

Redesigning High Schools to Prepare Students for the Future

By Jonathan A. Plucker, Jason S. Zapf, and Terry E. Spradlin

To be successful in the workforce or in postsecondary education, high school graduates must have achieved competency in the areas of reading, writing, mathematics, and science. Yet, many students leave high school without competency in these areas, putting them at a significant disadvantage both in the workplace and in postsecondary education institutions. To address these issues, educators across the country have been rethinking the traditional structure of secondary schools and restructuring their buildings and curricula to better prepare students for the future. This Policy Brief presents research on the preparedness of high school students for employment and postsecondary options and describes national and Indiana efforts at restructuring high schools to address preparedness gaps.

Are Today's High School Students Prepared for the Future?

There are several indicators that can be used to help determine students' preparedness for postsecondary education or the workforce. Among these are high school graduation rates, students' participation in rigorous high school curricula, teachers' and students' expectations for postsecondary enrollment, and the students' need for remedial courses during college. These can be telling factors when gauging students' preparedness.

High School Graduation Rates and College Preparedness

High school graduation rates have been rising. Nationally, the United States has a 70% public high school graduation rate, and states such as North Dakota and Utah boast 89% and 87% graduation rates in their public high schools. The Midwest has the highest public high school graduation rate (77%) of any region in the United States. Iowa, Minnesota, Nebraska, and Wisconsin all graduate 80% or more of their public high school students (Greene & Forster, 2003).

Yet, elevated high school graduation and postsecondary attendance rates may give the false impression that secondary schools are adequately preparing students for success in college or the workforce. Other data on students' college readiness tell a different story, however.

When students' transcripts were examined, only 36% of public high school graduates in the United States had taken courses necessary to prepare them for success in college. Even in states with high graduation rates, such as North Dakota and Utah, only 39% and 37% of public high school graduates were considered to have "college-ready" transcripts. Less than 40% of the public high school graduates in Iowa, Minnesota, Nebraska, and Wisconsin graduated with college-ready transcripts (Greene & Forster, 2003).

Among the four regions of the United States, the Midwest region has the highest high school graduation rate, but also has the second lowest percentage of high school graduates with college-ready transcripts at 34%. The other regions of the U.S. fared similarly to the Midwest, with the South and Northeast regions having the greatest percentage (41%) of high school graduates with college-ready transcripts (Greene & Forster, 2003).

In a 2002 survey, when asked about high school graduates' skill levels, employers and college professors indicated that high school graduates were lacking skills in core academic areas including writing ability, grammar, spelling, and basic math (see Figure 1). They also indicated concern about students' organizational skills, motivation levels, and interest in learning new things (Johnson et al., 2003).

In this issue...

Are Today's High School Students Prepared for the Future?.....1

How Can Schools Be Redesigned to Better Prepare Students?..... 3

What is Indiana Doing to Prepare Its Students?..... 6

Conclusions and Recommendations 9

Upcoming Policy Brief Issues

- ✓ Obesity in Indiana Schoolchildren
- ✓ School Finance in Indiana
- ✓ Long-Term Effects of Full-Day Kindergarten

Additionally, a recent ACT report asserted that based on their national readiness indicators, too few students are ready for college-level coursework (ACT, 2004). The report indicated that only 26% of high school graduates completing the ACT test met college readiness benchmarks in biology, 40% of tested graduates met college readiness benchmarks in algebra, and 68% of tested graduates met college readiness benchmarks in English. Overall, of the 1.2 million high school graduates tested in the areas of biology, algebra, and English in 2004, only 22% met or exceeded college readiness benchmarks in all three areas (ACT, 2004).

For those high school graduates who choose to attend college, this lack of preparedness for college-level coursework may require them to take remedial courses before they can enroll in courses for credit toward a college degree. Remediation rates for beginning 2-year and 4-year college students also indicate a trend that not all students entering postsecondary institutions are adequately prepared.

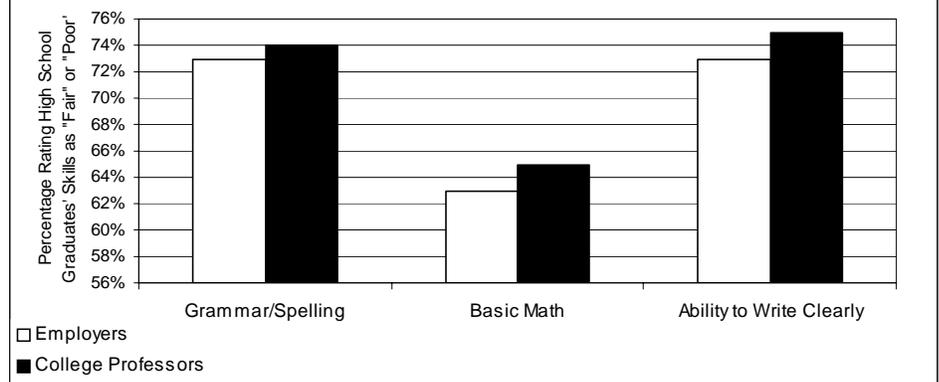
In the fall of 2000, public 2-year colleges reported that 63% of their students averaged a year or more of remedial coursework, and 38% of public 4-year college and university students averaged a year or more of remedial coursework (National Center for Education Statistics, 2004). A 2002 report noted that 37 states estimated remediation rates for entering students at 2-year colleges ranging from 10.4% to 70.9%. At 4-year colleges and universities, the estimated percentage of students needing remedial coursework ranged from 5.5% to 50% (Jenkins & Boswell, 2002).

The resulting need for remedial coursework can cost students extra tuition and fees, slow their progress toward a degree, and significantly decrease their chances of even earning a degree (see Table 1).

