

# Mandated Engagement: The Impact of Early College High Schools

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**Background:** *Early college high schools, small schools that blur the line between high school and college, have been obtaining very strong results. This paper uses the frame of student engagement to posit an explanation for the success of these schools.*

**Purpose:** *This paper examines the impact of early college high schools on indicators and facilitators of engagement in the ninth-grade. The paper also looks at how early college students perceive these facilitators of engagement.*

**Participants:** *The main sample for this study includes students who applied to an early college high school and went through a lottery process. Student who were accepted through the lottery are the treatment students and those who were not accepted form the control group.*

**Intervention:** *Early colleges are small schools, often located on college campuses, that aim to provide a rigorous course of study with the goal of ensuring that all students graduate with a high school diploma and two years of university transfer credit or an associate's degree. Serving students in Grades 9-12 (or 13), the schools are targeted at students who typically are under-represented in college.*

**Data Collection and Analysis:** *The study uses administrative data submitted to the North Carolina Department of Instruction, including suspensions and attendance data.*

The study team also administered an original survey to treatment and control students that included scales on indicators and facilitators of engagement. Both the administrative and survey data were analyzed using multiple regression. Finally, the study team collected qualitative data from interviews with early college students.

**Results:** Early college students had better attendance, lower suspensions, and higher levels of engagement than control students. Compared to the control students, early college students also reported higher levels of all of the facilitators of engagement examined, including better relationships with teachers, more rigorous and relevant instruction, more academic and affective support, and higher expectations.

**Conclusions:** Students in early colleges experienced overall higher levels of engagement on a variety of dimensions. The qualitative data suggest that early colleges make concerted and purposeful efforts to engage students in school. These efforts seem to almost require that students are active participants in school; in other words, early colleges can be seen as essentially “mandating engagement.”

## INTRODUCTION

“There are no failures at this school. They help you. They will make you win. They won’t let you fail anything. It’s just not an option.”—Student at Russell Early College

Early college high schools, small schools that blur the line between high school and college, have been obtaining very strong results. A large-scale federally-funded experimental study conducted by the authors of this paper has found that these schools have increased the proportion of students progressing in a college preparatory course of study and have resulted in more students staying in school (Edmunds, Bernstein, Unlu, Glennie, & Smith, et al., 2012; Edmunds, Bernstein, Unlu, Glennie, & Willse, et al., 2012). This is occurring despite the fact that the schools are serving many students who are underrepresented in college, including minority students, low-income students, and those who are the first in their family to attend college.

When we present these outcomes to different audiences, we inevitably are asked how these schools are getting these results. Because our experimental design applies only to the early college high school model as a complete package, we cannot definitively state which aspects of the school in which combination are causing which impacts. Nevertheless, we have developed a theory that a large part of the model’s success is due to what we call “mandated engagement.” While student engagement, particularly at the high school level, is considered something that really “cannot be legislated” (National Research Council and the Institute of Medicine, 2004, p. 13), we believe that the success of early college high schools is due in no small part to the fact that these schools essentially require students to

engage with the schooling experience in a variety of ways. In the words of one of the students we interviewed, “You can’t hide.”

In this article, we extrapolate upon this idea of “mandated engagement” within the context of early college high schools by examining what Appleton, Christenson, and Furlong (2008) call indicators of engagement and facilitators of engagement. Indicators of engagement are actions that students may take or perceptions or attitudes they may have, such as attendance, problem behavior, or sense of belonging to the school. Facilitators of engagement are “contextual factors that influence the strength of the connection [between the student and school], such as school discipline practices, parental supervision of homework completion, and peer attitudes toward academic accomplishment” (Appleton, Christenson, & Furlong, 2008, p. 382). We examine quantitative, experimental data regarding both facilitators and indicators of engagement. We then use qualitative information from the site visits to develop our theory of mandated engagement. To provide context for our analyses and findings, we begin by summarizing some key literature on engagement that has informed our work.

## RESEARCH ON STUDENT ENGAGEMENT

Increased engagement with school has been associated with a host of positive school-related outcomes including increased academic performance and increased graduation rates (Appleton et al., 2008; Fredericks, Blumenfeld, & Paris, 2004; Lee & Smith, 1993). Simultaneously, disengagement is seen as leading to a set of negative school-related outcomes, which can culminate in dropping out of school (Finn, 1989), the ultimate sign of disengagement with school.

## INDICATORS OF ENGAGEMENT

Students’ engagement with school is a multi-dimensional construct that researchers have approached from different angles (Appleton et al., 2008; Jimerson, Campos, & Greif, 2003), all sharing the notion that students are invested in or committed to different aspects of the schooling experience (Fredericks et al., 2004). The literature frequently references three primary dimensions of the engagement construct: behavioral, emotional or affective, and cognitive (Fredericks et al., 2004; Jimerson et al., 2003; National Research Council and the Institute of Medicine, 2004; Yazzie-Mintz, 2010). We discuss each of these briefly here.

Behavioral engagement is generally described as specific actions completed by students in school. At their basic level, these activities may include actions related to compliance or non-compliance in school and

include things such as following the rules, attending school, and not being disruptive in class (Finn & Rock, 1997). Also considered as indicators of behavioral engagement are academic work-related behaviors such as asking questions in class, putting effort into academic tasks, concentration, and persevering in doing the work (Fredericks et al., 2004).

Emotional engagement is also known as affective or psychological engagement and is often seen as a sense of liking or feeling positive toward school. Some researchers have further conceptualized this as a feeling of “belonging” to school or identification with the school (Finn, 1989; Voelkl, 1997), which can include the relationships students have with their teachers and their peers in school.

Cognitive engagement reflects the extent to which students are actively involved in the learning experience, the “psychological investment in learning” (Fredericks et al., 2004, p. 67). Some researchers conceptualize this as students’ use of specific strategies to improve their learning and as students’ effort in their learning (e.g., Yazzie-Mintz, 2010).

