

SREB

Career Pathways Connecting Education and the Workforce

LAC Presentation – September 21, 2024

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Session Objectives



Understand SREB's definition of **career pathways** and related components to identify strengths and future opportunities in your state.



Reflect upon actions to align **industry-recognized credentials** with career pathway courses, ensuring students earn certifications that provide an employment advantage.

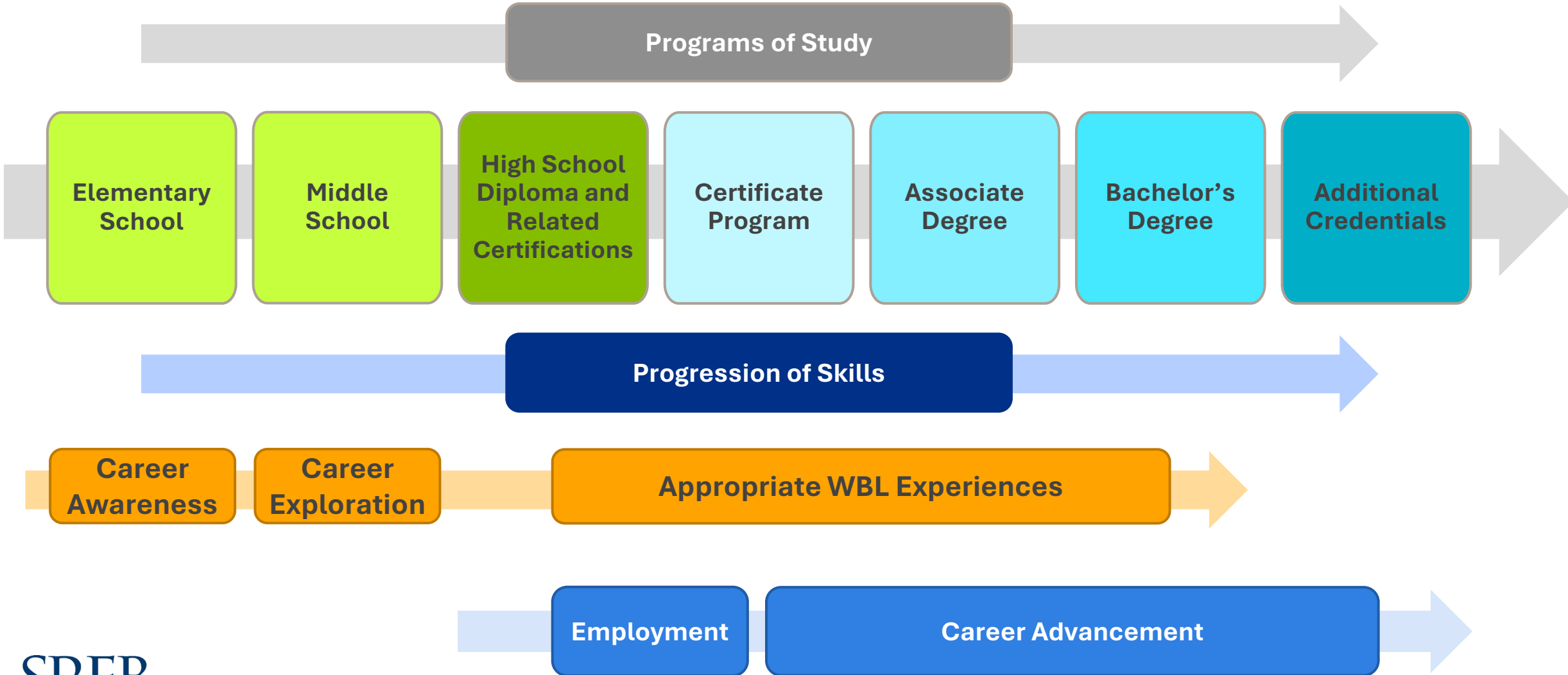


Review options to strengthen **Work-Based Learning** efforts to strategically expose students to in-demand careers and employers.

Mentimeter

Please provide your definition of a career pathway.