Limited Curricular Options Hurt Students

High school students' failure to enroll in college-preparatory coursework, graduates' low scores on tests of college preparedness, and graduates' need for remedial coursework in college are indicators of how high schools are not preparing students for success in college or the workforce. These are indicators of larger issues in high schools, including students' lack of access

Figure 1: Employers' and College Professors' Perceptions of High School Graduates' Skill Levels



Source: Johnson, J., Duffett, A., Vine, J., & Moye, L., 2003, cited in American Diploma Project, 2004.

to rigorous curricula and inadequate participation in college-preparatory coursework. These factors contribute to high school graduates' lack of preparedness for postsecondary education or the workforce.

In an examination of the performance of different types of students in different types of curricula, the U.S. Department of Education found that college-preparatory courses could benefit all students. Students who entered high school with standardized test scores in the lowest quartile, and who enrolled in college-preparatory courses, showed better performance on subsequent standardized tests than their peers enrolled in vocational courses (National Center for Education Statistics, 1999). Moreover, students enrolled in lower-level courses were more likely to earn a "D" or "F" in those

courses despite their level of ability (Cooney & Bottoms, 2002). Eighth-grade students who scored in the two lowest quartiles on the National Assessment of Educational Progress (NAEP) reading test were nearly twice as likely to earn a "D" or "F" in ninth-grade English if they enrolled in a lower-level course, rather than a college-preparatory course (Cooney & Bottoms, 2002). This trend held for high-achieving students as well. Those students who scored in the upper two quartiles of the NAEP tests in math and English during eighth grade and enrolled in lower-level English and math classes in ninth grade earned a "D" or "F" at nearly twice the rate of their peers who enrolled in college-preparatory math and English courses (Cooney & Bottoms, 2002).

Table 1: The Consequences of Needing Remediation (Four-Year College Students: 1988-2000)

Remedial Courses Needed	Percent Earning a Bachelor's Degree
Any remedial reading course	36%
1-2 remedial math courses only	45%
2 or more remedial courses other than reading	49%
1 remedial course other than math or reading	61%
No remedial courses needed	76%

Source: National Educational Longitudinal Survey (NELS:88), calculations by Clifford Adelman, U.S. Department of Education, 2004. Table adapted from Carey, 2004.

Placing students into different curricular tracks and perhaps denying some students the opportunity to enroll in high-level courses can be detrimental to their future. Progressing through high school taking only lower-level courses in mathematics, English, and science may not only hurt students in the long run, but may also deny them the opportunity to be challenged academically and rise to meet those challenges. These opportunities may not only influence their success in high school, but also their success in either college or the workforce.

Additionally, teachers' expectations of the number of students planning to continue their education at a 2-year or 4-year college differ dramatically from students' expectations. When asked about their plans to attend a 2-year or 4-year college or enter the workforce after high school, 79% of students responded that they planned on attending college, 5% planned on working full-time, 6% planned on attending a technical or vocational school, and 10% reported having other plans. Interestingly, teachers predicted that only 51% of their students would continue on to college, 28% would enter the workforce, 14% would attend technical or vocational school, and 7% would have other plans (Axelrod & Markow, 2000). Teachers' expectations

Issues with the Traditional High School Structure	
Access to Rigorous High School Curricula	<ul style="list-style-type: none"> Regardless of their ability level, students placed in college-preparatory courses perform better than students placed in lower-level courses (Cooney & Bottoms, 2002). However, not all students have the opportunity to enroll in college-preparatory courses. Teachers' and administrators' beliefs about students' future plans can lead to placement in high school curricula that deny some students the opportunity to take higher-level coursework.
Participation in Advanced Level Classes	<ul style="list-style-type: none"> If secondary and postsecondary institutions fail to define a common set of essential skills, many students will leave high school without completing the courses necessary for success in college. Across the United States, only 36% of public high school graduates' transcripts indicated that they had taken courses necessary for success in college (Greene & Forster, 2003). Only 22% of high school graduates taking the ACT met or exceeded benchmarks in the areas of biology, algebra, and English (ACT, 2004).
Need for Remedial Coursework in College	<ul style="list-style-type: none"> Estimates from 2-year and 4-year colleges and universities indicate that between 5.5% and 70.9% of incoming students need remedial coursework (Jenkins & Boswell, 2002). Remedial education courses cost students additional money and require additional time to complete a degree.

contribute to the division of students into "college bound" and "workforce bound" groups. This division can effectively exclude

some "workforce bound" students from higher-level courses, leaving them less prepared for college and the workplace.

How Can Schools Be Redesigned to Better Prepare Students?

The increasing emphasis on essential skills needed for the National Governors' Association workforce and postsecondary education has led to pockets of innovation in the redesign of high schools, but much more reform is likely to come. In response to the push for higher academic achievement, the National Governors' Association has announced a national initiative to reexamine American high schools and redesign them to prepare students for high-skilled jobs and success after graduation (National Governors Association, 2004a, 2004b). In some states and localities, redesign initiatives such as secondary and postsecondary curricular alignment, smaller learning communities, alternative schools, career and technical education, middle college high schools, and competency-based promotion are being tested or implemented.

Secondary and Postsecondary Curricular Alignment

Alignment of the high school curriculum content with the skills and knowledge students will be expected to know when entering college can help prepare students for success in college or the workplace. The development of a rigorous default high school curriculum can insure student preparedness. Requiring all students to participate in a rigorous default curriculum, and only allowing students to withdraw from this curriculum by having them and their parents sign themselves out of high-level courses, will help boost the overall skills of high school graduates.

Additionally, the development of a common set of essential skills necessary for student

readiness for college-level coursework could help eliminate the need for remedial education courses for incoming college students. Colleges need to determine a common set of skills needed for success in colleges and communicate them to high schools. In turn, high schools need to make sure their students are learning these skills. The determination of a common set of essential skills benefits both high schools and colleges. High schools will have a clear set of targeted skills that their students must learn, and colleges will benefit from the increased knowledge and skills of incoming students. With less need for remedial education, colleges can channel more resources into their academic programs (Education Trust, 2003).

To better prepare high school students for postsecondary education or the workplace, the San Jose Unified School District implemented more rigorous graduation standards, beginning with the graduating class of 2002. The new graduation requirements are aligned with California Public College Entrance Requirements which include provisions for the number of years of history, English, math, science, foreign language, and visual or performing arts/electives (San Jose Unified School District, n.d.).