Recent reviews have highlighted the overlap among these different types of engagement and the methodological challenges of distinguishing between them (Appleton et al., 2008; Fredericks et al., 2004). For example, students’ effort in their academic work may be treated as an indicator of behavioral engagement (Jimerson et al., 2003) or an indicator of cognitive engagement (Yazzie-Mintz, 2010). Because of this overlap, we do not attempt to place our findings within these categories of types of engagement; instead, we use these categorizations primarily to ensure that we are presenting as complete a picture as we can of the impact of the early college on a variety of student outcomes.

## FACILITATORS OF ENGAGEMENT

While many studies have also highlighted the role of external influences, such as family and friends, in students’ engagement in school (National Research Council and the Institute of Medicine, 2004; Lamborn, Brown, Mounts, & Steinberg, 1992), students’ level of engagement is often seen as something that should be under the influence of the school and the classroom. In particular, studies have shown that different school- and classroom-level factors are associated with increased student engagement and improved student outcomes (Akey, 2006; Fredericks et al., 2004; Lee & Burkham, 2003; Lee & Smith, 1993, 1999; Walker & Greene, 2009).

School-level facilitators of engagement have been found to include aspects of schooling such as a core, academic curriculum with fewer remedial courses offered (Lee & Burkham, 2003; Lee & Smith, 1993). Schools that are smaller in size are also associated with improved engagement-related outcomes (Lee & Burkham, 2003) although researchers often argue that is

this is not due to size by itself but instead is due to other factors such as improved relationships supported by smaller sized schools (Lee & Burkham, 2003; Visher, Teitelbaum, & Emanuel, 1999). Schools that are more communal in nature and are designed to create and support affective bonds among students and teachers also have higher levels of student engagement (National Research Council and the Institute of Medicine, 2004).

Classroom-level facilitators include the interactions between student and teachers and the kind of instruction. Positive or supportive relationships between students and staff have been found to be associated with positive outcomes including increased engagement and improved student achievement (Akey, 2006; Martin & Dowson, 2009). Social support married with higher academic expectations has been associated with substantial increases in engagement and achievement (Lee & Smith, 1999; Sebring et al., 1996).

Some studies have found that different types of instruction are associated with enhanced student engagement and improved student achievement, such as the presence of more authentic or intellectually challenging classroom assignments (Marks, 2000; Newmann, Bryk, & Nagaoka, 2001), the use of cooperative learning strategies (National Research Council and the Institute of Medicine, 2004), and the incorporation of challenging instruction with appropriate support and scaffolding for students (Turner et al., 1998).

In the study presented in this paper, we have examined the impact of early colleges on different indicators of student engagement. We have also examined students' perceptions of school-level experiences that can be seen as facilitators of engagement. Finally, we conducted focus group interviews with students about their early college experiences and used this information to construct our theory of mandated engagement. In the next section we provide some background on the early college high school model.

## THE EARLY COLLEGE HIGH SCHOOL MODEL

Starting in 2002, the Bill & Melinda Gates Foundation, partnering with other funding agencies, created the Early College High School Initiative, which is intended to lead to the widespread adoption of the early college model across the nation. This study focuses on schools in North Carolina, which has over a third of the early colleges under the Initiative.

## NORTH CAROLINA'S EARLY COLLEGE HIGH SCHOOL MODEL

North Carolina's Early College High School Initiative is funded by the North Carolina General Assembly and is supported by the North Carolina New Schools Project, a public-private non-profit organization. Located on

the campuses of two- and four-year colleges and universities, early college high schools aim to provide a rigorous course of study with the goal of ensuring that all students graduate with a high school diploma and two years of university transfer credit or an associate's degree. Early college high schools—we use the term early colleges as shorthand—are intended for students who typically are under-represented in college. The target populations are students whose parents never attended college themselves, students from low-income families, and students who are members of racial and ethnic groups who are underrepresented in college.

Schools participating in North Carolina's initiative are required to incorporate specific strategies and approaches, entitled "design principles," that can be seen as qualities of a highly functioning school. The six design principles focus on the following areas (North Carolina New Schools Project, 2011):

1. College Ready: Ensuring that students are ready for college.
2. Powerful Teaching and Learning: Incorporating rigorous and relevant instructional practices.
3. Personalization: Providing academic and affective support and emphasizing positive staff-student relationships.
4. Redefining Professionalism: Promoting shared decision-making and ongoing professional development for staff.
5. Leadership: Demonstrating a shared vision.
6. Purposeful Design: Implementing structures and procedures to support the other design principles.

In addition, North Carolina's early colleges are required to adhere to very specific organizational requirements that make them unique. They are autonomous schools managed by the local school district in partnership with a higher education partner, either a community college or a university. Almost all of the schools are physically located on the campus of their higher education partner, although a small number are considered "virtual" schools with their college courses being offered online. (The virtual schools were not examined as part of this study.) The maximum size is 400 students total, and they serve students in Grades 9-12 with some schools offering a fifth year or Grade 13. Students usually begin taking college courses in their freshman year of high school, and the expectation is that they will graduate with two years of transferable college credit. The model's components are intended to be implemented together; schools cannot select only some of them to follow. This is based on the belief that these different aspects of schooling will work together to create an environment that helps students remain in school and prepares them for college.

**Figure 1: Facilitators and Indicators of Engagement within the Early College Model**

<b>Facilitators of Engagement</b>	<b>Indicators of Engagement</b>	<b>Long Term Outcomes</b>
<b>College Ready</b> High expectations	Increased student attendance	Improved student achievement
<b>Powerful Teaching and Learning</b> Rigorous and relevant instructional practice	Improved behavior	Increased high school graduation rates
<b>Personalization</b> Academic and affective supports positive staff-student relationships	Increased engagement in school work	Increased enrollment in college Increased graduation from college

In this paper, we focus specifically on components of the model that are designed to directly influence the student experience and thus can be seen as facilitators of engagement. In particular, we examine the College Readiness, the Powerful Teaching and Learning, and the Personalization design principles. We also examine indicators of engagement that are designed to lead to the long-term goals of keeping students in school and helping them learn more (National Research Council and the Institute of Medicine, 2004). Figure 1 presents a conceptual model of early colleges and their indicators and facilitators of engagement. More information on the specific measures used to assess engagement appears in the methodology section.