SREB Career Pathways

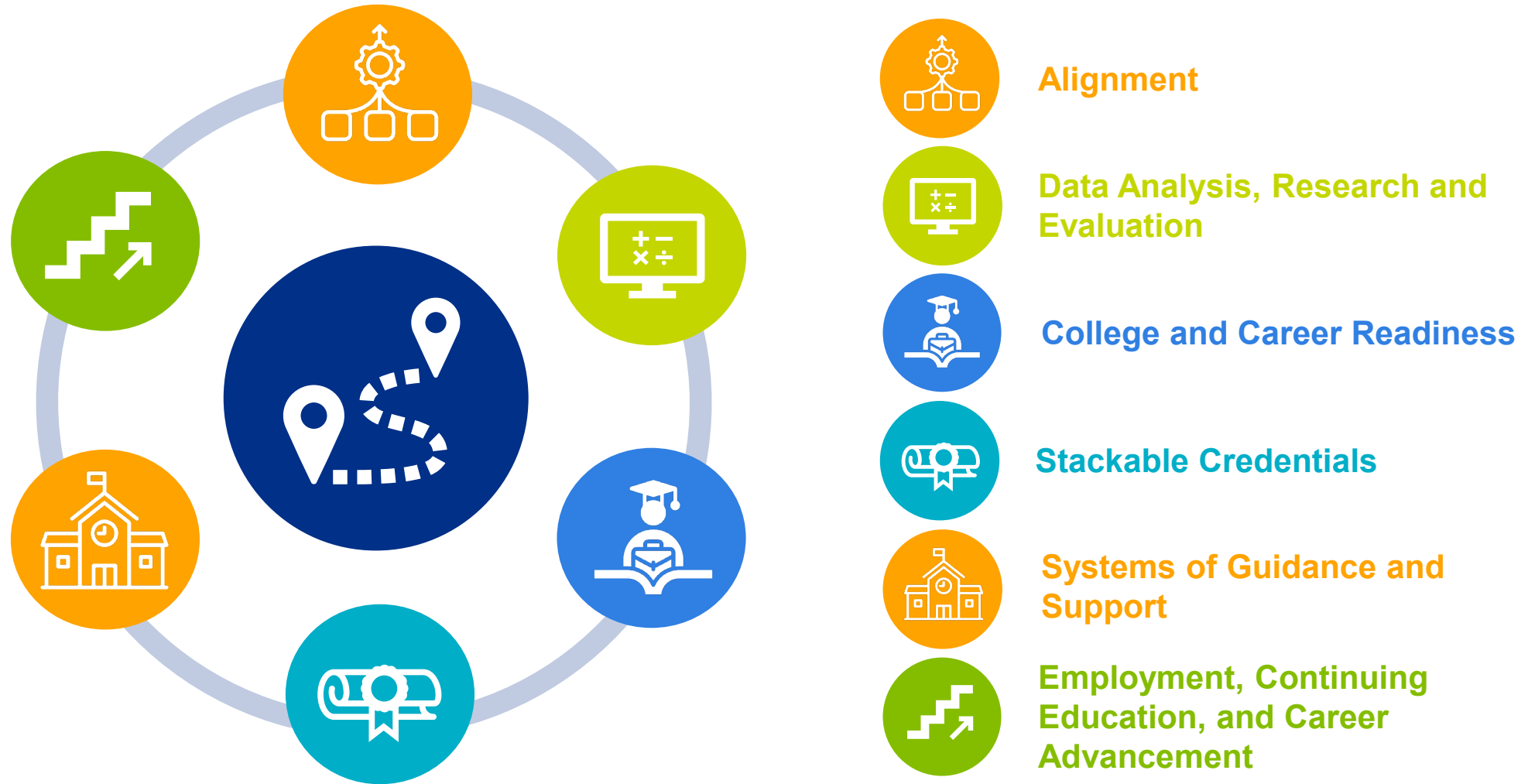


Defining SREB Career Pathways



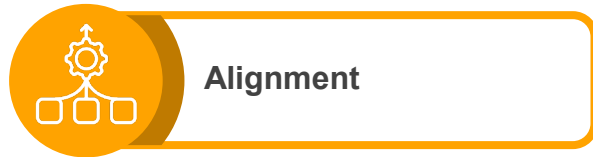
SREB career pathways connect elementary, secondary, and postsecondary education with work-based learning and real-world experiences. When implemented with fidelity, career pathways assist students and adult-learners in attaining the knowledge and skills needed to achieve personal and career goals that align with workforce needs and support thriving economies.

SREB Career Pathways Key Elements



Indicators of SREB Career Pathways

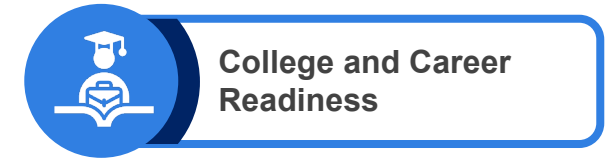
Key Elements



- Policy aligns with practice and expectations
- Programs of study align with labor market
- Work-based learning continuum
- Business and industry shareholders
- Non-duplicative courses
- Credit transferability



- Longitudinal data systems
- Data sharing and transparency
- Evidence-based programs and policies
- On-going monitoring and evaluation



- Aligned curriculum
- Integrated core academics and technical skills
- Evidence and validation
- Engaging instruction
- Educator and partner collaboration
- Experiential learning

Indicators of SREB Career Pathways

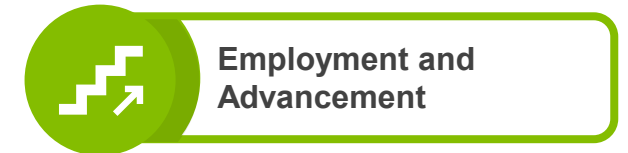
Key Elements



- Multiple entry and exit points
- Industry validated credentials
- Aligned learning outcomes
- Sequential curriculum
- Dual credit



- Career awareness, exploration and preparation
- Students' aptitude and interests
- Individual career and academic plans
- Career guidance system
- Programs of study
- Career information centers



- Meet workforce demands for high skill, high wage, high demand jobs
- Grant credit for prior learning/experience
- Career progression
- Transferable skills

Mentimeter Ranking

Now that we have reviewed the elements, please rank them for your state. 1st place goes to the strongest element; 6th place goes to the weakest element for your state.

