South Dakota Health Science
June 20-22, 2016
Sioux Falls

Participants:

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Participants introduced themselves stating name, location, and curricular area of expertise.

An introductory video, *Success in the New Economy* written and narrated by Kevin Fleming and produced by Bryan Y. Marsh, was shared. This video (available on the Internet at https://vimeo.com/67277269), describes a fallacy in the traditional "college for all" model of education and encourages individuals to select career paths based on interests and skills.

It was noted that the purpose of the work was to develop South Dakota's state standards for health science to ensure that they:

- Are aligned with industry needs
- Prepare students to be successful in employment and in postsecondary training
- Establish a sequence of courses leading to completion of a program of study.

It was clarified that standards describe "what" is to be learned, not "how" it is to be learned.

Information was provided regarding the importance of the federal Carl D. Perkins Career and Technical Education Act to the work and an update on progress toward reauthorization of the Act, last authorized by Congress in 2006.

The role of the standards committee was clarified to show that the standards committee members were selected because they were subject matter experts who would:

- Take the suggestions of industry
- Utilize personal expertise about how students best learn, and
- Write a standards draft.

It was further clarified that the work of the committee will go through industry validation and multiple public hearings before consideration for adoption by the State Board of Education.

Program of study was defined as:

- A nonduplicative sequence of both academic and technical courses
- Beginning no later than grade 11 and continuing for at least two years beyond high school
- Culminating in a degree, diploma or certification recognized as valuable by business/industry partners.

A program of study was viewed as the bridge connecting preparatory and advanced work in high school with further study at the postsecondary level through a collegiate program or advanced training through work.

A summary of a recent labor market analysis for South Dakota was presented, with separate slides shown identifying the 20 largest industry clusters, the fastest growing industry clusters by percentage growth and increase in employment demand, and the occupations with a projected demand of 50 or more.

Participants were asked to identify industry trends by describing what was new in the industry, what is emerging in the industry but not yet in full operation, and what is no longer done in the industry. It was intended that this information would guide discussion about where new standards were needed and where existing standards could be deleted. For health science the discussion suggested:

New and Emerging

- EMR'S
    - Part time
    - Facility
- Cultural diversity
- Computer skills
    - Rx
    - Imaging
    - Robotics
    - Communication
- Antibiotic resistance
    - Infection control
    - Super bugs
    - Isolation
- Epidemics
- Universal health care
- Genetics
- Ethics – right to die
- Immunotherapy – Body's own system to fight disease
- Aging – geriatrics
- Mental health (helpline)
- Animal therapy
- Evolving technology
- Telemedicine
    - EICU, ER
    - Follow up appointments
    - Ambulance
    - School nursing
    - Pharmacy