## RESEARCH ON EARLY COLLEGES

As a relatively new intervention, early colleges have a limited but growing research base. One of the first studies was a national evaluation of the model, commissioned by the Bill & Melinda Gates Foundation, which has focused on describing implementation and outcomes for schools across the country. The evaluation found that most early colleges were new schools, located on a college campus, and predominantly partnered with community colleges. Approximately two thirds of students were racial or ethnic minorities and 59% came from low-income households. The national evaluation also found that early college students did better overall than the other students in the district in which they were located, although the evaluators were unable to control for incoming achievement or motivation (American Institutes of Research & SRI International, 2009).

One study that is able to control for incoming achievement and motivation is the longitudinal, experimental study conducted by the authors of this paper. In findings reported elsewhere, our study has found that

early college students are more likely to be progressing in core college preparatory classes, particularly in mathematics (Edmunds, Bernstein, Unlu, Glennie, Willse et al., 2012). The study has also found that early college students were more likely to remain in school (Edmunds, Bernstein, Unlu, Glennie, Smith et al., 2012). Other findings from this study are reported in this paper.

Much of the remaining research on early colleges is primarily small-scale descriptive or qualitative studies (including a number of dissertations) investigating aspects of the early college experience. Studies have found that the early college is a personalized, caring learning environment (Thompson & Onganga, 2011) that provides students with care, support, and high expectations (Bruce, 2007).

A qualitative case study of a single early college explored the influence of the model on students' engagement. The study found that students generally reported increased levels of engagement on a variety of dimensions. The study also found that administrators believed that specific aspects of the early college model enhanced this engagement, including small class size, support provided by teachers, parental involvement, the presence of an honors level curriculum, mastery goal orientation, and teacher collaboration (Roberts, 2007).

This paper will utilize data from a large scale experimental study to examine how successful early college schools were in increasing students' engagement and in setting up the facilitators needed to keep them engaged. We will also present data that led us to the conclusion that early colleges structure their facilitators of engagement in such a way that students find it extremely difficult not to be engaged, our idea of mandated engagement. The next section summarizes the methodology of the study, including the specific indicators and facilitators of engagement we examined.

## METHODOLOGY

This paper reports on a subset of results from a broader longitudinal experimental study funded by the Institute of Education Sciences designed to look at the impact of the early college model. In this paper, we examine three specific research questions:

1. Compared to students in other schools, do students who attend early colleges demonstrate significantly higher levels of engagement on a variety of indicators?
2. Compared to students in other schools, to what extent do early college students experience higher levels of school-level and classroom-level facilitators of engagement?



3. How do students describe their experiences in the early college?

We define the specific indicators and facilitators below in the measures section.

SAMPLE

Schools participating in the study used random assignment to select students from an eligible pool of eighth-graders who applied for admission to the early college. Each student was assigned a randomly generated number; the list of students was then ordered from lowest to highest, creating a randomly ordered list with an embedded waitlist. Early colleges offered students spots in consecutive order. If needed, schools were allowed to exclude students from the random assignment. For example, some schools automatically admitted the siblings of current students. Students who enrolled in the school through a non-random process were excluded from all outcome analysis although they may have been included in the qualitative data collection.

As described in more detail in the measures section, the study used two primary data collection strategies with two samples for the impact questions. The first strategy relied on outcome data collected by the North Carolina Department of Public Instruction (NCDPI). All randomly assigned students in the study were included in this sample. The second strategy relied on administration of an original survey sent to a subset of the full sample of students. Each sample is described independently.

For engagement-related outcomes available through administrative data collected by NCDPI, the sample included a total of 1,607 Grade 9 students in 18 cohorts in 12 schools. The outcomes included in this sample come from students who were ninth-graders in 2005-2006, 2006-2007, 2007-2008, and 2008-2009.<sup>2</sup>

The sample for the survey analysis includes 575 ninth-graders associated with 10 early colleges. There were a total of 349 students in the treatment group (assigned to an early college) and 195 control group students who were not admitted to the early college and attended a different school, most frequently one of the comprehensive high schools in the district. Table 1 shows the total sample size by data source and year.

An examination of the characteristics of the 1,607 students in the NCDPI outcome dataset shows that the two groups were comparable on almost all characteristics, with the exception of the percentage retained prior to eighth-grade. Although the difference is statistically significant, we have done sensitivity analyses that indicate that this variable does not affect specific outcomes. Table 2 shows the characteristics of the treatment and control groups.

**Table 1: Sample Size by Data Source and Year**

Year of 9th grade cohort	NCDPI Outcome Data		Survey Data	
	Number of School-Cohorts	Number of Students	Number of School-Cohorts	Number of Students
2005-06	1	76		
2006-07	2	210		
2007-08	5	421	4	220
2008-09	10	900	6	355
Total	18 <sup>a</sup>	1607	10 <sup>b</sup>	575

<sup>a</sup>This is the number of cohorts in the analyses. The 18 cohorts were located in 12 schools; some schools enrolled multiple cohorts of ninth-graders in the study. <sup>b</sup>The survey data are collected longitudinally from one cohort of students in each of 10 schools.

The original survey sample included a total of 811 ninth-graders, which represented all treatment and control students in 10 sites with consent to participate in the study; a total of 575 of these students responded. The response rate for treatment students was 71% of the initial sample and 84% of the students with valid contact information. The response rate for control students was 62% of the total sample and 78% of the students with valid contact information. An analysis of the demographic characteristics of the final sample found that there were no statistically significant differences between respondents and non-respondents. There were also no significant differences between responding treatment and responding control students.<sup>3</sup>

In both of these samples, the treatment group includes students who were assigned to the early college. The control group includes students who applied but did not get into the early college. The students in the control group were part of a “business as usual” condition, usually attending any one of the traditional high schools in the district. Because control students were usually spread out among multiple schools in a district, this study does not have control schools per se; instead, it focuses on the experiences of individual students.

