

PA Academic Standards: Technology Education

Introduction

The 2020–21 school year presents a unique set of opportunities and challenges due to the disruption to instruction in spring 2020 as well as the uncertainty as the school year unfolds. Educators know that every school year there are students who require support in addressing unfinished learning from prior grades, a challenge that will be felt more prominently in the 2020–21 school year. It is vitally important that educators are supported to make deliberate instructional choices that allow all students to effectively engage with grade-level work.

The most effective and equitable way to support students in their learning is to ensure that the vast majority of time is spent engaging with grade-level content, remediating with precision and only as necessary. It is entirely possible to hold high expectations for all students while addressing unfinished learning in the context of grade-level work. Since time is a scarce commodity in classrooms — made more limited by anticipated closures and remote or hybrid learning models in the fall of 2020 — strategic instructional choices about which content to prioritize must be made.¹

Assessing students at the start of the year will identify learning gaps and provide data to inform grade level instruction — as well as incorporating both remediation and acceleration along the way. Diagnostic Assessments determine student strengths, weaknesses, knowledge, and skills. Diagnostic assessments allow teachers to adjust the curriculum to meet the unique needs of all students. While some concepts have greater emphasis in a particular year, all standards deserve a defined level of instruction. Neglecting concepts may result in learning gaps in student skill and understanding and may leave students unprepared for the challenges of a later grade.

This guidance document is designed to identify and define areas of high-level focus in Technology Education instruction supported by key PA Academic Standards. Note that while all standards deserve a defined level of instruction, neglecting key concepts may result in learning gaps in student skill and understanding and may leave students unprepared for the challenges of a later grade.

¹ Adapted from 2020–21 Priority Instructional Content in English Language Arts/literacy and Mathematics, Student Achievement Partners/Achieve the Core. May 2020

GRADE 12 FOCUS OF INSTRUCTION (2020-2021)

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Focus Areas of Instruction	PA Academic Standards
<p>Biotechnology</p> <ul style="list-style-type: none"> Analyze and solve a complex production process problem using biotechnologies (e.g., hydroponics, fish farming, crop propagation). Analyze specific examples where engineering has impacted society in protection, personal health application or physical enhancement. Appraise and evaluate the cause and effect and subsequent environmental, economic, and societal impacts that result from biomass and biochemical conversion. Evaluate and apply biotechnical processes to complex plant and animal production methods. Apply knowledge of biochemical-related technologies to propose alternatives to hazardous waste treatment. Apply knowledge of agricultural science to solve or improve a biochemical related problem. 	<p>3.6.12.A <i>Analyze biotechnologies that relate to propagating, growing, maintaining, adapting, treating, and converting.</i></p>
<p>Information Technology</p> <ul style="list-style-type: none"> Apply and analyze advanced information techniques to produce a complex image that effectively conveys a message (e.g., desktop publishing, audio and/or video production). Analyze and evaluate a message designed and produced using still, motion and animated communication techniques. Describe the operation of fiber optic, microwave, and satellite informational systems. Apply various graphic and electronic information techniques to solve real world problems (e.g., data organization and analysis, forecasting, interpolation). 	<p>3.6.12.B <i>Analyze knowledge of information technologies of processes encoding, transmitting, receiving, storing, retrieving, and decoding.</i></p>
<p>Physical Technologies</p> <ul style="list-style-type: none"> Apply knowledge of construction technology by designing, planning, and applying all the necessary resources to successfully solve a construction problem. Compare resource options in solving a specific manufacturing problem. Analyze and apply complex skills needed to process materials in complex manufacturing enterprises. Apply advanced information collection and communication techniques to successfully convey solutions to specific construction problems. Assess the importance of capital on specific construction applications. Analyze the positive and negative qualities of several different types of materials as they would relate to specific construction applications. Analyze transportation technologies of propelling, structuring, suspending, guiding, controlling, and supporting. Analyze the concepts of vehicular propulsion, guidance, control, suspension, and structural systems while designing and producing specific complex transportation systems. 	<p>3.6.12.C <i>Analyze physical technologies of structural design, analysis and engineering, personnel relations, financial affairs, structural production, marketing, research, and design to real world problems.</i></p>