The results from the implementation of this new curriculum have been very positive. Reading and mathematics scores at the high school level have improved significantly and at a much greater rate than at schools across the rest of California. Additionally, despite the increases in course requirements for graduation, the San Jose Unified School District's graduation rate rose from 72% in 1998-99 to 73% in 2002-03 (Education Trust – West, 2004).

Smaller Learning Communities

Smaller learning communities divide up larger schools into smaller subgroups to help students develop more personal relationships with their peers and teachers (U.S. Department of Education, 2001). While there are a number of ways that smaller learning communities can be structured, some of the most common examples of these are academies and schools-within-a-school (U.S. Department of Education, 2001).

Academies are made up of subgroups of students within a larger school. They are focused around a particular theme. Career academies are one example of the academy structure. This model coordinates curriculum and activities around a variety of occupations (Maxwell & Rubin, 2002). Academic subjects are integrated with laboratory courses and emphasize the relationship between academics and the workplace (Maxwell & Rubin, 2002). High school career academies have been shown to decrease drop-out rates and improve work attendance and job performance. Additionally, career academy students reported that this high school program provided them with the knowledge and skills needed to pursue postsecondary education (Maxwell & Rubin, 2002).

A second type of smaller learning community is the school-within-a-school.

Of the 1.2 million high school graduates tested in the areas of biology, algebra, and English in 2004, only 22% met or exceeded college readiness benchmarks in all three areas.

- ACT, 2004

A school-within-a-school is an autonomous program housed within a larger school building that has its own culture, program, personnel, students, budget, and school space (U.S. Department of Education, 2001). Much like the academy structure, a school-within-a-school works to foster relationships between students, their peers, and their teachers. Grouping students together to take courses with the same set of teachers and students increases the support that students receive from their peers and teachers (U.S. Department of Education, 2001).

Alternative Schools

Alternative schools generally refer to schools that serve students who are at-risk of failure in the more traditional school setting (Lehr et al., 2003). More specifically, the U.S. Department of Education (2002) considers an alternative school to be a "...public elementary/secondary school that addresses the needs of students which typically cannot be met in a regular school and provides nontraditional education which is not categorized solely as regular education, special education, vocational education, gifted and talented, or magnet school programs" (p. 55). The results of a 2002 survey indicated that there were an estimated 10,900 public alternative schools and programs serving 612,000 students in the United States (Kleiner et al., 2002).

Alternative schools can be generally categorized into three different program groups: Type I programs, Type II programs, and Type III programs (Raywid, 1994). Each type has different goals and characteristics.

Type I programs seek to make school a more challenging and fulfilling place for all who attend (Raywid, 1994). These types of alternative programs may resemble magnet schools, and are likely to have programmatic themes pertaining to the content they present or their instructional strategy (Raywid, 1994).

Type II programs may also be known as "last-chance programs" or alternative educational programs to which students are placed as a last chance option before expulsion (Raywid, 1994). Type II programs focus on behavior modification for students. There is little attention to curriculum modification in these programs.

Type III programs tend to focus on student remediation and on the social and emotional growth of the students (Raywid, 1994).

Career and Technical Education

The focus of career and technical education (CTE) has begun to change. In the past, the focus has been on preparing high school students for entry-level jobs that did not require any additional education beyond high school (U.S. Department of Education, 2003). In today's economy, jobs that pay sufficient wages to support a family and offer opportunities for advancement require strong academic skills, and education and training beyond high school (U.S. Department of Education, 2003).

In response to these needs, career and technical educators have been working to raise the rigor of CTE programs. CTE students are now required to meet higher academic and technical skill expectations, and be prepared for postsecondary education or advanced training (U.S. Department of Education, 2003).

Initiatives such as High Schools That Work, sponsored by the Southern Regional Education Board (SREB), have been working to improve the achievement of CTE students. The SREB identified several strategies for increasing vocational students' achievement. They include: completing a challenging curriculum, increasing graduation requirements, holding vocational students to demanding standards for technical achievement, providing guidance and advisement to students, and having students take a mathematics and science course during their senior year (Bottoms & Presson, 2000).

Additionally, the College and Career Transitions Initiative (CCTI), launched by the U.S. Department of Education in 2002, has worked to identify strategies, models, and curricula to help students make the transition from high school to postsecondary technical programs in a variety of high-demand occupational areas (U.S. Department of Education, 2003). CCTI supports 15 partnerships between community colleges and high schools that are working to develop rigorous programs that connect high school courses to advanced academic and technical courses at the postsecondary level (U.S. Department of Education, 2003).

Middle College High Schools

Middle college high schools, another curriculum model, allow students to engage in advanced education prior to completing high school. After students complete a core curriculum, they can choose from options including taking college courses or enrolling in an internship or apprenticeship program to help prepare them for future careers (Conley, 2002). The middle college high school structure has been shown to lower drop-out rates, increase the percentage of students enrolling in 2-year and 4-year colleges, and increase students' proficiency in writing at sites across the country (Conley, 2002).

Beginning in 1971, the middle college high school at the City University of New York's LaGuardia Community College has focused on helping at-risk students on the verge of dropping out of high school to get on the college track. At-risk students are enrolled in the program that provides access to the college's gym, library, faculty, and a college-like curriculum that includes smaller classes and longer periods of study (Kleiman, 2001).

This program offers students the opportunity to escape from an environment with low expectations, and places these students in an environment that focuses on students' success. Of the 500 high school students on campus in 2001, 95 percent graduated from high school, 90 percent continued on to college, and 20 percent took college courses while in high school (Kleiman, 2001).

