

8710.4850 TEACHERS OF TECHNOLOGY

FORM 1-C MATRIX

Professional Education Program Evaluation Report (PEPER II)	MATRIX Form I-C																	
8710.4850 Teachers of Technology	Identify coding used to indicate placement or assignment of standards here: (example: K=knowledge, A= assessed, A=Final Assessment)																	
	IT 1100	IT 1210	IT 1220	IT 1310	IT 1350	IT 1410	IT 1460	IT 2100	IT 2250	IT 2370	IT 3310	IT 3380	IT 3850	IT 3857	IT 4537	IT 4858	IT 4860	IT 4870
Subp. 3. Subject matter standard. A candidate for licensure as a teacher of technology must complete a preparation program under subpart 2, item C, that must include the candidate's demonstration of the knowledge and skills in items A to C.																		
A. A teacher of technology understands central concepts common to technology content. The teacher must understand:																		
(1) the technological method including defining the problem, researching, identifying possible solutions, analysis, implementation, and evaluation and how to apply it;		KA	KA		KA								K	KA	KA			KA
(2) how to identify, classify, and organize content within the following technological bodies of knowledge:																		
(a) communications technology including:																		
i. graphic and electronic forms of communications;					KA	K	K							K	KA			
ii. the processes of designing, drafting, photographing, printing, technical writing, and computer-based communication; and						KA	KA								KA			K
iii. communication systems such as data processing, programming, recording and playing, and transmitting and receiving information;					K	KA	KA											
(b) construction technology including:																		
i. the fields of residential, commercial, and civil construction; and										KA								
ii. construction systems, including wood, concrete, steel, composites, electrical, mechanical, and site development;					KA					KA								
(c) manufacturing technology including:																		
i. custom, intermittent, and continuous types of manufacturing;									K	KA					KA			KA
ii. manufacturing processes relating to materials used and the processes of forming, separating, combining, measuring, and finishing; and		KA	KA						KA						KA			K
iii. manufacturing systems such as research and development, automation, material handling, and quality control;		K	K						K	KA								
(d) energy and power technology including:																		
i. radiant, chemical, thermal, mechanical, electrical, and nuclear forms of energy;					KA													
ii. methods of extracting, conserving, measuring, controlling, converting, transmitting, and storing energy;					KA													
iii. fossil fuel, solar, nuclear, electrical, fluid, and renewable energy resources; and									K			KA						
iv. converting, measuring, altering and controlling mechanical power systems;				KA	KA													

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(e) transportation technology including:																			
i. terrestrial, marine, atmospheric, and space modes of transportation; and				K								KA							
ii. propulsion, suspension, guidance, control, support, and structural systems of transportation;				KA															
(f) biotechnology including:																			
i. plant, animal, and machine applications of biotechnology and biotechnology processes for propagating, growing, maintaining, harvesting, adapting, treating, and converting; and												KA							
ii. human factors, engineering, health care, cultivation of plants and animals, fuel and chemical production, waste management and treatment, and biomaterials; and												KA							
(g) management of technologically related resources including the resources of time, capital, energy, tools, materials, information, and people needed to use biotechnology, communication, construction, manufacturing, energy and power, and transportation technology;									KA										
(3) how technological elements, components, and devices function in micro and macro systems including input, process, output, and feedback, and why systems interact or behave as they do;					KA		K		KA	KA	KA								
(4) historical, sociological, ethical, environmental, and economic impacts of technology; and									KA				K	KA	K	K			
(5) current and emerging technological careers, the importance of possessing lifelong learning values, workplace skills, and an understanding of the developmental career process as gained through employment, internship, mentorship, job shadowing, or apprenticeship.	KA	K	K						KA	K			KA	KA	KA				
B. A teacher of technology understands central concepts common to the teaching and learning of technology education content. The teacher must understand:																			
(1) the definition, philosophy, and rationale of technology education;													KA	K		KA	KA		
(2) technological issues and problems for teaching decision-making, critical thinking, and problem-solving skills;													KA	KA		KA			
(3) how to use tools, equipment, materials, and processes in technology education learning environments safely; and		KA	KA	KA	KA	KA				KA				KA			KA	KA	
(4) laboratory oriented instructional skills necessary for modeling technological expertise including craftsmanship, visualization skills, spatial relationships, mechanical aptitude, and design principles.		KA	KA	KA	K	KA	KA			KA	KA		KA	KA	KA		KA	K	
C. A teacher of technology must demonstrate an understanding of the teaching of technology that integrates understanding of technology with the understanding of pedagogy, students, learning, classroom management, and professional development. The teacher of technology to preadolescent and adolescent students must:																			
(1) understand and apply educational principles relevant to the physical, social, emotional, moral, and cognitive development of preadolescents and adolescents;												KA		KA			KA		

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(2) understand and apply the research base for and the best practices of middle and high school education;													KA	KA		KA	KA		
(3) develop curriculum goals and purposes based on the central concepts of technology and know how to apply instructional strategies and materials for achieving student understanding of technology;												KA		KA		KA		KA	
(4) understand the role and alignment of district, school, and department mission and goals in program planning;													K	KA			KA		
(5) understand the need for and how to connect students' schooling experiences with everyday life, the workplace, and further educational opportunities;												K		KA			K	K	
(6) know how to involve representatives of business, industry, and community organizations as active partners in creating educational opportunities;														K			KA		
(7) understand the role and purpose of cocurricular and extracurricular activities in the teaching and learning process;	KA													K			KA		
(8) understand the impact of reading ability on student achievement in technology, recognize the varying reading comprehension and fluency levels represented by students, and possess the strategies to assist students to read technology content materials more effectively; and														KA					
(9) apply the standards of effective practice in teaching students through a variety of early and ongoing clinical experiences with middle level and high school students within a range of educational programming models.												KA		KA					