Strategically Enhancing Career Pathways

Priority
Occupations

Aligned
Credentials

Targeted
WBL

3H Careers: High Wage, High Demand, High Skill

High Wage

- Helps inform which pathways and career areas in which to expect to make a living wage

High Skill

- Knowing the specific skills of a pathway helps to create a program of study with appropriate credentials

High Demand

- When identified, states can select certain pathways to focus resources

Industry Recognized Credentials

Health Sciences 

Credential	Level	Issuing Agency
Surgical Technologist	Essential	National Board of Surgical Technology and Surgical Assisting
NHA Certified Medical Administrative Assistant (CMAA)	Essential	National Healthcareer Association
NC: Pharmacy Technician Certification	Essential	NC Pharmacy Technician Certification Board
AAPC Certified Professional Coder CPC®	Essential	American Academy of Professional Coders
NHA Certified Billing & Coding Specialist (CBCS)	Essential	National Healthcareer Association
Sterile Processing and Distribution Technician	Essential	American Academy of Professional Coders

Current Credential List

Credential Name	Earn in One School Year	State-issued License	Point Value	EMIS Code
<u>3M: Head, Eye and Face Protection</u>	•		1	CP59
<u>3M: Hearing and Noise Protection</u>	•		1	CP60
<u>3M: Respiratory Protection</u>	•		1	CP61
<u>Accelerated Logix 5000 Maintainer Certificate Level 1</u>	•		6	CP62
<u>Accelerated Logix 5000 Programmer Certificate Course Level 1</u>	•		6	CP63
<u>Allen Bradley / Rockwell Automation PLC</u>	•		6	CL10
<u>American Welding Society (AWS) - Certified Welder (FCAW)</u>			12	CP69
<u>American Welding Society (AWS) - Certified Welder (GMAW)</u>			12	CP70
<u>American Welding Society (AWS) - Certified Welder (GTAW)</u>			12	CP71

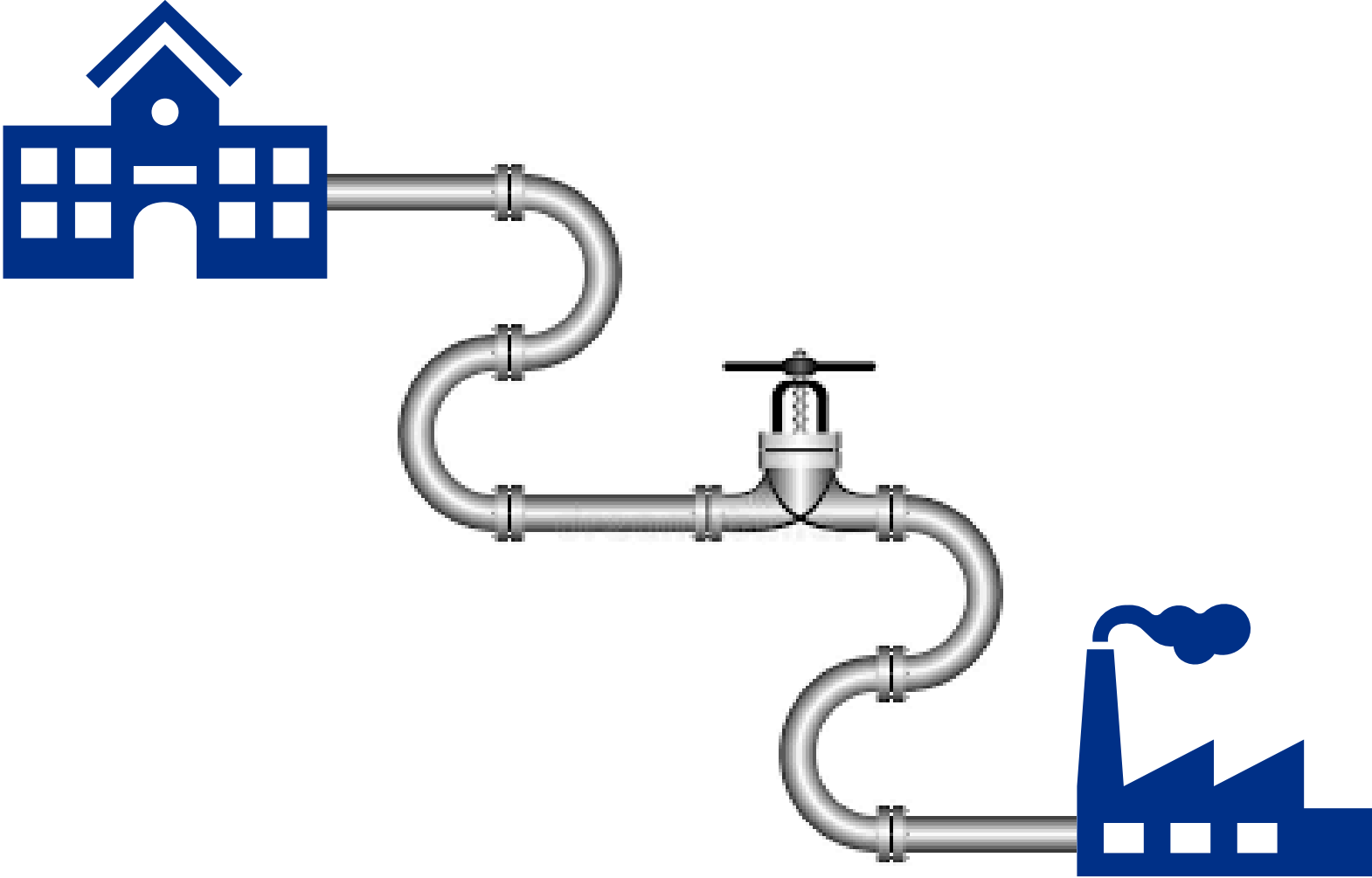
South Carolina TACs

Agriculture, Food & Natural Resources	Architecture & Construction	Arts, A/V Technology & Communications	Business, Management & Administration
Education & Training	Finance	Government & Public Administration	Health Science
Hospitality & Tourism	Human Services	Information Technology	Law, Public Safety, Corrections & Security
Manufacturing	Marketing	Science, Technology, Engineering & Mathematics	Transportation, Distribution & Logistics

TAC Members

- **Business and industry experts;**
- Postsecondary Instructors (from both two and four-year campuses);
- Local Career and Technical Education directors and teachers; and
- Workforce agency representatives (including the Department of Education, DEW and SC Competes).