To answer the third research question, we conducted site visits to 18 early colleges that are part of the full study sample (not all of these schools have outcome data that have been analyzed for this paper). As part of these site visits, we conducted focus groups with groups of 5–8 students during which we asked them about their experiences in the Early College High School. Not all of the students we interviewed were part of the lottery process because we believed that it was important to understand the early college experience of students in a range of grades. As

**Table 2 Descriptive Statistics – 9th Grade Analysis Sample**

	<b>Whole Sample (N=1,607)</b>	<b>Treat. Group (N=919)</b>	<b>Control Group (N=688)</b>
	<b>Mean</b>	<b>Mean</b>	<b>Mean</b>
<b>Race &amp; Ethnicity</b>			
Black	26.8%	27.3%	26.1%
Hispanic	8.2%	9.3%	6.6%
White	60.2%	59.0%	61.8%
<b>Male</b>	41.4%	41.0%	41.9%
<b>Age</b>	15.35	15.34	15.37
<b>Socioeconomic Background</b>			
First Generation College	40.8%	41.0%	40.5%
Free or Reduced-Price Lunch	50.6%	51.3%	49.8%
<b>Exceptionality</b>			
Disabled/Impaired	2.9%	2.5%	3.5%
Gifted	11.8%	11.4%	12.4%
<b>Retained Prior to Eighth Grade</b>	3.7%	2.9%*	4.8%*
<b>Eighth Grade Achievement</b>			
Math – scale (z-score)	0.02	-0.01	0.06
Reading – scale (z-score)	0.00	-0.01	0.01
Algebra 1 – take up	23.0%	22.5%	23.6%
Algebra 1 – scale (z-score)	0.00	0.07	-0.09

\*Difference significant at  $p \leq .05$ .

some schools had only one cohort of students participating in the lottery, restricting the interview sample to only students in the lottery would have meant that we could interview students in only one or two grades. Because our control students were in multiple schools in each district, it was not feasible to conduct control school site visits. For the study, information from these site visits is used to describe implementation and to develop complementary explanations for the quantitative data (Erzberger & Kelle, 2003).

## MEASURES

We used both data collected by the North Carolina Department of Public Instruction (NCDPI) and original survey data to examine indicators and facilitators of engagement. NCDPI collects student-level data from

schools. These data are then shared with the North Carolina Education Research Data Center at Duke University, which gives each student record a unique identifier that allows researchers to link student records across years and across data files. The measures are organized by whether they are facilitators or indicators of engagement.

## INDICATORS OF ENGAGEMENT

For this study, we use two primary indicators of engagement from the administrative data, which have also been reported elsewhere (Edmunds, Bernstein, Unlu, Glennie, & Willse et al., 2012).

### *Attendance*

Student attendance is a commonly used indicator of student behavioral engagement (Appleton et al., 2008; Finn & Rock, 1997). Each school reported to NCDPI the number of days each student attended school.

### *Suspensions*

Some researchers use the presence of disruptive behavior as another behavioral indicator of students' disengagement from school (Finn & Rock, 1997; Fredericks et al., 2004). For this analysis, we looked at the percentage of ninth-graders who had been suspended out-of-school at least once in a given year.

Because the administrative data present an incomplete picture of the potential student outcomes, we developed an original survey that was administered to both treatment and control students. Asking students directly may be a more valid way of capturing students' attitudes and experiences (Appleton et al., 2008), especially when coupled with administrative measures of student performance as we do in this study. The specific constructs measured in the survey included both indicators of engagement and potential facilitators of engagement. Unless noted in the description, the scales were adapted from a student survey administered by the American Institutes of Research and SRI International as part of their national evaluation of the Early College High School Initiative (American Institutes of Research & SRI International, 2009).<sup>4</sup> The entire survey was subject to pilot testing (Scales & Willse, 2008). The results of the pilot testing were used to refine items and improve scale psychometrics (e.g., reliability). Scales have been determined to measure distinct constructs. The percentage of variance shared between scales ranged from 0% to a high of 46%, providing strong evidence of discriminant validity (results are available upon request). To supplement the data on suspensions and attendance, the survey included three additional indicators of engagement.

### *Schoolwork Engagement*

The six items on this scale were designed to capture the extent to which students were actively involved in their learning and the tasks they were assigned in school, often seen as cognitive engagement (Yazzie-Mintz, 2010).

### *Challenge*

As an attitudinal measure of behavioral engagement, challenge relates to a student's perception of the difficulty of the tasks at hand and their perceived abilities to complete the tasks (Ames & Archer, 1988).

### *Work perseverance*

This construct focuses on opinions of the students' abilities related to task completion and perseverance through difficult assignments or courses, often seen as a measure of cognitive engagement (Yazzie-Mintz, 2010).

## FACILITATORS OF ENGAGEMENT

The survey also included questions around a core set of facilitators of engagement.

### *Rigor of Instruction*

More challenging and authentic instructional practices have been associated with higher levels of engagement (Newmann et al., 2001). The questions on this scale were geared towards instructor behaviors and activities that are considered to be indicative of instructional rigor: asking students to explain their thinking, defending points of view or critical thinking processes, use of rubrics for grading, and other practices. Two items were adapted from the national early college evaluation survey, and eight new items were created by the research team.

### *Relevant Instruction*

To assess the relevance of assignments and projects, a five-item subscale was created that assessed the extent to which teachers relate assignments and projects to other activities within and outside of school. They also assessed the extent to which instructors allow students a voice in determining the kinds of topics they will cover on their assignments and how the assignments should be completed. These aspects of instruction have been positively associated with increased engagement (National Research Council and the Institute of Medicine, 2004).

