

HOW TO DEVELOP A SCOPE & SEQUENCE THAT STRATEGICALLY ALIGNS HIGH SCHOOL, COLLEGE, AND INDUSTRY

The P-TECH 9-14 school model is an integrated six-year scope and sequence (S&S) of high school classes, college courses, and work-based learning experiences. The scope and sequence provides the blueprint for students to earn their high school diploma, associate degree, and relevant workplace knowledge within four to six years. The S&S document is a semester-by-semester overview of the school's program, covering the full range of grade levels and content areas, paying attention to the specific order and thoughtful arrangement of academic courses and work-based learning experiences. All students complete the same high school and college requirements, but the pace at which they move can vary.

Developing a scope and sequence, and building out the various pathways, is a complex process that must consider:

- i. Local high school graduation requirements, including required courses and exams
- ii. Local career and technical education (CTE) high school graduation requirements
- iii. College entrance requirements
- iv. Course prerequisites and academic requirements for the degree(s) offered
- v. Workplace skills (technical and professional skills) and experiences that are needed for employment in the specific industry

1. WHO DEVELOPS THE SCOPE AND SEQUENCE?

The development of the scope and sequence requires that all key stakeholders from high school, college, and industry work together to construct a thoughtful and comprehensive document. The high school, school district, and college need to ensure all graduation requirements are mapped out and the employer must ensure that the key skills developed in the coursework and workplace learning experiences meet entry-level requirements for successful employees.

Suggested stakeholders may include, but are not limited to:

- i. High school Principal and leadership team
- ii. High school district personnel
 - 1. *Superintendent*
 - 2. *Office of Post-Secondary Readiness or Early College Office*
 - 3. *CTE Department*
- iii. College Provost, Dean, Department Chair
- iv. P-TECH College Liaison
- v. P-TECH Industry Program Manager

2. WHAT DO YOU NEED TO KNOW OR DECIDE BEFORE DEVELOPING THE SCOPE & SEQUENCE?

Before the scope and sequence document can be constructed, there are some decisions that should be made by the P-TECH 9-14 school partners:

- i. What are the entry-level jobs that students will be working toward?
- ii. What technical and professional skills do the employer highlight as being essential for the identified jobs?
- iii. Which associate degree(s), as identified by the college partner, best align with the Skills Maps?
- iv. What are the specific workplace learning opportunities (coursework, site visits, mentor events, internships, etc.) that will be required of the students to be “first in line” for jobs with the employer?
- v. What are the eligibility standards for beginning college level coursework? Are there other factors that the group sees as important in students being ‘college ready’? What does it mean to be ready to be successful in a college course or strand of courses?
- vi. What are the eligibility standards for internships or other workplace activities? How will students demonstrate their readiness? What does it mean to be ready to be successful in a professional setting?

3. WHAT IS THE PROCESS FOR DEVELOPING THE FIRST DRAFT OF THE SCOPE & SEQUENCE?

Pre-planning: In constructing the first draft of the scope and sequence, the following components must be gathered for consideration.

- i. List all the courses required to graduate from high school, including courses that are part of the career and technical sequence.
- ii. List all the courses required for the desired associate degree(s) and examine current course syllabi.
- iii. Note all the entry requirements and/or prerequisites for the college courses (e.g. college readiness benchmarks, specific GPA in core subjects, etc.).
- iv. List the entry-level jobs the degree will feed into and the necessary skills required and suggested by the industry partner.
- v. Outline the areas where each system may have flexibility (i.e., whether biology or earth science is taught first within the high school course sequence) and where flexibility is limited or non-existent (i.e., colleges may or may not have the ability to change prerequisites for specific college courses).
- vi. List required and desired workplace learning experiences (e.g. six-week internship, summer bridge, site visits, coursework, certifications, badges, etc.)

Sequencing the high school courses: High school courses should be mapped first onto the P-TECH program’s first four years so that it is easy to see those requirements. State exams, where relevant, should also be identified and placed appropriately. Career and technical education requirements for high school programs, where relevant, should also be mapped. Bear in mind the local requirements for “seat time” per high school credit, traditional length of class periods, use of summers, etc.; be prepared to adjust these, as needed.

