.D. Dissertation, University of Kentucky.	Dissertation	Student outcomes
McAdams, L. A. (2010). *Congruence of perceptions among Texas Early College High School leadership teams.* ProQuest LLC, Ed.D. Dissertation, Tarleton State University.	Dissertation	ECHS leadership
McCorry-Andalis, C. (2013). *Academic and social adjustment of students transitioning from an Early College High School Program to an institution of higher education*. ProQuest LLC, Ed.D. Dissertation, University of Texas at El Paso.	Dissertation	Transition to postsecondary
McDonald, D. & Farrell, T. (2012). Out of the mouths of babes: Early College High School Students' transformational learning experiences. *Journal of Advanced Academics, 23* (3), 217-248.	Peer reviewed	Student experiences
Michaud-Wells, A. (2016). *Building adaptive capacity of pathways in Technology Early College High School stakeholders: A multiple-case study on the influence of performance, leadership, and organizational learning.* ProQuest LLC, Ed.D. Dissertation, Manhattanville College.	Dissertation	Adaptive nature of early college
Miratrix, L., Furey, J., Feller, A. Grindal, T., & Page, L. (2018). Bounding, an accessible method for estimating principal causal effects, examined and explained. *Journal of Research on Educational Effectiveness, 11* (1), 133-162,	Peer reviewed	Methodology
Mollet, A. L.; Stier, M. J.; Linley, J. L. & Locke, L. A. (2020) "I didn't become a professor to teach high school": Examining college educators' perceptions of culture in Early College High Schools. *Equity & Excellence in Education, 53* (1-2), 229-243.	Peer reviewed	College faculty's perceptions
Muñoz, M. D. (2011) *Early College High Schools established from 2006 through 2008 in El Paso County, Texas: Discovering factors contributing to Hispanic student success.* ProQuest LLC, Ph.D. Dissertation, New Mexico State University.	Dissertation	Supports in the ECHS

Citation	Type	Primary Topic
*Muñoz, M.A., Fischetti, J. C. & Prather, J.R. (2014) An Early College Initiative in an urban, high-poverty high school: First-year effects on student achievement and non-academic indicators. *Journal of Education for Students Placed at Risk, 19* (1), 36-52.	Peer reviewed	Impact
Ndiaye, M. & Wolfe, R. E. (2016). Early College can boost college success rates for low-income, first-generation students. *Phi Delta Kappan, 97* (5), 32-37.	Journal	Early college designs
Newton, A. (2008) *Empowering students: How Georgia College Early College changes student aspirations.* Boston, MA: Jobs for the Future. https://eric.ed.gov/contentdelivery/servlet/ERICServlet?accno=ED500547	Report	Program description
Newton, A. & Vogt, K. (2008). *Ensuring college success: Scaffolding experiences for students and faculty in an Early College School.* Woodrow Wilson National Fellowship Foundation. https://eric.ed.gov/contentdelivery/servlet/ERICServlet?accno=ED536863	Report	Program description
Nodine, T. (2010). *College success for all: How the Hidalgo Independent School District is adopting Early College as a district-wide strategy.* Boston, MA: Jobs for the Future. https://eric.ed.gov/contentdelivery/servlet/ERICServlet?accno=ED520015	Report	Program description
Nodine, T. (2011). *Making the grade: Texas Early College High Schools prepare students for college.* Boston, MA: Jobs for the Future. https://eric.ed.gov/contentdelivery/servlet/ERICServlet?accno=ED520007	Report	College readiness
North, C. (2011) *Designing STEM Pathways through Early College: Ohio's Metro Early College High School.* Boston, MA: Jobs for the Future. https://eric.ed.gov/contentdelivery/servlet/ERICServlet?accno=ED523098	Report	Program description
O'Connor, Bennett (2018). Factors Contributing to Science Self-Efficacy in an Early College High School Setting. ProQuest LLC, Ph.D. Dissertation, Texas Woman's University	Dissertation	Science self-efficacy
*Oliver, M., Ricard, R.J., Witt, K.J., Alvarado, M. & Hill, P. (2010) Creating college advising connections: Comparing motivational beliefs of Early College High School students to traditional first-year university students. *NACADA Journal, 30* (1) 14-22.	Peer reviewed	Student motivation
Olsen, L. (2010) Aztec Middle College: High school alternatives in community colleges. *Community College Journal of Research and Practice, 34* (8), 662-675.	Peer reviewed	Program description
Omer, A., Fisher-Ari, T., Killacky, J., & Angel, R. (2017). "This is my family outside of my family": Care-based relating in a model early college high school. *Education Policy Analysis Archives, 25* (61/62), 1-38.	Peer reviewed	Student-staff relationships
Ongaga, K. O. (2010) Students' learning experiences in an Early College High School. *Peabody Journal of Education, 85* Issue 3, p375-388	Peer reviewed	Student experiences
Parsons, J.W. (2008). *The middle college high school: A case study*. Dissertation Abstracts International Section A: Humanities and Social Sciences, Vol 68(10-A) University of Southern California	Dissertation	ECHS Leadership

Citation	Type	Primary Topic
Pitchford-Nicholas, G. J. (2015). How African American and Hispanic high school students in an urban Charter High School May Benefit from the Early College High School Model of Receiving College Credits? ProQuest LLC, Ed.D. Dissertation, Cardinal Stritch University.	Dissertation	Student perceptions of college credits
Pollock, Catherine Fairley (2009). The Impact of Exposure to Early College Students on Community College Student Academic and Social Integration. ProQuest LLC, Ed.D. Dissertation, Western Carolina University.	Dissertation	Influence of ECHS on adult students
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Shepperson, T.L., Skepple, R. & Smith, S. (2016). When community support fails: How a local early college program failed to gain traction. in Building and maintaining collaborative communities: Schools, university, and community organizations. Slater, Judith J., (Ed); Ravid, Ruth, (Ed); Reardon, R. Martin, (Ed); pp. 73-83; Charlotte, NC, US: IAP Information Age Publishing	Book	Scaling up early colleges
Shorter, J. R. (2013*). A comparative analysis of college entrance examination scores and retention of early and middle college high school graduates and traditional high school graduates attending Historically Black Colleges & Universities*. Dissertation Abstracts International Section A: Humanities and Social Sciences, Vol 74(1-A)(E)	Dissertation	College Readiness
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*Swiderowski, T., Lauen, D. L., Fuller, S. C., & Unlu, F. (2021—in press). A path towards citizenship: The effects of early college high schools on criminal convictions and voting. *Social Science Research.* doi:https://doi.org/10.1016/j.ssresearch.2021.102584	Peer reviewed	Impact
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*Washington State Institute for Public Policy (2019). *Early college high school (for high school students).* http://www.wsipp.wa.gov/BenefitCost/Program/789	Report	Cost of ECHS
Watlington, T. B. Sr. (2008). *The impact of a multicultural curriculum upon student achievement: Perceptions of potential dropouts who graduated from North Carolina's first early/middle college high school.* Dissertation Abstracts International Section A: Humanities and Social Sciences, Vol 69(6-A), University of North Carolina at Chapel Hill	Dissertation	Multicultural curriculum
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Citation	Type	Primary Topic
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Wyont, S. S. (2017). *The feasibility of implementing Early College instructional strategies and design principles in traditional high schools as a reform model.* ProQuest LLC, Ed.D. Dissertation, Gardner-Webb University.	Dissertation	Scaling up early colleges
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