Competency-Based Promotion

Competency-based promotion allows students to be promoted through school based on demonstrated academic ability

Modifications to the Traditional High School Structure	
<i>Curricular Alignment</i>	<ul style="list-style-type: none"> Alignment between secondary schools and postsecondary institutions can help define what students need to know to be successful. Curricular alignment can help prepare students for success in college or the workplace by ensuring they have attained the necessary skills.
<i>Smaller Learning Communities</i>	<ul style="list-style-type: none"> Smaller learning communities (SLC) in high schools, such as career academies or schools-within-a-school, break students up into subgroups to provide an environment where students are able to develop closer relationships with teachers and peers. SLCs such as career academies emphasize the relationship between academics and the workplace and have been shown to decrease drop-out rates and improve work attendance and job performance (Maxwell & Rubin, 2002).
<i>Alternative Schools</i>	<ul style="list-style-type: none"> Alternative schools provide an option for students who do not function well in traditional schools. Different curricular and structural methods are used to help provide students with an educational environment that is more suited to their academic and social needs (Raywid, 1994).
<i>Career and Technical Education</i>	<ul style="list-style-type: none"> Career and Technical Educators have worked to increase the rigor of CTE programs. Increased rigor includes a challenging curriculum, increased graduation requirements, and providing additional guidance and advisement to CTE students (Bottoms & Presson, 2000). Initiatives such as High Schools That Work and the College and Career Transitions Initiative have worked to identify strategies to help students transition from high school to postsecondary training in high-demand occupational areas (Bottoms & Presson, 2000; U.S. Department of Education, 2003).
<i>Middle College High Schools</i>	<ul style="list-style-type: none"> Middle college high schools provide at-risk students with the opportunity to attend high school on a college campus. Students attending middle college high schools have the opportunity to complete requirements for high school graduation and earn college credit. The middle college high school structure has been shown to decrease drop-out rates, increase college attendance, and improve students' writing proficiency (Conley, 2002).
<i>Competency-based Promotion</i>	<ul style="list-style-type: none"> Competency-based promotion allows for grade promotion based on students' demonstrated competency. It allows those students who demonstrate a need for additional instruction to receive it, and students who demonstrate mastery in certain areas to progress to the next educational level (Webb & Bunten, 1988).

(Webb & Bunten, 1988). Competency-based promotion allows students to progress through school at their own pace and better prepares them for college or the workplace. This promotional structure has the potential to allow some students to progress more rapidly through school than others. Rather than promoting students who may not be ready, or holding more advanced students back, competency-based promotion allows those students who need more instruction in a certain area to receive it while allowing those who are able to progress to more advanced material to do so (Webb & Bunten, 1988).

In 2001, the State of Oregon began an initiative to align high school proficiency standards with college admission standards that led to the creation of the Proficiency-based Admission Standards System, or PASS. Beginning in 2005, Oregon's 7 public universities and 17 community colleges will judge students' proficiency in areas such as mathematics, English, science, and foreign language as criteria for college

admissions. Subject proficiency will replace the traditional college admission criteria of grade point average and course credits (Graves, 2001).

Students are expected to earn Certificates of Initial Mastery (CIM) in subjects during their first two years of high school, and Certificates of Advanced Mastery (CAM) during their final two years of high school. Students will demonstrate their proficiency in academic subjects through tests and class assignments. Teachers will grade assignments using a five-point scale: N, not meeting proficiency; W, working toward proficiency; M, meets proficiency; H, high-level mastery of proficiency; and E, exemplary (Graves, 2001). The alignment of high school proficiency standards and college admission standards could allow students to move through high school more quickly than in the past. If proficiency is demonstrated after two or three years of high school, students may move on to college.

A similar reform movement is taking place in Boston, Massachusetts. Boston Public School officials are considering redesigning the traditional four-year high school structure. A proposal developed by Boston Public Schools' superintendent, Dr. Thomas Payzant, could change the way students progress toward high school graduation. Dr. Payzant's recommendation involves allowing students to work at their own pace toward high school graduation. According to the proposed plan, students who fail high school courses would be required to retake the classes they fail, rather than repeating an entire grade. This plan could allow advanced students to complete their graduation requirements in as little as three years. However, it may also keep those students who struggle to pass courses in high school for five years. The focus of the program is not on the completion of high school at age 18, but on helping students to get the knowledge and skills they need to succeed in college or the workforce before leaving high school (Associated Press, 2004; Boston Public Schools, 2004).

What is Indiana Doing to Prepare Its Students?

Secondary and Postsecondary Curricular Alignment

Indiana's Education Roundtable, an advisory body co-chaired by the governor and the state superintendent of public instruction, developed in 2003 a plan for pre-school through college (P-16) alignment to promote higher academic achievement and to help prepare students for the workplace or postsecondary education. One component of the *P-16 Plan for Improving Student Achievement* is to provide a high-quality, rigorous academic curriculum for all students. To achieve this goal, the Roundtable's P-16 Plan calls for revisions to the general diploma, the Core 40 diploma, the Academic Honors diploma, and the creation of a new Technical Honors diploma. If adopted by the Indiana State Board of Education, all changes to the high school curriculum would be effective as diploma requirements for seniors graduating in 2009 (Indiana's Education Roundtable, 2004). In addition, the revised Core 40 curriculum (see Table 2) would become the default curriculum for the class of 2011. The plan is among the first of its kind, and it has been called "...one of the most comprehensive plans that I've seen" by Keith Gayler,

associate director of the Washington, D.C., based Center on Education Policy (Gayler, cited in Hoff, 2004).

Students who seek to set the bar even higher and exceed the Core 40 requirements can complete 47 specified credits to earn an Academic or Technical Honors diploma. Requirements for the Academic Honors diploma include earning additional mathematics, world language, and fine arts credits, earning a grade point average of "B" or above, and completing one of the following requirements: 1) two Advanced Placement courses (and taking the AP exams); 2) completing dual credit courses resulting in six college credits or completing a combination of one AP course and three college courses; 3) scoring 1200 or higher on the SAT (combined math and verbal) or 26 or higher on the ACT; or 4) completing an International Baccalaureate Diploma.

Technical Honors requires that students have a grade point average of "B" or above, complete a technical or career program, and earn a recognized certification or an Indiana Certificate of Technical Achievement in a technical or career program (Indiana's Education Roundtable, 2004).