- Robotics - surgeries

No longer done

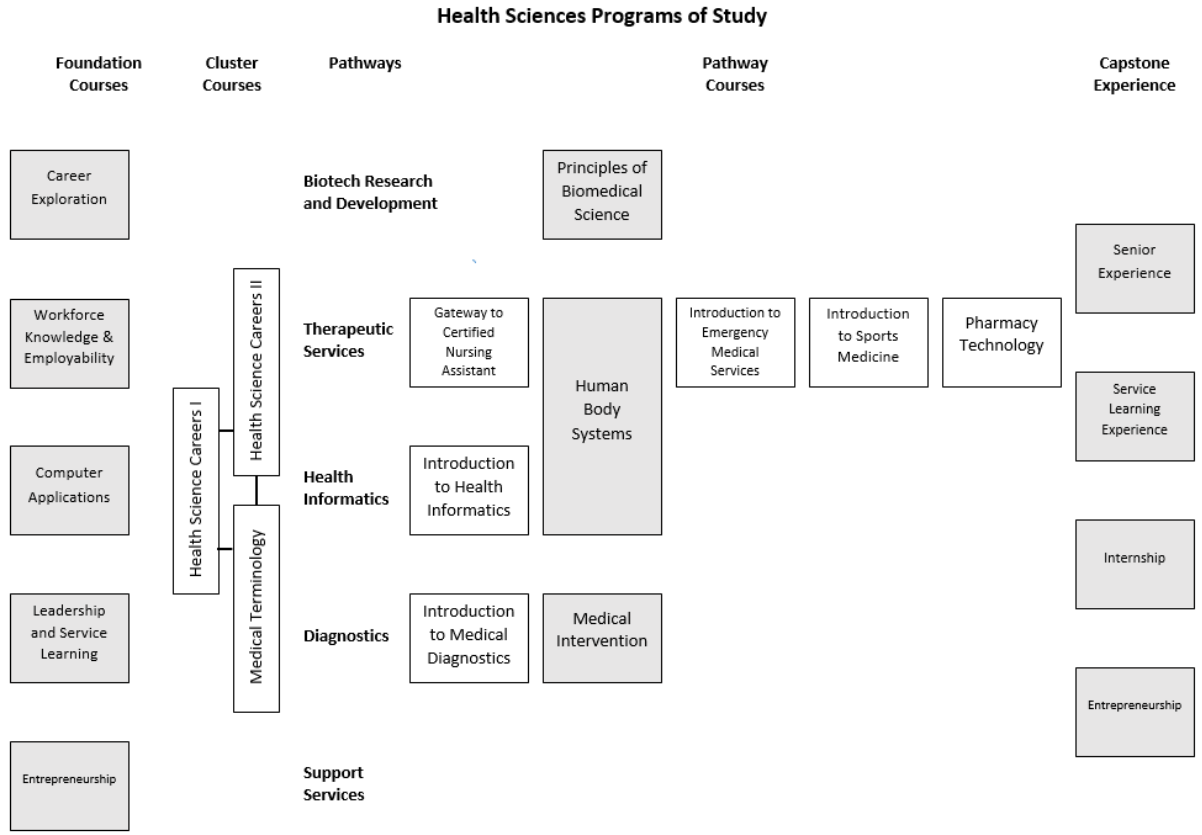
- Paper charts/dictation
- Knowledge of steps (auto checklist)
  - Head/toe
  - Checklist vs paragraph form
- Mercury thermometers
- Latex/self-capping (more sharps safety now)
- Skin on skin contact

Results of a recent survey of employers were shared. The survey was designed to ascertain if employers were having hiring difficulties, if applicants were deficient in either soft or technical skills, and options for a state response. Forty six survey responses were included in the results with largest participation from hospitality and tourism (8), architecture and construction (6), business management (6), agriculture, food and natural resources (5), manufacturing (5), and marketing (4). In general:

- Four out of five employers noted having hiring difficulties in the previous 12 months.
- Primary reasons for this hiring difficulty were:
  - Low number of applicants (29)
  - Lack of work experience (21)
  - Lack of technical or occupational skills (21)
  - Lack of soft skills (14)
  - Unwillingness to accept offered wages or work conditions (9)
- Occupational areas noting the greatest hiring difficulties were hospitality (8), and marketing (6) though these results are skewed by the response rate from the individual sector
- The most highly noted soft skills lacking were:
  - Initiative (33)
  - Attendance/dependability (30)
  - Communications (25)
  - Customer service (24)
  - Problem solving (23)
- Similarly, employers noted the highest needs for additional training in:
  - Attendance/timeliness/work ethic (73%)
  - Customer service (68%)
  - Problem-solving (50%)
  - Teamwork (41%)
- Slightly over half of employers noted that applicants lacked technical skills.
- Employers asked that the state response focus on:
  - Work ethic (8)
  - Communications (8)

The current state program of study in health science was reviewed and participants were asked to chart out a new program of study incorporating course titles for which standards would be developed. The process involved placing course titles on post-it notes on the wall with an open process to place courses where deemed appropriate, remove courses not considered appropriate, and add courses deemed necessary. The resulting structure is shown in the chart that follows and includes foundation courses, three cluster courses, pathway courses in five separate pathways (biotech research and development,

therapeutic services, health informatics, diagnostics, and support services), and four capstone experience options. The structure gives students latitude to move from cluster courses to any of the five pathways. Pathway course options, described with a first level and options at a higher level, are generally associated with one pathway and, after the first level, may be taken in any order.