Overarching TAC Goal



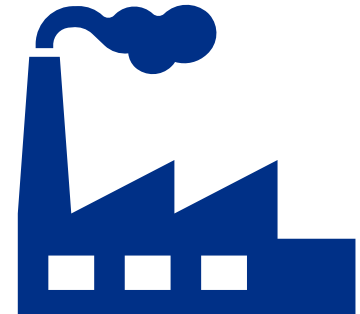
TAC Annual Focus Areas



**Year 1: Refining
Stackable Credentials**

**Year 2: Expanding Work-
Based Learning Activities**

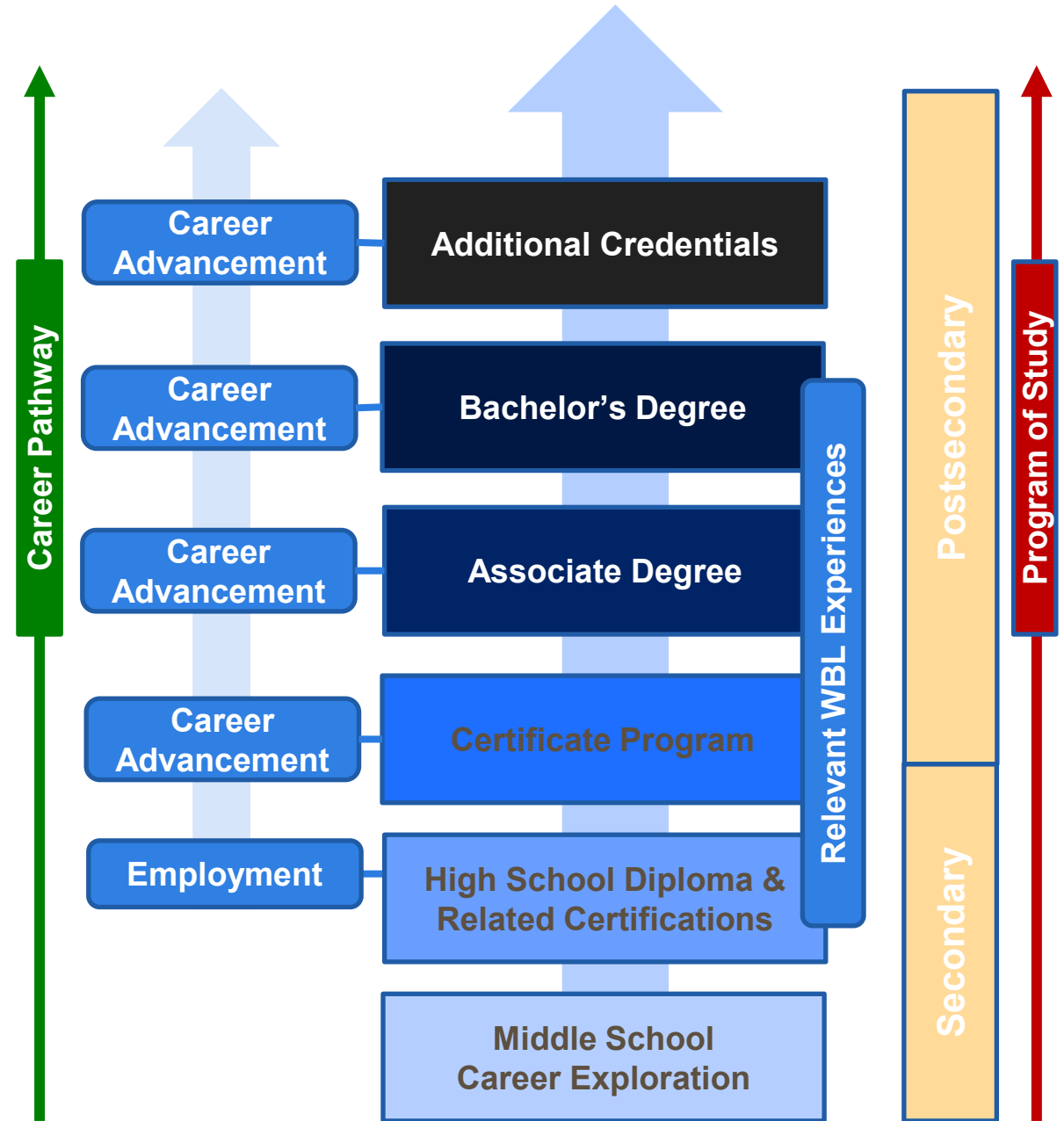
**Year 3: Communicating
Acceleration Options**



A maximum of 4 (90 minute) virtual sessions annually.

The Overarching Goal

- Create a tiered system that communicates the value of advanced credentials
- Advance credential attainment across the state to benefit:
 - Employers
 - Students/Families
 - Districts/Institutes



South Carolina's Tiering Language

Tier 1—Introductory

1. The credential measures **basic skills**.
2. The credential is **recognized by local/regional industries**.
3. The **credential can be obtained in the early stages** (first or second course) of a program of study.

Tier 2—Intermediate

1. The credential is **aligned with industry-recognized standards**.
2. The credential is **endorsed by a national industry or trade association or a major employer in the state**.
3. The credential holder is given **job consideration**.
4. The **credential leads to improved social outcomes** such as improved health and well-being.