Since the first Indiana high school graduating class was able to earn a Core 40 diploma in 1998 (see Table 2 for requirements), the percentage of high school students in Indiana completing a Core 40 diploma has steadily increased. During that same timeframe, the percentage of Indiana high school students earning an Academic Honors diploma has increased as well (St. John et al., 2004b). The impact of completing either the Core 40 or Academic Honors curriculum can be seen in terms of higher performance on the SAT and increased persistence in college.

Indiana's is one of the more comprehensive plans [to increase academic rigor and course requirements for a high school diploma] that I've seen.

- Keith Gayler, Associate Director of the Center on Education Policy, Washington, DC.

Students completing the Core 40 curriculum scored an estimated 31 points higher than their peers who completed a general high school diploma. Students completing an Academic Honors diploma scored an estimated 75 points higher on the SAT than their peers completing a general high school diploma (St. John et al., 2004b).

Completion of the Core 40 diploma or Academic Honors diploma were both positively associated with college

persistence for students attending an Indiana 4-year public college or university (St. John et al., 2004b). In fact, 89% of college freshmen who had earned an Academic Honors diploma, and 83% of college freshmen who had earned a Core 40 diploma returned to college for their sophomore year. Comparatively, only 65% of college freshmen who had earned a regular high school diploma returned for their sophomore year (St. John et al., 2004b).

Similarly, students who earned Academic Honors diplomas and attended independent colleges and universities in Indiana showed greater persistence through college. Sixty-one percent of students earning a Core 40 diploma and 75% who had earned an Academic Honors diploma returned for their sophomore year of college. Sixty-seven percent of their peers who earned a general high school diploma prior to beginning college returned for their sophomore year (St. John et al., 2004a).

Table 2: Current and Proposed Indiana Core 40 Diploma Requirements

	Requirements as of 1994	Proposed Changes 2004
English/ Language Arts	8 credits Credits in literature, composition, and speech	8 credits Credits must include literature, composition, and speech
Mathematics	6-8 credits 2 credits: Algebra I 2 credits: Geometry 2 credits: Algebra II (or integrated Math I, II, and III for 6 credits) Additional credits in: Pre-Calculus/Trigonometry, AP Calculus, Discrete Mathematics, Probability and Statistics, or AP Statistics	6 credits 2 credits: Algebra I* 2 credits: Geometry* 2 credits: Algebra II* (*or complete Integrated Math series I, II, and III for 6 credits) Students must take a math class in their senior year.
Science	6 credits 2 credits: Biology I 2 credits: Chemistry I, Physics I, or Integrated Chemistry – Physics 2 credits: Additional credits in Chemistry, Physics, Earth and Space Science, Advanced Biology, Advanced Chemistry, Advanced Physics, or Advanced Environmental Science	6 credits 2 credits: Biology I 2 credits: Chemistry I or Physics I or Integrated Chemistry – Physics 2 credits: Any Core 40 science course
Social Studies	6 credits 2 credits: U.S. History 1 credit: U.S. Government 1 credit: World History and Civilization or World Geography 1 credit: Economics 1 credit: Additional course from the social studies area	6 credits 2 credits: U.S. History 1 credit: U.S. Government 1 credit: Economics 2 credits: World History/Civilization or Geography/History of the World
Other Subjects/ Flex Credits	8 credits (Other Subjects) Foreign Language Arts Computers Career Area	5 credits (Flex Credits) World Languages Fine Arts Career/Technical
Electives	2-4 credits	6 credits¹
Physical Education	1 credit	2 credits
Health	1 credit	1 credit
Total	40 total credits	40 total state credits required

¹Note – This specifies the number of electives required by the state. High school schedules provide time for many more electives during the high school years. All students are strongly encouraged to complete a Career Academic Sequence (selecting electives in a deliberate manner) to take full advantage of career exploration and preparation opportunities.

Local schools may have additional requirements.

Source: Current Core 40: Indiana Department of Education, 2004; Proposed Core 40 Changes: Indiana's Education Roundtable, 2004.

With such information in mind, Indiana's Education Roundtable has proposed the completion of the Core 40 high school curriculum as a requirement for several areas including high school graduation, admission to state-supported 4-year universities in Indiana, and for students to receive state financial aid (Indiana's Education Roundtable, 2003).

Additionally, the P-16 plan includes provisions to ensure that high school students have the option to complete Advanced Placement courses and International Baccalaureate programs, as well as earn advanced college credit through dual enrollment courses. Provisions for linking vocational and technical programs with both business and industry certification and degree programs at 2-year and 4-year colleges have also been outlined by this plan to provide opportunities for all students (Indiana's Education Roundtable, 2003).

*Smaller Learning Communities at Indiana High Schools**

Career Academies

In 2002, Pike High School in Indianapolis reorganized its high school into seven academies. These smaller learning communities within the high school are organized around broad career themes including business and technology, judicial and global studies, medical and allied health, performing arts, science and engineering, and visual arts and communications (Pike High School, 2004).

The academies at Pike High School work to link the school, businesses, and the community together to better prepare students for success in life after high school. The academies encourage students to explore their options and increase their academic achievement. Students are allowed to change academies each year in accordance with their interests. Graduation requirements for students at schools with academies are the same as those without academies. However, students at schools like Pike High School have more options for achieving the required credits for graduation (Pike High School, 2004).

Beginning with the class of 2008, students at Lafayette Jefferson High School will have the option to enroll in one of six career academies, including Arts and Comm-

unications, Business and Technology, International Studies, Life-Centered Achievement, Political and Social Sciences, and Science and Mathematics. Students enrolling in these academies will have the option to earn a Jefferson Academy Diploma, which requires students to earn additional credits beyond those required by the State of Indiana for a high school diploma (Lafayette Jefferson High School, 2004).

The Jefferson Academies give students the opportunity to work in smaller learning communities than a traditional high school structure would allow. Students are also able to get focused academic guidance throughout their high school careers, as well as preparation for success in postsecondary education, connections to postsecondary programs, and opportunities to complete college credits while in high school (Lafayette Jefferson High School, 2004).