Focus on the 1st year: During year 1, the program provides the best opportunity to assess, support and academically norm students to the program. Therefore, programming during the 1st year needs to provide as many academic and social supports as possible. These may include:

- i. Use of extended learning time
- ii. Tutoring

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- iii. Enrichment
 - iv. Block programming
 - v. Supports for English Language learners and special education students
 - vi. Reduced content area load focused on deep conceptual work in English and mathematics

Sequencing the college courses: Since students may graduate in 4, 5, or 6 years, planning backwards from each (Year 6, Year 5, and Year 4), through mapping of the college courses for these years on top of the high school courses, will accommodate all learners and the full scope of the 4-6 year model. Also, as many college degree programs have a required sequence for their core courses, students will likely follow that basic sequence with some adjustments to accommodate individual needs. It should be noted that sometimes college courses are offered in the summer, so this should be considered when constructing the Scope & Sequence. The scope and sequence planning committee should pay attention to the supports and expectations built into the college sequence; for example, paired or concurrent courses and prerequisites.

The First College Course: The first college course in the scope and sequence is an important milestone for students. One of the goals of the first course is to help students understand how college courses differ from high school courses, and to give them the confidence that they will be able to succeed in more advanced courses as they proceed through the program. Many programs will offer the first college credit course in the 10th grade. The first college course should be carefully selected with the goal that as many students as possible will qualify to take it. The first college course should be structured as a cohort course (meaning that it is comprised entirely of high school students) and will likely be offered in the high school setting.

Examples (one campus’s plan): Cybersecurity

- i. [4 Year](#)
- ii. [5 Year](#)
- iii. [6 Year](#)

Offering More Than One College Degree: If more than one associate degree is offered, effort should be made to give students equal exposure to courses in the departments representing each of the associate degrees selected. This will provide a ‘common trunk’ of college courses before students decide which ‘branch’ or degree to pursue. If your program chooses to offer two degrees, you will be designing two Scope & Sequences with a common core of courses.

Prerequisites: It is important to pay attention to prerequisites for courses and internships so that students will be adequately prepared. However, remedial or developmental college courses should not be included in the scope and sequence. These are courses that are offered at many community colleges to help students meet college proficiency standards. The academic program at the P-TECH school should be structured so that the high school courses prepare students to meet college ready benchmarks. In addition, all courses offered in the scope and sequence should contribute to students' ability to matriculate with the degree, which remedial courses often do not do.

Sequencing the Workplace Learning Sequence: The scope and sequence will also include a Workplace Learning sequence. The partners need to decide how Workplace Learning will be monitored and implemented and then map backwards. The coursework and workplace learning experiences should complement each other, which are mapped out via the scope and sequence. As these are constantly changing, a link to teacher enablement materials on SkillsBuild for Students is provided:

https://students.yourlearning.ibm.com/channel/CNL_LCB_1596726391696 . .

Questions to consider while developing the first draft:

- i. How can college prerequisites be built into the high school course sequence?
- ii. Which courses can satisfy both high school and college requirements?
- iii. Which courses can provide dual credit?
- iv. What academic policies for taking college courses will need to be in place, in addition to established college policies?
- v. How soon must a student choose a major?
- vi. Will students have had equal exposure to each degree program's area of study by the time he or she needs to decide?
- vii. How can the college departments work together to ensure that students have been exposed to each choice?
- viii. How will workplace learning instruction be delivered?
- ix. Which workplace learning experiences will support high school and college coursework?

4. VISUALIZING THE SCOPE & SEQUENCE

Horizontal Alignment: The goal of the scope and sequence is to create a seamless academic sequence for students through the program. After the initial map is created that includes both high school and college degree coursework, the next step is to examine each content area

strand horizontally (across the six years) to ensure that the high school coursework and college courses together form a logical and supported academic sequence. For example, an English sequence would include all the necessary content to bridge successfully into the first college English course and beyond.

Vertical Alignment: This refers to the “load” students bear per semester and year in the sequence, as well as the holistic “feel” of the combination of courses and experiences per year. Each year should consider how many courses (both high school and college) it is reasonable to expect students to take and be successful, time for academic supports and extracurricular activities, as well as the fundamental skills students are building that year as they move to the next. When planning, it is important to imagine being a student in the program to anticipate what students should be learning and experiencing.

Creating a plan to support the logistics of the program: Due to the nature of the P-TECH 9-14 model, students and staff will likely need to travel between different settings. Once an initial draft of the scope and sequence has been developed, the planning team should consider the following questions:

- i. Which courses should be taken at the college and which at the high school?
- ii. How will the school handle bussing to and from the college campus? When are students mature enough to travel on their own? Note: the answers to these questions may dictate when certain courses can be in the scope and sequence.
- iii. Which college courses require special equipment or facilities that are not available at the high school?
- iv. Who will teach these courses? High school teachers who have adjunct status, or professors from the college?