Tier 3—Career Ready

1. There is transparent evidence the competencies held by the credential holder **align with the anticipated job opportunities**.
2. The credential **is required for employment or advanced training**.
3. The outcomes for credential holders are **wage gains, promotion, or retention supporting a family-sustaining wage for South Carolina**.
4. The **credential leads to additional education and training**. (Stackable)
5. The credential is granted to those that **complete a training program and related assessments are administered by a third party** with no connection to the test-taker.

LPSCS Credential Data

<https://bit.ly/SREB-SC-LPSCS-CRED>

Clstr 1	Clstr 2	Clstr 3	Clstr 4	Cert ID (SRPG)	CTE Certification	Tier	Currently CR Approved	Certs Admin FY20 (29,561)	Certs Passed FY20 (27,223)	Certs Admin FY21 (39,250)	Certs Passed FY21 (36,145)	Certs Admin FY22 (51,720)	Certs Passed FY22 (46,714)	Certs Admin FY23 (64,212)	Certs Passed FY23 (56,764)	Certs Admin FY24 (84,519)	Certs Passed FY24 (74,238)
LAW					Law and Public Safety CLUSTER Enrollment			3,584		3,546		3,981		4,078			
LAW				222	Basic Auto Extraction Firefighter	2	Yes	27	27	42	38	17	17	58	58	105	105
HLTH	LAW			A68	Community Emergency Response Team	2	No			19	19			20	20	5	5
LAW				A29	Emergency Telecommunicator Certification	2	Yes	22	22	39	35	62	62				
LAW				543	Department of Corrections Certificate		No									63	57
LAW				496	Emergency Medical Responder		Yes							66	66	61	59
LAW				A11	ETC Certification Course	1	No	42	40	21	19	14	13	64	60		
LAW				324	Expert Rating: Legal Administrative Assistant Certification	3	Yes					4	4	8	8	7	7
HLTH	EDU	HUM		418	First Aid	2	No			28	28	159	159			104	103
HLTH	HUM	EDU		44	First Aid/CPR/AED	2	No	2,434	2,310	2,097	2,040	2,929	2,923			18	18
HLTH	LAW			18	First Responder Certification	2	No	201	200	69	68	51	50			247	246
LAW				231	Hazardous Materials Awareness (Firefighter)	2	Yes	89	89	237	235	216	213	233	232	202	196
LAW				232	Hazardous Materials Operations (Firefighter)	3	Yes	95	88	156	152	175	172	238	234	22	22
LAW				233	Hybrid Firefighter I Class Code 1402	2	Yes	7	7	24	23	5	5	43	43	15	15
LAW				234	Hybrid Firefighter II Class Code 1403	3	Yes	5	5	8	8			5	4	255	245
LAW				A70	National Incident Management System Certification	3	Yes	155	133	146	145	182	182	254	241	118	63
LAW				351	YouScience Industry Certification: Law Enforcement	1	No			5	1	30	25	76	26	65	64
LAW				165	SCFA Certificate Auto Extrication –3330	2	No	21	21	53	53	67	66	63	63	146	137
LAW				161	SCFA Certificate NFPA 1001 Firefighter I – 1196	2	Yes	54	49	253	242	152	133	192	189	111	107
LAW				162	SCFA Certificate NFPA 1001 Firefighter II – 1197	3	Yes	33	32	70	70	55	53	104	104	79	55
LAW				455	YouScience Industry Certification: Criminal Justice 1	2	Yes					12	6	22	16	169	34
LAW				456	YouScience Industry Certification: Criminal Justice 2	3	Yes							0	0		
LAW				457	Initial Security Officer Certificate		Yes							0	0	13	13
LAW				458	Professional Security Officer Certificate	3	Yes					17	17	10	8	105	105
LAW				550	IS-700.B: Introduction to the National Incident Management System		No									38	38
LAW				547	IS-906 Workplace Security Awareness		No									38	38
LAW				548	IS-907 Active Shooter: What You Can Do		No									38	38
LAW				549	IS-909 Community Preparedness: Implementing Simple Activities for Everyone		No									2,024	1,770
					Total Certifications Administered and Earned for the Cluster			3,185	3,023	3,267	3,176	4,147	4,100	1,456	1,372		

Stackable Credential Examples

Emergency & Fire Management Services Technology Pathway

Firefighter 1

Firefighter 2

IS-700.B: Introduction to the National Incident Management System
IS-906 Workplace Security Awareness
IS-907 Active Shooter: What You Can Do
IS-909 Community Preparedness: Implementing Simple Activities for Everyone
Emergency Medical Responder

First
AID/CPR/AED

SCFA Certificate
Auto Extrication -
3330

Hazardous Materials Awareness (Firefighter)
Hazardous Materials Operations (Firefighter)
Hybrid Firefighter I Class Code 1402
Hybrid Firefighter II Class Code 1403
SCFA Certificate NFPA 1001
Firefighter I – 1196
SCFA Certificate NFPA 1001 Firefighter II – 1197
National Incident Management System
Certification First Responder Certification
Basic Auto Extraction Firefighter

Stackable Credential Examples

Mechatronics Integrated Technologies



OSHA 10 General
NCCER Core

Level 1: Fundamentals Fluid Power -
Hydraulics
Level 1: Fundamentals Industry 4.0
Level 1: Fundamentals Mechanical Systems
Snap-on/NC3: 504 Multimeter Certification

Society of Manufacturing
Engineers (SME) Certified
Manufacturing Associate
(CMfgA)
Siemens Mechatronics
Systems Certification
Titans of CNC Expert

Table Sharing



The focus on credentials is intended to showcase content and skill mastery.

Share state efforts to align industry recognized credentials and identify one action step that can advance this work in your state.