At Lawrence North High School, the addition of the freshmen center appears to have had a positive impact on its students. According to school records, the number of freshmen students failing at least one class dropped by 18% from spring 1999 to spring 2004. Additionally, a greater number of freshmen made the honor roll during that same timeframe (Hupp, 2004).

Alternative Schools

Alternative schools in Indiana school corporations generally serve middle school and high school students who are at risk for dropping out of school for a number of reasons. They offer services including behavior modification, life skills training, remediation, and tutoring (Indiana Department of Education, Division of Educational Options, 2004a).

Eighty-nine percent of freshmen at Indiana 4-year public colleges and universities who earned an Academic Honors diploma and 83% who earned a CORE 40 diploma returned to college for their sophomore year.

- St. John et al., 2004b

Freshmen Centers

Several high schools in Indiana have built separate centers for high school freshmen in order to provide a transition between middle school and high school. In the fall of 2004, the Metropolitan School District of Pike Township opened the Pike High School Freshmen Center. An estimated 850 students will be housed at Pike Township's Freshmen Center during the 2004-05 school year (M.S.D. of Pike Township, 2003).

The Pike High School Freshmen Center joins Lawrence North High School and Warren Central High School who have been operating freshman centers since 2001 and 2003, respectively. Additionally, the Lake Central Freshman Center in Lake County, Indiana, has been in operation since 1993. Several other high schools in Central Indiana including Ben Davis High School, Carmel High School, Zionsville High School, and Noblesville High School, all have plans to open freshmen centers (Hupp, 2004).

In 2003-04, 212 school corporations offered 291 alternative education programs serving 31,955 students (Indiana Department of Education, Division of Educational Options, 2004b). Since 1997, the number of alternative education programs offered by school corporations has increased from 206 to 291, and the number of school corporations offering alternative programs has increased from 96 in 1997-98 to 212 in 2003-04 (Indiana Department of Education, Division of Educational Options, 2004b).

* For the location of the Indiana high schools, please see the school directory link on the Department of Education's web site:

<http://www.doe.state.in.us/publications/schooldirectory.html>

Conclusions and Recommendations

Several aspects of the traditional high school configuration restrict students' learning opportunities and deny some students the opportunity to participate in classes that could provide them with long-term benefits. These restrictions leave some high school students without the preparation necessary to succeed in college or the workplace. High schools, colleges and universities, and businesses must all do their part to help ensure that *all* students are prepared for successful futures, whether that future is in college or in the workplace.

Success in college depends on high school preparation

Success during college and completion of a bachelor's degree is dependent upon students' level of preparation during high school. The quality of courses completed in high school is a greater predictor of college success than test scores, class rank, or grade point average (Barth, 2003). The relationship between high school preparation and college success is perhaps most evident in mathematics courses. Students who complete high school math courses higher than algebra II double their chances of successfully earning a college degree (Adelman, 1999, cited in Barth, 2003).

Recommendations:

- All high school students should have the option to take – and should be encouraged to take – high-level mathematics, English, and science courses during high school to prepare them for the rigors of college or the workforce.
- Minimum graduation requirements should be increased for all students to ensure the completion of a rigorous, meaningful curriculum during high school. At the same time, high-level courses and programs should be maintained to promote achievement among the highest performing students (e.g., advanced honors courses, dual enrollment programs).

Teachers and administrators must not be resistant to curricular change

Beneficial changes in high school curricula can take many forms. Curricular change does not necessarily mean a complete overhaul

of the current school structure, but can take the form of alignment between the high school curriculum and college admissions standards, or the adoption of a required curriculum for all high school students (e.g., the Core 40 high school curriculum in Indiana). Curricular reform can also take the form of more radical changes such as the development of career academies, middle college high schools, and competency-based grade promotion.

Recommendations:

- Schools must examine what reforms are most appropriate for them and implement those that will be of greatest benefit to their students.
- Many of these reforms can be highly resource intensive, and they should be evaluated to determine their effectiveness and ensure that scarce resources are not devoted to curricular changes that are not working. At the same time, all programs can be improved, and comprehensive evaluations can provide the information necessary to improve major reform initiatives that are in progress.

A common set of essential skills for college/workforce success must be defined

The alignment of curricular standards between high schools and colleges can help ensure that all graduating high school students are prepared with the knowledge and skills necessary to succeed in college (Barth, 2003). A definition of essential skills could help reduce the need for students to complete remedial education courses during college or when entering the workforce. This could save businesses, postsecondary institutions, and students millions of dollars per year (Barth, 2003; Greene, 2000; Hammons, 2004).

Recommendations:

- Businesses, secondary education institutions, and postsecondary institutions should work together to develop a set of common essential skills that are necessary for success in either college or the workplace. Indiana's Education Roundtable is an example of just such a consortium working to promote rigorous academic expectations.

- Indiana is recognized as having world-class academic standards for its courses. However, failing to complete the proper sequence of courses in high school can leave students without the essential skills necessary for success in college. Alignment between secondary and postsecondary institutions' expectations for their students is necessary to enable students to complete the courses necessary to develop essential skills for success in college.

Broad reform is necessary

Although there have been some pockets of change across the country, these efforts must become more universal if all students are to be prepared for college and the workforce after high school. Progress is being made through efforts such as the increased rigor of high school graduation requirements, the creation of smaller learning communities within large schools, and the adoption of competency-based promotion. These improvements affect not only the students, but the employers who are seeking educated workers to fill the jobs of the Information Age. The burden of getting on the right curricular track and being prepared for the future should not fall solely on the students. Preparing students for several options following high school should be a primary responsibility of high school educators.

Recommendation:

- The State of Indiana should create a high school improvement task force, whose mission would include serving as a clearinghouse for information on effective high school reforms both within the state and across the nation. The task force, perhaps resulting from a consortium of government, education, and private groups with interest and expertise in improving high schools, could also provide information on funding opportunities to support reform.