Members were also asked to look at their Program of Study to make certain that students would be ready to make the transition from middle school to high school and from high school to the postsecondary level. To do so, postsecondary partners were asked what they would want students to know and be able to do upon entry into their programs, not as hard prerequisites, but general expectations for students to be ready to participate fully and effectively. Similarly, high school partners were asked what they would want students to know and be able to do upon entry into their programs, and to reflect upon whether those expectations were included in the courses available at the middle level or in the foundational courses. For health sciences, the following skills were identified:

Middle School to High School

- Read:
    - Textbook and index
    - Instructions
    - Journal articles
    - Longer than a tweet
- Writing:

    - Sentence structure
    - Word use
    - Grammar/capitalization
- Social skills
    - Empathy
- Interpersonal communication
- Online:
    - Spell check
    - Terminology
- Detail orientation
- Professional communication
- Lack of privacy/empathy
- Social media
    - Health Insurance Portability and Accountability Act (HIPAA)
    - Caring Bridge
- Criminal record
    - Any felony
- Study skills
- Time management/accountability
- Soft skills/tact/manners

High School to Postsecondary Program

- Reliability – do the work
    - Positive attitude
- Sensitivity to differences
    - Religion
    - Culture
- Accountability
- Higher order thinking skills
- Test taking skills
- Personal pride
- Appearance/work appropriate
- Drive/enthusiasm/"calling"
- Self-care/stress management

Participants were encouraged to identify a "big picture" concept statement describing what was to be accomplished within each course before developing standards. This "big picture" statement would eventually be revised to be an executive summary statement at the time that the standards had been drafted.

Information was provided about what makes good standards. These criteria included:

- Essential – does it define knowledge and skills that an individual must have to participate fully and effectively in programs that prepare them to enter careers with livable salaries, and to engage in career advancement in growing, sustainable industries?

- Rigorous – does it ask a student to demonstrate deep conceptual understanding through the application of knowledge and skills to new situations?
- Clear and specific – does it convey a level of performance without being overly prescriptive? Is it written in a way that the general public would understand?
- Teachable and Learnable – does it provide guidance to the development of curricula and instructional materials? Is it reasonable in scope?
- Measurable – Can it be determined by observation or other means that the student has gained the knowledge and skills to be demonstrated to show attainment of the standard?
- Coherent – Does it fit within the progression of learning that is expected for the program of study?
- Sequential – Does it reinforce prior learning without being unnecessarily repetitive? Does it provide knowledge and skills that will be useful as the student continues through the program of study?
- Benchmarked – Can the standard be benchmarked against industry or international standards? Does it prepare the student to be successful in the regional, state and global economies?

State agency staff met in May of 2015 to review the processes to be used for standards review. During that session the staff identified other criteria to be considered when writing standards:

- Connections to postsecondary programs
- Relevant across the content area
- Compatible with virtual learning
- Reflects business/industry input
- Adaptable to change over time
- Allows for instructional creativity
- Appropriate for the target audience
- Aligned with relevant academic content
- Applicable to student organizations
- Recognizes unique features of CTE

These additional criteria were shared with participants for their consideration during standards development, and an exercise was conducted in which participants individually, and then as a group, reviewed four sample standards.

Brief mention was made of resources available in the Dropbox in which members shared information. Because an introductory video regarding the Dropbox had been prepared and reviewed by participants prior to participation in the standards review team, the Dropbox review conducted here only showed categories of information provided in the general section and note that a Working Drafts folder would be created in which participants would store their work.