5. FACTORS TO CONSIDER AS THE SCOPE & SEQUENCE IS REFINED

Crucial decision points for students in the scope and sequence: The scope and sequence document should include a summary of high school and college credits earned each year so students and families understand where the important transitions and decision points are throughout the entire program experience. Those decision points include when a student:

- i. Chooses a college degree pathway (if more than one degree is offered)
- ii. Continues their degree path OR graduates from the school with a high school diploma and a significant number of transferable college credits
- iii. Chooses to earn industry certifications
- iv. Knows that they are prepared for the entry level position in the targeted field(s)

Addressing the Needs of Diverse Learners: P-TECH 9-14 schools are designed to serve an unscreened population; therefore, students will enter the school with different levels of readiness. Efforts to bring students up to grade level should be front-loaded — especially in English and Mathematics, as the skills developed in these courses provide the foundation for success in other courses. Other scope and sequence pathways should provide opportunities for students who are able to move more quickly through the content.

6. ONCE THE COURSES AND WORKPLACE EXPERIENCES ARE SEQUENCED, WHAT'S NEXT?

Once the initial scope and sequence has been developed and approved, it can be used to plan additional elements of collaboration, including: curriculum development; professional development; student supports; assessments; and academic and other benchmarks that will ensure that students move through the Scope & Sequence successfully.

Curriculum Development:

- i. High school and college faculty should work together to develop curriculum that is aligned throughout. It is important for college professors to identify foundational skills that need mastery at the high school level and for the high school teacher(s) to implement those skills into their curriculum.
- ii. Teachers within the same grade level can develop cross-disciplinary projects that align to the skills identified in WPL and Skills Maps developed by industry.
- iii. Industry professionals should work with teachers and professors to develop projects aligned with real world tasks.

Professional Development:

- i. High school faculty, college faculty and industry professionals can all learn about the norms and requirements of each partner's organization through site visits, discussions, and common learning experiences, leading to authentic curriculum for students.

7. THE KEY STEPS IN ALIGNING HIGH SCHOOL AND COLLEGE CURRICULUM

The curriculum alignment planning committee will need:

- i. A well-defined goal or purpose for working together. The school leader should develop this goal in collaboration with the Steering Committee, a specific department chair (at the high

- school or college), or another group charged with developing and implementing the “big picture” goals for the school.
- ii. Adequate time to complete their work. Team members will need time to work, both together and independently, and some groups may benefit from visiting high school, college, and workplace settings.
 - iii. A facilitator who can help establish norms for communication and standards for the work.

8. HELPFUL QUESTIONS AND BEST PRACTICES WHEN ALIGNING DEGREE PATHWAYS

- i. What are the main things that experts ‘do’ in a specific profession? Similarly, what are the discipline-specific skills that college faculty expect to see as important for success in their field of study?
- ii. What should high school students know and be able to do in order to be prepared for the specific entry-level college courses in various disciplines? How do those expectations relate to academic standards in high school and college courses? Is the coursework aligned with current industry practice? Are pre-requisites designed to assure student success in required courses or is there a misalignment?
- iii. How do teaching strategies and classroom technologies differ between high school, college and workplace settings? Are there opportunities to mimic elements of one setting in another?
- iv. How are skills and content knowledge assessed in different settings? What are critical “high stakes” assessments in high school, college, and/or the workplace? How can we demystify those assessments for students and faculty? How do college placement exams affect the content of courses that are offered either before or after them? Is there alignment between high school exit exams and college placement exams?
- v. What are the roadblocks that college students experience in the entry-level courses that stand in the way of students acquiring the skills and knowledge necessary to be successful?
- vi. How should we assess our alignment work moving forward and plan to adjust as necessary?

Here are a few curriculum development suggestions:

- i. Create opportunities for committee members to review and compare student work from different settings (i.e., high school, college, workplace) but in closely related subjects. Compare the ways in which student work is assigned and assessed. Discuss opportunities to share the different types of expectations with students as they move from one environment to the next.

- ii. For a high school course that leads to a college course, develop an end-of-course assignment in the high school course that mimics the first assignment in the entry-level college course.
- iii. Develop syllabi for high school courses that follow the form and content used in college course syllabi. Use the high school course as an opportunity for students to learn to read and understand how syllabi are used in the college setting.
- iv. Create time in the high school curriculum for students to engage in conversations about how their learning relates to college-level learning and/or workplace norms in a specific discipline. This time to reflect will help students have a better understanding of what they know and what they need to do in order to take the next step in learning.
- v. Encourage employers to provide “real-life” examples, problems, or challenges that high school and college faculty can use as the basis for interdisciplinary projects. Create opportunities for students to present their work to panels that include high school, college and industry professionals.