References

- ACT. (2004). *Crisis at the core: Preparing all students for college and work*. Iowa City, IA: Author. Retrieved October 18, 2004, from http://www.act.org/path/policy/pdf/crisis_report.pdf
- Adelman, C. (1999). *Answers in the tool box*. Washington, DC: U.S. Department of Education.
- American Diploma Project. (2004). *Ready or not: Creating a high school diploma that counts*. Washington, DC: Achieve, Inc. Retrieved November 1, 2004, from [http://www.achieve.org/dstore.nsf/Lookup/ADPreport/\\$file/ADPreport.pdf](http://www.achieve.org/dstore.nsf/Lookup/ADPreport/$file/ADPreport.pdf)
- Associated Press. (2004). *Boston considers graduation redesign*. CNN.com. Retrieved June 28, 2004, from <http://www.cnn.com/2004/EDUCATION/06/27/brf.boston.schols.ap/index.html>
- Axelrod, A., & Markow, D. (2000). *The metropolitan life survey of the American teacher 2000: Are we preparing students for the 21st century?* New York, NY: The Metropolitan Life Insurance Company. Retrieved July 26, 2004, from <http://www.metlife.com/WPSAssets/19369043831018400720V1F2000ats.pdf>
- Barth, P. (2003). A common core curriculum for the new century. *Thinking K-16*, 7(1), 3-25. Retrieved July 22, 2004, from http://www2.edtrust.org/NR/rdonlyres/26923A64-4266-444B-99ED-2A6D5F14061F/0/k16_winter2003.pdf
- Boston Public Schools. (2004). *School committee schedule of meetings 2004*. Boston, MA: Author. Retrieved August 6, 2004, from <http://boston.k12.ma.us/schcom/schedule.asp>
- Bottoms, G., & Presson, A. (2000). *Finishing the job: Improving the achievement of vocational students*. Atlanta, GA: Southern Regional Education Board. Retrieved October 11, 2004, from <http://www.sreb.org/programs/hstw/publications/pubs/FinishingTheJob.pdf>
- Carey, K. (2004). *A matter of degrees: Improving graduation rates in four-year colleges and universities*. Washington, DC: The Education Trust.
- Conley, D.T. (2002). Preparing students for life after high school. *Educational Leadership*, 59(7), 60-63.
- Cooney, S., & Bottoms, G. (2002). *Middle grades to high school: Mending a weak link*. Atlanta, GA: Southern Regional Education Board. Retrieved July 22, 2004, from http://www.sreb.org/programs/hstw/publications/briefs/02V08_Middle_Grades_to_HS.pdf
- Education Trust. (2003). What students need to succeed: An agenda for change. *Thinking K-16*, 7(1), 26-28. Retrieved July 22, 2004, from http://www2.edtrust.org/NR/rdonlyres/26923A64-4266-444B-99ED-2A6D5F14061F/0/k16_winter2003.pdf
- Education Trust – West. (2004). *Are California high schools ready for the 21st century?* Oakland, CA: The Education Trust – West. Retrieved July 1, 2004, from http://www2.edtrust.org/nr/rdonlyres/819B2A7C-C749-477E-A90A-13DFA120C382/0/EdTrustWest_ReportFinal.pdf
- Graves, W. (2001). PASS: Oregon's new path to college. In G.I. Maeroff, P.M. Callan & M.D. Usdan (Eds.), *The learning connection: New partnerships between schools and colleges*. New York, NY: Teachers College Press.
- Greene, J.P. (2000). *The cost of remedial education: How much Michigan pays when students fail to learn basic skills*. Midland, MI: Mackinac Center for Public Policy. Retrieved July 28, 2004, from <http://www.mackinac.org/3025>
- Greene, J.P., & Forster, G. (2003). *Education working paper: Public high school graduation and college readiness rates in the United States*. New York, NY: Center for Civic Innovation, Manhattan Institute. Retrieved July 28, 2004, from http://www.manhattan-institute.org/ewp_03.pdf
- Hammons, C.W. (2004). *The cost of remedial education: How much Alabama pays when students fail to learn basic skills*. Birmingham, AL: Alabama Policy Institute. Retrieved July 28, 2004, from <http://www.alabamapolicy.org/PDFs/Remedial%20Education%20study.pdf>
- Hoff, D.J. (2004, October). Indiana considers mandatory college-prep curriculum. *Education Week*. Retrieved October 28, 2004, from <http://www.edweek.org/ew/articles/2004/10/27/09indiana.h24.html?print=1>
- Hupp, S. (September 6, 2004). The grade divide. *The Indianapolis Star*. Retrieved September 22, 2004, from <http://www.indystar.com/articles/3/176582-9723-Phtml>
- Indiana Department of Education. (2004). *Core 40 infocenter: Diploma requirements*. Indianapolis, IN: Author. Retrieved October 18, 2004, from <http://www.doe.state.in.us/core40/pdf/Core40DiplReqComp.pdf>
- Indiana Department of Education, Division of Educational Options. (2004a). *2004–2005 alternative education grant application*. Indianapolis, IN: Author. Retrieved September 30, 2004 from: <http://www.doe.state.in.us/alted/grantinfo.html>
- Indiana Department of Education, Division of Educational Options. (2004b). *Alternative education programs for 2003–2004 by corporation*. Indianapolis, IN: Author. Retrieved September 30, 2004, from http://mustang.doe.state.in.us/ALTED/Corp_Program.cfm
- Indiana's Education Roundtable. (2003). *Indiana's P-16 plan for improving student achievement: Phase I*. Indianapolis, IN: Author.
- Indiana's Education Roundtable. (2004). *Resolution to adopt changes to Indiana's course and credit requirements for a high school diploma*. Indianapolis, IN: Author.
- Jenkins, D., & Boswell, K. (2002). *State policies on community college remedial education: Findings from a national survey*. Denver, CO: Education Commission of the States, Community College Policy Center.
- Johnson, J., Duffett, A., Vine, J., & Moye, L. (2003). *Where are we now: 12 things you need to know about public opinion and public schools*. Washington, DC: Public Agenda. Retrieved November 1, 2004, from http://www.publicagenda.org/research/pdfs/where_we_are_now.pdf