PROGRESSION OF WORK-BASED LEARNING EXPERIENCES

		Elementary School			Middle School			High School			Postsecondary					
Career Awareness	Interest surveys															
	Diverse classroom career activities															
	Diverse employer job talks															
Career Exploration	Career fairs															
	Workplace tours															
	Job shadows															
	Structured career exploration lessons															
	Informational interviews															
Career Preparation	School-based enterprises															
	Counseling															
	Internships															
	Career and technical education															
	Apprenticeships															
	Career and technical student organizations															
	Simulated work-based learning															
	Job-seeking training															
	Career Seeking and Advancement	Job applications														
Job training																
Career and financial management training																
Audience (Grade Level)		PreK-3	4	5	6	7	8	9	10	11	12	13	14	15	16	

Continuum of Work-Based Learning (WBL) Activities

The following table outlines what students can experience along the continuum of WBL activities through in-depth planning with postsecondary and employer partners.

Type of Opportunity	Description	Purpose	Sample Projects and Activities
Industry and Career Awareness	In early grades, students make connections between foundational skills and how they are applied in different occupations.	Build awareness of the variety of careers available and the role of postsecondary education in broadening student options.	<ul style="list-style-type: none"> • Small-group interactions with industry partners • Industry-driven projects that broaden student awareness. • Workplace tour • Guest speaker • Visiting parents at work
Career Exploration	In early and middle grades, students learn how to succeed in specific industries they may wish to pursue. Interest and aptitude assessments help students understand potential areas of elective focus in high school.	Explore career options and postsecondary requirements for the purpose of motivation and making informed decisions about specific occupations.	<ul style="list-style-type: none"> • Personalized interactions with employers to understand the nature of an occupation • In-depth, student-centered occupational research • Informational interview • Virtual exchange with industry partners
Career Preparation	In middle grades and high school, students enroll in career and technical education (CTE) courses that prepare them for capstone WBL experiences in high-growth industries.	Apply learning through practical experiences that develop knowledge and skills necessary for success in careers and postsecondary education.	<ul style="list-style-type: none"> • Cross-curricular project-based learning activities • Educator-led school-based enterprises • Classroom simulations
Career Training	In grades 11 and 12, students participate in WBL experiences that may include postsecondary credit-bearing courses, career-specific training, school-based enterprises, and capstone WBL placements.	Train for employment and/or postsecondary education in a specific range of occupations.	<ul style="list-style-type: none"> • Paid employment • Long-term internships • TN Certified Pre-Apprenticeships • Clinical experiences • Registered Apprenticeships

Rethinking WBL

Early
Exposure

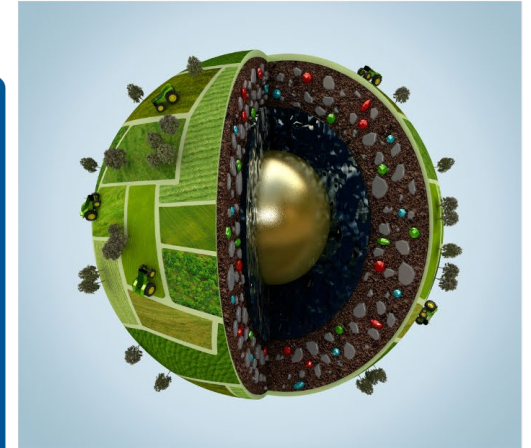
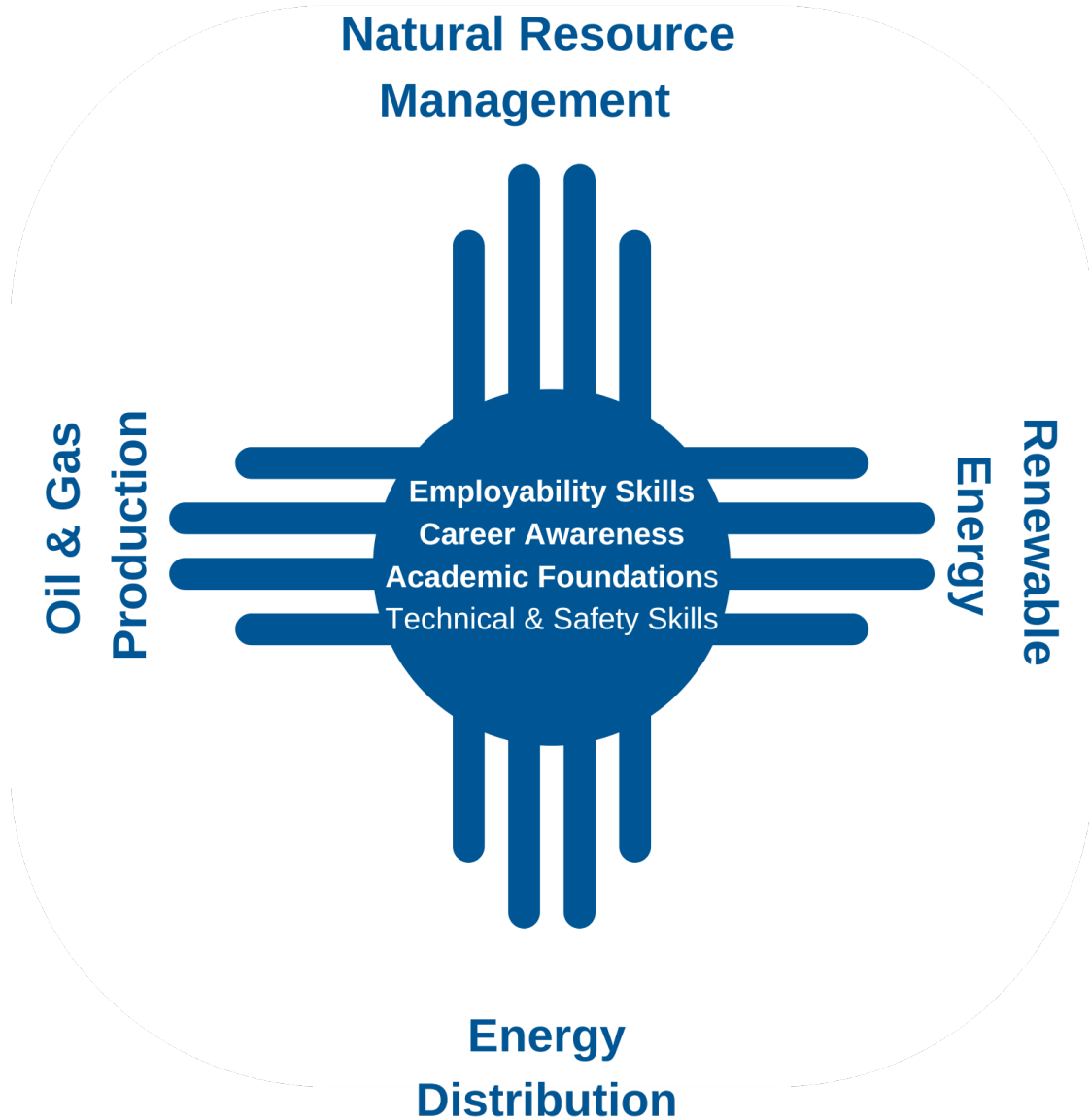
Career
Previews