A Standards Template was shared with the participants and reviewed:

- The course title was inserted at the top.
- A grid of administrative information was completed to the extent the information was known. This grid included:
    - The Career Cluster [Health science]
    - The Course Code [to be added by state staff if not known]
    - Any prerequisites or recommended prior coursework
    - Credits [generally established by the individual school district]
    - Graduation requirement [generally established by the individual school district]

    - Program of study and sequence [a listing of the components of the program of study]
    - Student organization options
    - Coordinating work-based learning appropriate for the course
    - Industry certifications [if appropriate for the course]
    - Dual-credit or dual enrollment options if available
    - Teacher certification requirements [to be completed by state staff]
    - Resources
- Course description. Eventually this will be an executive summary describing the course, but in the process participants were encouraged to develop a "big picture" statement about the course to serve as a reminder when developing standards.
- Program of study application: a more detailed description of the elements within the program of study and where the particular course fits within a sequence.
- Course Standards and prods
    - "Prods" is a list of topics to keep in mind when developing standards to see that related topics are included. The prods identified by state staff include:
        - Safety
        - Soft skills
        - Reinforcing academic concepts in math, language arts, science and social studies
        - Addressing all aspects of the industry
        - Trends [so that students are thinking of the direction that an industry is moving]
    - Indicators – the main topics written in terms of a demonstration of knowledge and skills
    - Sub-indicators – statements identifying in more detail how the indicator will be demonstrated
    - Integrated content – A space that allows for examples, explanation, reference to credentials, alignment with other academic standards or other useful information to bring clarity to the understanding about the intent of the sub-indicator
    - Notes – a place for additional information to clarify the intent and expectations of the indicator.

An example was shared to ensure understanding.

Working teams were then established to write the standards. Each team selected a course to begin the work. Early drafts were reviewed by the consultants and participants were led with guiding questions so that they could refine their own work. Eventually, when standards had been developed for all courses, the participants did a final group review of all standards to give their approval. Final documents were then reviewed by the consultants for format and structure, and saved to the shared Dropbox. Participants were given two weeks to make any final comments or suggestions, at which time the Dropbox was put into a "read-only" status.

For Health Science the following course standards were developed:

Cluster Course

Health Science Careers I

Understand the healthcare setting networks and roles and responsibilities.

Differentiate between private and public/government healthcare settings (managed care)

Collaborate and communicate effectively with colleagues,
patients/residents, and/or family members

Classify personal traits or attitudes desirable in a member of the healthcare setting

Identify health science career pathways.

- Identify and compare health science career pathways
- Demonstrate knowledge of levels of education and credentialing requirements for a variety of health science careers of interest
- Explore and demonstrate knowledge of employment opportunities, workplace environments, and career growth potential

Examine legal/ethical responsibilities and limitations of the healthcare worker.

- Understand legal/ethical issues, religious and cultural diversity and their impacts on health care
- Understand scope of practice and a variety of professional standards including the American Medical Association, American Nurse Association, American Dental Association
- Examine the implications of Health Insurance Portability and Accountability Act (HIPAA) for healthcare professionals
- Analyze Patient/Residents' Bill of Rights and advanced directives

Understand and demonstrate safety practices in the healthcare environment.

- Apply principles of body mechanics and ergonomics
- Identify common safety hazards in the healthcare environment including patient/resident, community, and healthcare worker settings

Health Science Careers II

Identify and apply principles of infection control.

- Discuss the chain of infection
- Understand and apply the prevention of pathogen transmission

Discuss disease, diagnosis, and treatment.

- Discuss disease concept with reference to Centers for Disease Control and National Institute of Health
- Evaluate and assess patient/residents' health
- Recognize current treatment modalities including but not limited to obesity, heart disease, cancer, and respiratory

Demonstrate hands-on patient/residents' care skills.

- Apply procedures for monitoring, measuring, and recording vital signs
- Apply First Aid/Cardiopulmonary Resuscitation (CPR), and Automated External Defibrillator (AED)

Explain documentation standards and findings.