**Table 3: Survey Descriptives**

Construct	Sample Question	N	Range	Mean	Standard Deviation	Cronbach's Alpha
<b>Indicators of Engagement</b>						
Schoolwork Engagement	This school year, I have... Asked questions in class.	540	1-5	3.70	0.69	0.73
Challenge	I have worked harder than I expected to work in school.	548	1-4	2.73	0.49	0.56
Work Perseverance	I gave up when my schoolwork became too hard. (reverse coded)	551	1-5	3.98	0.60	0.69
<b>Facilitators of Engagement</b>						
Rigor of Instruction	This year, how often have your instructors... Had you engage in in-depth discussions about what you have read or learned?	524	1-5	3.42	0.61	0.80
Relevance of Instruction	My instructors have made connections between what goes on inside and outside of school.	546	1-5	3.25	0.78	0.77
High School Instructor Relationships	My teachers care about me.	551	1-4	3.36	0.51	0.92
High School Instructor Expectations	In general, the high school instructors I have had at this school believe all students can do well.	540	1-4	3.37	0.55	0.85
Academic & Social Support Structures	This year, how frequently did you participate in the following activities? Tutoring or extra help connected to a specific class you are having trouble with	551	1-5	2.27	0.91	0.86

*High School Instructor Relationships*

Positive relationships and a sense of caring between teachers and students can be seen as a measure of emotional engagement (Akey, 2006; Martin & Dowson, 2009). The eight items in this scale come from the School Success Profile (Bowen & Richman, 2005).

*High School Instructor Expectations*

Higher expectations have been associated with positive student outcomes in a variety of domains, including engagement (Lee & Smith, 1999).

*Academic & Social Support Structures*

The use of the various support structures available in schools was seen as supporting students' feelings of relatedness to and engagement in their school environment. Eleven sources of support and interaction were listed in a separate subscale created by the research team.

This survey was assessed for internal reliability. Table 3 shows the mean and reliability for each of the scales as well as a sample question. Eight out of the 10 scales had good to high reliability. Two of the scales, Challenge and Work Perseverance, had lower reliability. Low reliability may lower the power of significance tests; as a result, absence of significant findings for these scales should be interpreted with caution.

## ANALYSIS

The primary impact estimates for the administrative and survey data were obtained from multivariate linear regression models that incorporated site fixed effects and baseline covariates. All the students who applied to a single early college were considered a single site. The covariates included first generation college-going status, gender, free and reduced price lunch, minority status, and passing math in eighth-grade. The regression models created site-specific estimates that were then weighted by the number of students in each site and pooled to create an impact estimate for the average student who applied to enroll in an early college and went through the lottery. For the original survey, the simple mean item scores from each survey scale were used as the scale scores for respondents. Glass'  $\Delta$  effect sizes were calculated by dividing the adjusted mean difference between groups by the standard deviation of the control group, an approach recommended when the variance for the treatment group differs from that of the control group (Lipsey & Wilson, 2001).<sup>6</sup>

A team of researchers analyzed the student focus group interviews using inductive analysis procedures (Morse, 2003) to develop codes. Four researchers

together read three focus group transcripts and developed codes from the data. The team came to agreement on a list of common codes, which were then applied using ATLAS.ti to the remaining 15 transcripts. The transcripts were divided such that two different researchers read each of the remaining transcripts and then met to come to agreement on the coding of that particular transcript. During team meetings, the researchers identified and discussed relationships across the codes for all implementation aspects. We identified codes and quotations related to facilitators of engagement.

## RESULTS AND DISCUSSION

Results presented elsewhere (Edmunds et al., 2010; Edmunds, Bernstein, Unlu, Glennie, & Willse et al., 2012) showed that more early college students were successfully completing a college preparatory course of study. In this paper, we focus specifically on the experimental results for the impact of the model on indicators of engagement and on facilitators of engagement. We then draw on the qualitative data to provide more detail around the various facilitators of engagement and to develop our theory of mandated engagement.

### IMPACT ON INDICATORS OF ENGAGEMENT

The NCDPI data and survey data provided information on the impact on various indicators of student engagement. Results from the analysis of NCDPI data show that treatment group students had statistically significantly fewer absences and fewer out-of-school suspensions than control group students. Table 4 presents both the unadjusted means for both groups, as well as the adjusted impacts calculated from the regression model. The adjusted impacts can be thought of as the difference between the control group and early college group that remains after controlling for differences in students at different early college sites and student background variables (e.g., incoming achievement, ethnicity, etc.).

**Table 4: Impact on Behavioral Engagement Indicators—NCDPI Data**

	Treatment Group	Control Group	Adjusted Impact	P-Value
	Unadjusted Mean	Unadjusted Mean		
Number of Days Absent	4.7	6.3	-1.3	0.000
Suspensions (% suspended at least once)	6.5%	13.1%	-6.0%	0.000

*Note.* Sample for suspensions is 918 for treatment and 686 for control and excludes students who dropped out. Sample for absences is 898 for treatment and 656 for control and excludes students missing attendance data.



**Table 5: Impact of Early College Model on Indicators of Engagement— Survey Data**

	Early college	Control	Effect					
Scale	N	Mean	SD	N	Mean	SD	Size	p-value
Engagement	333	3.76	0.67	189	3.56	0.71	0.25	0.011
Challenge	339	2.81	0.49	190	2.62	0.51	0.37	0.000
Work perseverance	338	3.98	0.61	190	3.99	0.59	-0.05	0.614

The analysis of the survey data, which also takes the clustered nature of the data and any pre-existing differences into account when calculating significance and effect sizes, shows that treatment students reported higher levels of engagement ( $ES = +0.228$ ,  $p = .014$ ) and higher levels of challenge ( $ES = +0.312$ ,  $p < .001$ ) than students in the control group. There was no significant difference on students' reported work perseverance.

These results show that, compared to control school students, early college students are exhibiting or reporting overall higher levels on almost all of the measured aspects of engagement. In the next section, we report on the impact of the model on students' experiences with various facilitators of engagement.

## IMPACT ON FACILITATORS OF ENGAGEMENT

We draw from the survey data to examine the different facilitators of engagement listed above. Analyses of the surveys show that students in the Early College High School reported significantly more positive experiences on all dimensions measured, and some of the effect sizes are large for social sciences research. Table 6 presents the group means, standard deviations, and effect sizes for each scale.

These quantitative data show that early colleges are having a positive impact on key indicators of engagement. The survey data also show that early college students reported higher implementation of various aspects of schooling that past research has suggested can be considered facilitators of engagement. We next turn to the qualitative data to provide more insight into how early colleges have set up these facilitators of engagement to create an environment that mandates engagement.