Industry
Norms and
Protocols

Industry
Tools and
Technology

Highlighting
Priority
Partners

Energy & Natural Resources Management



Oil and Gas Production

<ul style="list-style-type: none"> • Derrick operators, oil and gas • Rotary drill operators, oil and gas • Service unit operators, oil and gas • Explosives workers • Petroleum pump system operators, refinery operators, and gaugers • Production/ extraction operators • Pump operators • Lease hand • Riggers • Roustabouts • Wellhead pumpers • Multi-Skill operators 	<ul style="list-style-type: none"> • Welders • Pipefitters • Mechanics • Safe Land Training 	<ul style="list-style-type: none"> • Industrial machinery mechanics • Environmental technician • Geological technicians, Except hydrologic Technicians • Automation technicians • Instrumentation technicians • Process control technicians 	<ul style="list-style-type: none"> • Environmental scientists and specialists • Fuel cell engineers • Geoscientists • Petroleum engineers • Environmental health and safety professional • Water/wastewater engineers • Mining and geological engineers, including mining safety engineers
<p>High School or Equivalent</p>	<p>Credential/Certificate</p>	<p>Associates</p>	<p>Bachelor's or Advanced</p>

Building/Remodeling a Pathway

What Jobs...?

What Skills...?

Workplace Practices...?

Inception / Concept



PSP Catalyst - Prioritized Job Roles

Job Roles further classified to establish current needs of each industry specialization, cross-disciplinary application across industries, and projected future demands based on labor market analysis.

specialized roles

- Artificial Lift Technician
- Lease Production Operator
- Lease Production Supervisor
- Production Engineering Generalist
- Water Processing Operator
- Drilling Technician
- Drilling Supervisor
- Wellsite Supervisor
- Pipeliners
- Gas Pipeline Operator
- Liquid Pipeline Operator
- Terminal Operator

transferrable roles

- EHS Advisor
- Supply Chain Operator
- Mechanical Technician
- Electrical Technician
- Automation Technician
- Measurement Technician

future roles (3-5yr trending analysis)

Deemed highly relevant to evolving industry needs...

- Data Analytics Specialist
- Data Management Advisor
- GIS Technician
- Production Analyst



Course Content Development: Course Sequence

Courses in TX and NM will include the same content, however course names differ. Course descriptions are available for TX and [NM](#).

This can be customized by school/district, as needed.

Program of Study:

- Oil and Gas Production (TX)
- Energy and Natural Resources Management (NM)

High School COURSE 1

Foundations of
Energy (TX)

Foundations of
Energy & Natural
Resource
Management
(NM)

High School COURSE 2

Oil and Gas Production
I/Lab (TX)

Integrated Energy and
Power Generation and
Distribution (NM)

High School COURSE 3

Oil and Gas Production
II/Lab (TX)

Applications of Integrated
Energy Systems (NM)

High School COURSE 4

Practicum in Energy (TX)

ENRM Practicum and
Advanced
Applications (NM)

Course 1 Standards At-a-Glance

TX 1-2 History and Process of Drilling	Basic and Emerging Principles of the Field	Modes of Transportation and Distribution	Differing Processes of Generation and Distribution
TX 1-3 Components, Systems, Equipment, Production and Safety Regulations	Six Simple Machines	Fluid Power Systems	Energy Types (Nonrenewable, Wind, Solar, etc.)
Relationships between Energy, Work, Power and Force	Future Trends of Power and Energy	TX 1-4 Safety Issues Related to the Field	ENRM Issues, Legislation and Regulations