- Demonstrate use of technological documentation standards by entering data on the electronic medical record or paper
- Differentiate between subjective and objective healthcare data to communicate patient/residents' status

Medical Terminology

Build and interpret medical terminology.

- Decipher and create medical terms using word roots, prefixes, and suffixes
- Demonstrate the importance, and practice the correct spelling, of medical terminology
- Communicate patient/residents' care information utilizing medical terminology

Demonstrate use of medical terminology in relation to the human body.

- Utilize medical terminology associated with the human body and medical healthcare treatment
- Understand body planes, directional terms, quadrants, and cavities using medical terminology

Utilize medical terminology to identify and interpret signs and symptoms of diseases and disorders.

- Utilize medical terminology to compare and contrast symptoms of diseases and disorders
- Utilize medical terminology pertaining to diagnosis and treatment of diseases and disorders in patients/residents

Biotech Research and Development pathway
Principles of Biomedical Science
[Project Lead The Way (PLTW) course relying on a national curriculum]

Therapeutic Services pathway
Gateway to Certified Nursing Assistant
Discuss the Certified Nursing Assistant (CNA) certification process and roles of the CNA in the healthcare environment.
- Discuss laws and regulations that govern the work and certification of the nurse assistants
- Identify the job duties and requirements of a nurse assistant

Identify and implement principles related to infection control and basic safety/emergency situations.
- Identify Certified Nursing Assistant's role in infection control procedures in reference to Centers for Disease Control, Occupational Safety Health Administration, and National Institute of Health
- Discuss and demonstrate safety procedures within the healthcare environment

Measure and record patient/resident's health-related vital data/statistics.
- Collect and document baseline information, including vital signs, height and weight
- Identify normal ranges for vital signs, and list factors which can affect vital signs
- Identify the importance of basic physical human needs of the patient/resident
- Identify the importance of the patient/resident's psychosocial needs

Understand care involving cognitive impairment, mental illness, and death and dying.
- Identify effective strategies when caring for cognitively altered and mentally ill patients
- Understand the basic needs and care during patient/resident's death and grieving process

Human Body Systems
[Project Lead The Way (PLTW) course relying on a national curriculum]

Introduction to Emergency Medical Services
Explore roles, responsibilities, and professionalism of Emergency Medical Services (EMS) personnel.
- Distinguish differences among careers within EMS and explain in detail the education level, credentialing/licensure requirements
- Demonstrate emotional support to patient, bystanders, or other responders
- Investigate medical and legal standards in correlation with the Health Insurance Portability & Accountability Act (HIPAA)
- Apply concepts related to professional attitude and appearance

Demonstrate skills in first aid, cardiopulmonary resuscitation (CPR) and automated external defibrillation (AED) certification standards set by the American Heart Association or the American Red Cross.
- Understand how to perform First Aid for Students and/or CPR for Students and/or how to use an AED

Determine the necessity of emergency medical care for a variety of patients with varied medical conditions
- Identify emergency medical treatment protocol

Introduction to Sports Medicine
Identify the fundamental aspects of medical terminology, the human body systems, kinesiology and careers related to sports medicine.

- Distinguish differences among careers within sports medicine and explain in detail the education level, credentialing/licensure requirements
- Interpret medical terms and abbreviations to communicate information
- Identify basic structures and functions of human body systems
- Analyze concepts of kinesiology in relation to athletic performance

Understand injury prevention principles and performance enhancement philosophies

- Develop a nutrition and hydration plan for an athlete while implementing personal healthy behaviors
- Describe injury prevention
- Explore and demonstrate safe training practices in sports management
- Compare and contrast performance enhancement philosophies

Explore and understand common sports injuries, injury management and treatment techniques.

- Recognize and explain common injuries and conditions that impact athletic performance
- Assess common sports injuries to determine treatment modalities
- Perform proper treatment techniques of common sports injuries through hands-on application

Explore the psychological impact of injury and the healing process on an individual.