## CREATING AN ENVIRONMENT THAT MANDATES ENGAGEMENT

Our first goal in analyzing the data from the interviews was to contextualize the quantitative results. We were interested in how students reported experiencing these various facilitators of engagement. What did they say

**Table 6: Impact of Early College Model on Facilitators of Engagement— Survey Data**

	Early College	Control	Effect					
Scale	N	Mean	SD	N	Mean	SD	Size	p-value
Academic Expectations	335	3.53	0.49	188	3.15	0.55	0.68	0.000
Rigorous Instruction	327	3.51	0.57	185	3.19	0.62	0.53	0.000
Relevant Instruction	338	3.38	0.74	189	2.98	0.79	0.42	0.000
Academic and Social Support	324	2.51	0.90	184	1.81	0.71	1.07	0.000
Relationships with Teachers	340	3.47	0.48	190	3.26	0.54	0.37	0.001

about expectations, relationships, support, and instruction? As we read the interviews and looked across the different facilitators, we realized that there was a common thread tying together their experiences. We came to believe that the early colleges were purposefully establishing an environment with the explicit goal of promoting success for all of their students. Instead of leaving things to chance, they deliberately set out to create a set of expectations, structures, classroom instructional experiences, and relationships that required students to engage with the different aspects of schooling. In this section, we describe how the different aspects of schooling interact to create an environment mandating student engagement. We have organized this section according to the main facilitators of engagement as they were described in the interviews. Students conceptualized these facilitators of engagement slightly differently than we as researchers did; as a result the categories do not align perfectly. In particular, student placed more of an emphasis on the relationships with their peers than we did. In addition, when discussing classroom instruction, the students mentioned specific practices less frequently and instead spent more of their time discussing how the teachers spent time with them making sure they understood the content. Both of these are discussed below.

*High expectations*

One of the early college’s core principles is to create a culture of high expectations for all students. All students are required to take honors-level college preparatory courses. Most schools begin enrolling students in college courses starting in ninth-grade. In the interviews, students

reported higher expectations that they were required to meet. These higher expectations appeared to be driven at least in part by the fact that students take college courses at a much younger age than their counterparts in traditional high school. For example, a student at Falmouth Early College (all names are pseudonyms) compared the expectations for her with the expectations for her brother at a traditional high school:

With my brother and I, we take the same courses and everything, and I'll be up later than him maybe doing work, and he'll be able to watch TV, and I'll still be doing my homework. So there is a much more workload, you could say, on our classes because we have to prepare for college. We're expected to do great things.

Students mentioned that meeting the higher expectations in the early college was not seen as optional. Below is an exchange from students at Linden Early College, who believed that teachers would not let them get away with the minimum required:

Student 1: [In the regular high school] they don't have to do as much. They can just slide by, right by the minimum, and here, they don't just let us slide by. ... Your best is not enough. Your best is sometimes not enough here. They want better.

Student: 110%.

Student: If you're making a 98, they want a 100.

This idea that students were not really given an option to slide by appeared as a theme in multiple interviews. For example, students at Russell Early College discussed how they were expected to do well in their classes:

Student: They nag us constantly about stuff. Dr. T. [the principal] says they nag with love. In a regular high school you kind of have—I guess you have the choice to take a class over if you fail it, but here it's kind of mandatory that you're going to take it again and you're going to pass it. Dr. T. pretty much has the will to say that you're going to pass it the first time.

Student: She has the winning mindset. There are no failures at this school. They help you. They will make you win. They won't let you fail anything. It's just not an option.

Student: In my middle school I made Fs and stuff, but here it's hard for me to make an F.

Student: They won't let it happen . . . They don't even let you get past a C. If they know that you're an A student and if you slip

down a little bit they'll say, "Hey, we need to change this."

The above quote also highlights that these increased expectations were accompanied by support that was in many cases not optional. The kinds of supports provided by the early college are described in the next section.

*Required academic support*

Virtually every traditional high school will provide academic support for struggling students. Often, this may take the form of tutoring that occurs after school and that may be sparsely attended. In contrast, academic support at the early college was seen as integral and embedded in instruction and throughout the school. As one student in Oldham Early College said,

In [early college] high school classes you get to really interact with the teachers, and they really want you to do your best. They're not just like, "Oh you're just there." They actually talk to you, and if you're struggling they'll talk to you about it.

One common theme among the interviews was that the early college teachers were willing and committed to helping the students. Students at Laurel Early College commented on this commitment and how it extended beyond the regular school day:

Student: The teachers, they're always wanting to help us. They don't give up on us, like with the no-fail policy and all that. They're always—we can stay after school every day except Friday and make up stuff and all that.

Student: And they gave us their cell phone numbers and email addresses to get in contact with them any time we need them.

Student: You wouldn't have that benefit at a regular high school because they're not as personal as here.

Other students described how teachers would work above and beyond the school day to help students. A student at Green Mountain Early College said,

everybody has everybody's cell phone number and stuff, and you can call them or text them and be like, "I really need help." They won't come to your house, because that's a little creepy, but you can meet them. ...You can get a group together, and we'll go eat at Bojangles and do History at Bojangles.

The above descriptions of academic support suggest that academic support in the early college is more accessible because the teachers are seen as willing to help students within their classroom and also outside of the school day. In many of the early college settings, students described how academic support would be required if you had low performance. Below is an exchange from students at Linden Early College.

Student: They won't let you fail. Ms. L. won't let you fail... Your free time is with her... It belongs to her if you're failing. Your after-school time belongs to her. That's what most of the teachers will do. If you start failing or getting below a C, they're going to say, "You know what? You're coming in here this time and this time."

Student: And it helps. You might not like it, but it helps.

Students at other schools believed that this kind of help would enable just about any student to be successful in the early college. Below is an exchange from a group of students at Maple Early College.

Interviewer: Tell me about a student who would not be successful at the early college.

Student: I don't know any because . . . In middle school, my report card was pretty much straight Fs. Now, I'm making As and Bs, and a few Ds.