TX 1-1 Careers/Employability Skills

Engineering Skills and Project Management Aspects

Safety and Employability Skills

1-Energy Systems	2- Sourcing Electric Motors	3- Firewater Systems and Centrifugal Pumps	Where Do We Drill?	5-Building a Well Plan
<p>-TX-History and Process of Drilling</p> <p>-Basic and Emerging Principles of the Field</p> <p>-TX Modes of Transportation and Distribution</p> <p>-Differing Processes of Generation and Distribution</p> <p>-TX Components, Systems, Equipment, Production and Safety Regulations</p> <p>-Energy Types (Nonrenewable, Wind, Solar, etc.)</p> <p>-Future Trends of Power and Energy</p> <p>-ENRM Issues, Legislation and Regulations</p>	<p>-Differing Processes of Generation and Distribution</p> <p>-TX Components, Systems, Equipment, Production and Safety Regulations</p> <p>-Six Simple Machines</p> <p>-Relationships between Energy, Work, Power and Force</p> <p>-TX Safety Issues Related to the Field</p>	<p>-TX-History and Process of Drilling</p> <p>-Six Simple Machines</p> <p>-Fluid Power Systems</p> <p>-TX Safety Issues Related to the Field</p> <p>-ENRM Issues, Legislation and Regulations</p>	<p>-TX Components, Systems, Equipment, Production and Safety Regulations</p> <p>-Energy Types (Nonrenewable, Wind, Solar, etc.)</p> <p>-ENRM Issues, Legislation and Regulations</p>	<p>-TX-History and Process of Drilling</p> <p>-TX Components, Systems, Equipment, Production and Safety Regulations</p> <p>-TX Safety Issues Related to the Field</p> <p>-ENRM Issues, Legislation and Regulations</p>
<ul style="list-style-type: none"> • Everyday petroleum products • Understanding energy systems • The lifecycle of an energy source (e.g. oil well, solar field, etc.) • Energy system prototype • Energy systems presentation • The connection across energy sources (basic level) 	<ul style="list-style-type: none"> • Overview of how motors are used in the Permian Basin • Motor components • Building a motor (hands-on with kits) and/or problem solving with trainers • Research on motor selection • Sourcing a motor to address a specific need • Presentation on motor selection with justification 	<ul style="list-style-type: none"> • Overview of centrifugal pump components • Pump assembly and disassembly • Analysis of a fire water system • Research on improving fire water systems • Creation of proposal and presentation to upgrade a fire water system 	<ul style="list-style-type: none"> • Understanding geology and rock formations in the Permian • Reading structural and seismic maps • Exploration case study on site selection • Research potential barriers and regulations associated with site selection • Prospect selection and analysis • Geophysical report or story map presentation (with visual aid) for site selection 	<ul style="list-style-type: none"> • Oil and Gas Museum connection– history of well development • Science experiment on pollution • Understanding well bore diagrams and casing models • Research and apply understanding to improve a well plan and casing model • Understand and complete local and regional applications for oil and gas permits • Presentation of well-site plan supported by a casing model

1-Energy Systems	2- Sourcing Electric Motors	3- Firewater Systems and Centrifugal Pumps	Where Do We Drill?	5-Building a Well Plan
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• Guest Speaker
 • Mentor
 • Skill/Equipment Demonstration
 • Project Judge
 • On-Site/Virtual Tours
 • Sponsorship

SREB

Firewater Systems and Centrifugal Pumps



Enduring Learning Concepts of the Unit

- Tank farms are critical components of the Permian Basin oil and gas industry and serve as storage facilities for various hydrocarbon products.
- Tank farms require fire suppression systems.
- Centrifugal pumps are used widely in the oil and gas industry for fluid transfer, injection and extraction processes. Using raw water in a centrifugal pump requires frequent maintenance due to the water's pH.
- Operators and maintenance personnel use a common technical vocabulary to describe, communicate, and troubleshoot centrifugal pumps and safety systems.
- Engineering professionals design solutions and communicate the solutions through graphics, pictures, and words.

Project Description

You work for an oil and gas company as a maintenance technician. You oversee the maintenance of a tank farm that stores liquid petroleum products or petrochemicals. The tank farm has a firewater system to fight class A fires, those that involve burning solids, such as paper, wood or structural elements of buildings. However, the system does not deliver the amount of water needed. The design draws raw or untreated water from a well, and the water is stored in the firewater tank. If a fire occurs, centrifugal pumps draw from the firewater tank and send water to various fire hydrants in the tank farm. Your company asked you to research firewater systems, investigate problems with the design, analyze the information, and develop a proposal to improve the firewater system.

After researching texts, websites, and other information about firewater systems and centrifugal pumps and participating in enabling learning activities intended to assist you in researching issues associated with firewater systems, investigating of problems with the system, and analyzing the information, write a proposal in which you argue for your improved firewater system. Support your position with evidence from texts and conclusions you draw from enabling learning activities, providing evidence to clarify your analysis.

Activities supporting this project

1. Investigate centrifugal pump use in oil and gas
2. Science lab on pH and water hardness
3. Disassemble and assemble a centrifugal pump
4. Develop firewater system schematic

Project Deliverables

1. AC Professional Notebook (Individual)
2. Procedure to disassemble and assemble a centrifugal pump
3. Prototype of group's preventive maintenance procedure
4. Firewater system schematic created using computer-aided drafting (CAD)

Table Sharing

Many states and districts have goals to expand WBL options.



Share other strategies being used by your state and identify future actions to expand WBL opportunities.

Session Objectives



Understand SREB's definition of **career pathways** and related components to identify strengths and future opportunities in your state.



Reflect upon actions to align **industry-recognized credentials** with career pathway courses, ensuring students earn certifications that provide an employment advantage.



Review options to strengthen **Work-Based Learning** efforts to strategically expose students to in-demand careers and employers.

SREB

Thank you!!!

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Southern
Regional
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