References (Continued)

- Kleiman, N.S. (2001). *Building a highway to higher ed: How collaborative efforts are changing education in America*. New York, NY: Center for an Urban Future. Retrieved August 4, 2004, from www.nycfuture.org/images_pdfs/pdfs/education%20report.final.pdf
- Kleiner, B., Porch, R., & Farris, E. (2002). *Public alternative schools and programs for students at risk of educational failure: 2000-01 (NCES 2002-04)*. Washington, DC: U.S. Department of Education, National Center for Education Statistics. Retrieved September 30, 2004, from http://www.iaae.net/Articles/NCES_PUB_Alt_Schools.pdf
- Lafayette Jefferson High School. (2004). *2004-05 Jefferson Academies*. Lafayette, IN: Author. Retrieved August 18, 2004, from <http://www.lafayettejeff.org/academies/academies.pdf>
- Lehr, C.A., Lanners, E.J., & Lange, C.M. (2003). *Alternative schools: Policy and legislation across the United States research report I*. Minneapolis, MN: University of Minnesota Institute on Community Integration.
- Maxwell, N., & Rubin, V. (2002). High school career academies and post-secondary outcomes. *Economics of Education Review*, 21, 137-152.
- Metropolitan School District of Pike Township. (2003). *Pike High School Freshmen Center Report*. Indianapolis, IN: Author. Retrieved September 22, 2004, from <http://www.pike.k12.in.us/pfc/report.asp>
- National Center for Education Statistics. (1999). *Students who prepare for college and a vocation*. Washington, DC: U.S. Department of Education. Retrieved August 2, 2004, from <http://nces.ed.gov/pubs99/1999072.pdf>
- National Center for Education Statistics. (2004). *The condition of education 2004*. Washington, DC: Author. Retrieved October 18, 2004, from <http://nces.ed.gov/programs/coe/2004/section5/indicator31.asp>
- National Governors Association. (2004a). *Redesigning the American high school*. Washington, DC: Author. Retrieved October 28, 2004, from <http://www.nga.org/cda/files/04chairman.pdf>
- National Governors Association. (2004b). *Governors leading high school reform efforts*. Washington, DC: Author. Retrieved October 28, 2004, from http://www.nga.org/nga/legislativeUpdate/1,1169,C_ISSUE_BRIEF^D_7342,00.html
- Pike High School. (2004). *The academies of PHS*. Indianapolis, IN: Author. Retrieved August 3, 2004, from <http://www.pike.k12.in.us/phs/frame.html>
- Raywid, M.A. (1994). Alternative schools: The state of the art. *Educational Leadership*, 52(1), 26-31.
- San Jose Unified School District. (n.d.). *High school graduation requirements*. San Jose, CA: Author. Retrieved August 5, 2004, from http://www.sjUSD.k12.ca.us/District_Information/Contact/graduation.html
- St. John, E.P., Chung, C-G., & Musoba, G.D. (2004a). *Academic success in independent colleges: Analyses of persistence by Indiana's 2000 freshmen cohort (IPAS Research Report #04-02)*. Bloomington, IN: Indiana Project on Academic Success.
- St. John, E.P., Musoba, G.D., & Chung, C-G. (2004b). *Academic preparation and college success: Analyses of Indiana's 2000 high school class (IPAS Research Report #04-03)*. Bloomington, IN: Indiana Project on Academic Success.
- U.S. Department of Education. (2003). *Charting a new course for career and technical education: Issue brief from the high school leadership summit*. Washington, DC: Author. Retrieved October 11, 2004, from <http://www.ed.gov/about/offices/list/ovae/pi/hsinit/papers/cte.pdf>
- U.S. Department of Education, National Center for Educational Statistics. (2002). *Characteristics of the 100 largest public elementary school districts in the United States: 2000-01 (NCES 2002-351)*. Washington, DC: Author.
- U.S. Department of Education, Office of Elementary and Secondary Education and Office of Vocational and Adult Education. (2001). *An overview of smaller learning communities in high schools*. Washington, DC: Author. Retrieved September 21, 2004, from http://www.ed.gov/offices/ovae/hs/slcp/slchighschools_research_09_01.doc
- Webb, M., & Bunten, P. (1988). *Promotion policies in the urban high school*. ERIC/CUE Digest No. 48. New York, NY: ERIC Clearinghouse on Urban Education.

 The Authors

Jonathan Plucker (jplucker@indiana.edu) is the Director of the Center for Evaluation and Education Policy.

Jason S. Zapf (jzapf@indiana.edu) is a Graduate Assistant at the Center for Evaluation and Education Policy.

Terry E. Spradlin (tspradli@indiana.edu) is Associate Director for Education Policy at the Center for Evaluation and Education Policy.

Web Resources

An Overview of Smaller Learning Communities in High Schools.

U.S. Department of Education Office of Elementary and Secondary Education and Office of Vocational and Adult Education
Available at: http://www.ed.gov/offices/ovae/hs/slcp/slchighschools_research_09_01.doc

Crisis at the Core: Preparing all Students for College and Work.

ACT

Available at: http://www.act.org/path/policy/pdf/crisis_report.pdf

NGA Chairman's Initiative: Redesigning the American High School

National Governor's Association

Available at: <http://www.nga.org/chairman04/>

Moving Forward with Core 40

Indiana Education Roundtable

Available at: <http://www.edroundtable.state.in.us/pdf/P16/state%20board%20presentation%20on%20Core%2040%20resolutions%2010-6-04.pdf>

**More about the Center for Evaluation & Education Policy
and our publications can be found at our web site:
<http://ceep.indiana.edu>**

Redesigning High Schools to Prepare Students for the Future
Education Policy Briefs are published by the Center for Evaluation and Education Policy.

Indiana University
509 East Third Street
Bloomington, IN 47401-3654
812.855.4438



NON-PROFIT ORG.
U.S. POSTAGE
PAID
Bloomington, IN 47405
Permit No. 2