Interviewer: So you feel every child or every student could be successful in this program.

Student: Yes.

Student: Yeah, with all the help they give you, you could do it.

While most students could see this level of support as a positive, there were some students who resented the amount of attention they received from the staff. For example, a student at Oak Early College shared how the teachers really didn't seem to leave him alone and how that was something that was very hard to get used to. He said:

In the beginning, all I did was complain . . . The teachers were too attached, I guess you'd say. I really didn't like that whole in your face type thing about what you're doing, looking over your shoulder. I was kind of used to that whole teachers who were detached from you. You turn in your assignments, you get your grade, you're done.

Although most schools did appear to require academic support for students who were struggling, there were also some cases where the students believed that the onus was on them to seek help. For example, a student at Oak Early College commented that the relationship with the teachers made it easy to seek help but that it was the student's responsibility to do that:

We have—actually we have the relationship with our teachers, so if you do need the help they're always there ... and they will take the time. It's just you taking that step to go to them, because they're not going to sit there and baby you, "Let me help you because you're struggling." It's more of you being independent and responsible, and be like, "I don't understand."

Although exceptions existed, the general sense was that, if a student had academic troubles, the early college would do everything it could to help even if the student did not seek it out.

#### *Social/Emotional Support*

In addition to the support students received on their academic work, students also commented that the early college staff would provide emotional support without the student asking for it. They noted that the staff at the school would often know if something was wrong and reach out to the students. An exchange among students at Grayson Early College illustrates this point:

Student: They [the staff] really care about you.

Student: They really do.

Student: And they know when something's wrong.

Student: They can always tell. They can tell.

Student: You'll try to hide it from them but they're like—it doesn't work.

Student: No. You can't hide.

Similarly, students at Russell Early College discussed how the staff would know if there was something bothering them and would intervene.

Student: (The counselor) knows. Oh, he knows everything . . . I don't know if people tell him or—

Student: He can tell by the way we act—or he knows is something's wrong with you...

Student: And then (the counselor)'s all, "I need you in my office now."

Student: He'll talk to you every day.

Student: He'll talk to you every day, and he'll get everything out of you until he knows that everything is okay.

A few schools set up formal structures that provided a time for students to receive more personal, non-academic support. A Green Mountain Early College student described how there was a specific time set aside during the small group time (entitled "Focus Groups"):

Student: In my focus group we have this thing called Connections ... a time where ... you can talk anything about your heart's desire, and no one can respond to it. So it's not a fixing session ... it's really helpful just to get it off your chest and not to feel pressured, or prejudiced in any way about what you said. So that's really helpful.

For the majority of students, however, more personal support occurred through the strong relationships they felt they had with the staff.

### *Relationships with Staff*

One key way in which the school set up the academic and emotional support for students was by creating strong, positive relationships among the staff and students. Students frequently commented that the small size of the schools meant that teachers could get to know their students better, which made it extremely hard for students to not be engaged in school. One student at Whitley Early College commented on the nature of relationships at the early college:

For me, coming to Early College was the closest I've ever been to a teacher, pretty much ... because of the small number of us, our teachers know us personally. They, if you ask them, could probably tell you everybody's name and something unique about them. And back in the regular middle school or going to the regular high school, I doubt a teacher could do that for everybody.

This close knowledge of students made it easier for teachers to provide support or to indicate that they cared. As one of the Hopkins Early College students said, "They really care about you doing the best that—they

really want you to do the best of your ability. They really care about you, more than a teacher way. It's like a friend." In many cases, the students believed that these relationships allowed the students to do better in schools. This idea was expressed by a Green Mountain Early College student:

I feel like having a better relationship with the teachers makes it easier for me if I'm struggling in something to go up to that teacher and talk to them about it because if I don't have a personal relationship with someone I don't like admitting that I'm having trouble. That's just the way that I am. I feel like having a personal relationship makes it easier to talk to them.

A student from Grayson Early College had a similar comment:

We know the teachers personally ... they are our friends. So you're not worried about what they're going to say. When they criticize you, you know that it's just to help you, not just brushing you off to the side.

### *Peer Relationships and Support*

In addition to the positive relationships and support the majority of students saw between the staff and students, students also reported strong relationships among peers that required students to become involved in school. They often commented that there were no cliques at the early college and that there was a real sense of family. For example, a Lawson Early College student talked about the relationships they have with each other: "since there's not that many people here, you know everybody. You're going to have classes with everybody, so you're going to talk to everybody and you get to know them, and some become good friends and they have good relationships."

A Russell student talked about how the other students essentially required him to become engaged with other students at the school from the beginning, "I was home schooled, so I was just sort of over there doing my own little thing. People basically—not forcibly, but they were like, 'Come over here and do this.' They really adapted me into their body." A Linden student shared a similar experience when current early college students got him involved with the school in his first year:

It was really easy to get worked into the family kind of thing because everybody knows everybody here . . . I was . . . a not very popular person [in middle school], so most people didn't like me. I came to this school. I sat down in the hallway to do my work



and . . . Ten juniors came up and asked me, “Are you okay. Do you need help?” I was like, “And you don’t even know me. Why are you talking to me? Is something wrong?”

While being a small school could partly account for improved peer relationships, these schools also created purposeful structures and opportunities for students to get to know each other. For example, Green Mountain conducted a set of activities designed to help students get to know and rely on each other:

Student: I feel like the other students help us out too, because we all realize that everyone learns different and that we need to help each other out to be successful . . . It’s not just always all about you.

Student: When you go through your classes they shuffle us . . . every nine weeks so by your freshman year you know everyone’s first and last name, their likes, their dislikes. So I can tell when [another student] comes in and he’s having a bad day, and I know what to say to him . . . You know what’s going on in each other’s lives, and so you don’t always have to feel like you’ve got to put a smile on, you don’t always have to feel like no one’s listening to me because there’s always someone listening to you. There’s always someone there for you.

The quotes shared so far suggest that the expectations, support activities, and positive relationships combine to create an environment that requires students to engage with the school in academic and social ways. The final facilitator of engagement discussed by the students is the instructional experience in the classroom.

### *Engaging instruction*

In interviews, students highlighted how the early college teachers used varying instructional practices to engage them in learning. A Whitley student commented on the variety of teaching: “every one of them have a different way of teaching but they like all of us to get involved and not just do stuff, like different labs and activities for the class.” At Oak Early College, students highlighted how their use of projects enhanced both the rigor and relevance of the instruction. They also believed that this kind of instruction made the learning experience more meaningful and less focused on external drivers such as state-mandated exams.

Student: In a project—at a [regular] high school you can probably just guess the answer and get it right, look up the answer on

the internet and find it. Here, you can't look up how to do your project and just turn it in. You actually got to sit and think about it, and understand it and be like, "Okay, I'm going to do this. I'm going to do that."

Student: At the regular high schools you hear they're teaching for tests . . . They're just, "All right, this is going to be on the test, so learn how to take the test." You're not really learning how to apply it and actually know it. Like they were saying, you have to do project-based, you have to actually understand it, and it will stay with you."

A Grayson student made a similar point about the early college's instruction and learning being more meaningful:

I think you have more qualified teachers and there are smaller class sizes, and it's closer, almost, to the college setting, where it's not just you're stuck in the loop in the system, that you have to do your work, get your grade, progress on to the next level . . . [here] you actually get taught. You don't just get information crammed down your throat. I really like that here. You actually get to learn.

Coupling the idea of instruction with the idea of support again, some students also commented that the teachers take the time to work with the students to help them actually learn. As a Hopkins student said,

What I love best about the school are the teachers because in normal high schools and stuff, the teachers, they don't really—they don't teach as well. They would give you a lot of work, and they wouldn't really help you out and explain it as well as they would here. I guess I've learned a lot more here than I would have normally.

### *Other Possible Explanations*

While students' interviews highlighted the role that specific indicators played in students' engagement, there are some other possible explanations. One was alluded to during the discussions of peer and staff relationships: the size of the school. The fact that these are all small schools could partially account for improved relationships. For example, studies have found improved social relations in small schools (Lee, Smerdon, Alfeld-Liro, & Brown, 2000; Lee & Smith, 1997). Another possible explanation for the impact of these schools comes from the element of

selection. Both teachers and students choose to be a part of these schools; they are thus likely different than people who do not volunteer to be part of the model (Rosnow & Rosenthal, 1976). While our study design controls for these differences at the student level, we have no such controls at the staff level; it is possible, therefore, that the staff in these schools are more motivated to work with students than the staff in traditional high schools. In fact, there is evidence from other studies to suggest that new schools started from scratch are more effective at creating a desired culture than established schools trying to change (American Institutes of Research & SRI International, 2004, 2008).

### *Mandating Engagement*

Many of these comments reflect a sense that the school essentially requires students to become engaged. To highlight a few of the comments again:

- “Here, they don’t just let us slide by . . . Your best is sometimes not enough here. They want better.”
- “They help you. They will make you win. They won’t let you fail anything. It’s just not an option.”
- “[The staff] know when something’s wrong . . . You’ll try to hide it from them but . . . it doesn’t work.”
- “[Students] basically—not forcibly, but they were like, ‘Come over here and do this.’ They really adapted me into their body . . .”
- “Every one of [the teachers] have a different way of teaching but they like all of us to get involved”

In particular, the students’ comments indicate that students have little choice but to be involved in the early college high school; there is a sense of “mandated engagement.”

## CONCLUSIONS

The results show that the early colleges have significant impacts on many indicators of engagement. Students in the early college have higher attendance and lower suspensions. They reported higher levels of

engagement and challenge. The one indicator showing no impact was students' work perseverance.

The survey results also showed that students reported significantly more positive experiences in these facilitators of engagement. Early college students reported higher expectations, better relationships, more support, and more rigorous and relevant instructional practices. When the quantitative results are merged with the interview data, a picture emerges of schools that utilize these facilitators of engagement to create an environment that requires students to be engaged or involved on different levels.

This picture of an overall engaged adolescent population is different from the picture often presented in studies, some of which have found that "40 to 60 percent of high school students are chronically disengaged; they are inattentive, exert little effort, do not complete tasks, and claim to be bored." (National Research Council and the Institute of Medicine, 2004, p. 18). But research has also provided support for the idea that schools can take specific actions to increase student engagement such as developing more engaging instruction, improving student-staff relationships, and providing high expectations coupled with support to help students achieve. These factors are all present in the early college high schools we studied and they combine to create an atmosphere that supports higher levels of engagement.

While our study focuses on early college high schools, we believe that these indicators of engagement can be present at high levels in traditional school settings as well. Traditional schools could hold high expectations for their students and could provide support to help students achieve. Schools could work with their staff on creating more engaging instruction, and they could set structures in place to create more positive relationships among the members of the school. Individual teachers can, and many do, create classroom environments that mandate engagement. The challenge becomes creating such an environment across an entire school setting.

In this article, we use the term "mandated engagement" to emphasize that the schools are purposefully and proactively reaching out to students to involve them in the learning process. While some may argue that the schools are not truly "mandating" anything, we make the case that the early colleges are supporting facilitators of engagement at a level that makes it very hard for students not to engage in school. Students in these schools "can't hide." Perhaps engagement cannot be legislated, but it is clearly possible to create schools that demand much higher levels of engagement from their students.

## Notes

1. This material is based upon work supported by the Institute of Education Sciences under grant number #R305R060022. Any opinions, findings, and conclusions or recommendations expressed in this publication are those of the authors and do not necessarily reflect the views of the Institute of Education Sciences.
2. Schools enrolled in the study on a staggered basis. This paper includes results for schools that had enrolled through the 2008-2009 school year. By the completion of the study, we will have administrative outcome data for over 4,000 students in 19 schools; however, our sample for the surveys is complete as reported in this paper.
3. The results of these analyses are available upon request.
4. To compare North Carolina's results with national results, we deliberately used as many scales as were appropriate from the national early college evaluation.
5. Copies of the survey questions are available upon request.
6. More details on the analysis strategies are available upon request.

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