- Describe principles of sports psychology
- Explain possible adaptations that can be made to exercise programs to account for different clients' needs

Pharmacy Technician

Understand the roles and responsibilities of the Pharmacy Technician and governing laws.

- Understand the roles and responsibilities of a pharmacy technician
- Interpret the laws and regulations involved in dispensing medication including controlled substances
- Apply the requirements for dispensing medication in accordance with Federal and South Dakota law
- List the various types of reimbursement for prescription coverage

Understand safety measures as they pertain to preparing prescriptions and maintaining inventory.

- Identify the steps involved in preparing and processing prescriptions
- Apply safety measures to prevent prescription errors and recognize the importance of reporting errors
- Identify the process of maintaining pharmacy inventory

Understand drug dosage calculations and preparation of prescriptions.

- Solve Basic Math Problems
- Convert between metric and apothecary measurements
- Calculate dosage
- Identify characteristics of dosage forms
- Identify common terminology and abbreviations related to pharmacy

Identify various drugs and their effects on the human body.

- Define therapeutic effects of medications
- Memorize common medications by brand and generic names
- Identify the most common adverse effects of drugs
- Identify common drug interactions of drugs
- Identify monitoring parameters or labs for drug therapy

Health Informatics pathway

Introduction to Health Informatics

Communicate health information accurately and within legal and regulatory guidelines, upholding the strictest standards of confidentiality.

- Apply accuracy, effectiveness and timeliness to the transfer of information
- Summarize how legal and regulatory requirements apply to the transfer of information
- Distinguish who in the organization needs information and when they need it
- Organize recorded information and other documents within the Health Insurance Portability and Accountability Act (HIPAA) protocols to ensure confidentiality and privacy
- Communicate information ensuring confidentiality of content is maintained

Describe the content and diverse uses of health information.

- Interpret and extract information from medical records and documents
- Collect appropriate, accurate information including proper codes to record charges for reimbursement
- Identify and apply accurate medical terminology
- Determine the need for requesting further clarification when transcribing/transferring information that may be unclear
- Assess and apply information for regulatory and legal purposes

Demonstrate the use of systems used to capture, retrieve and maintain confidential health information from internal and external sources.

- Formulate and accurately document required information
- Interpret information that has been collected
- Differentiate the purposes and audiences for whom information is collected
- Prepare accurate documentation for various audiences within legal and regulatory requirements, as requested
- Disseminate information to various audiences using systems and guidelines within the facility
- Organize and maintain a records storage system within legal requirements and protocols

Diagnostics pathway

Introduction to Medical Diagnostics

Investigate Diagnostic Pathway careers.

- Compare and contrast scope of practice of diagnostic careers
- Identify educational requirements for specific careers
- Identify workforce needs and compensation
- Understand licensure, registration, or certification requirements

Acquire the skills necessary to work in any healthcare facility.

- Define the Health Insurance Portability and Accountability Act (HIPAA) and explain how it provides confidentiality for healthcare information
- Demonstrate infection control standard precautions
- Apply and demonstrate professional appearance

Understand the dynamics of a healthcare diagnostic workplace.

- Identify workplace equipment, protocol, and procedures
- Identify professional communication and teamwork
- Identify professional level patient care and interaction

Support Services pathway

[no specific courses identified]

A cover letter has been drafted to guide business/industry feedback to the standards developed through this process. The seven standards documents will be reformatted with three columns for business/industry feedback at the sub-indicator level utilizing a 1 (low) to 5 (high) scale:

- Is the sub-indicator essential?
- Is the sub-indicator clear and specific?
- Is the sub-indicator measurable?

Business/industry partners are also asked if the standards reflect the preparation necessary for a student to enter her/his particular occupational field. A sample of the reformatted document follows.

Course Standards

HSI 1: Understand the healthcare setting networks and roles and responsibilities.

			Essential 1 (low) – 5 (high)	Clear and Specific 1 (low) – 5 (high)	Measurable 1 (low) – 5 (high)
Webb Level	*Sub-indicator*	*Integrated Content*			
Two Skill/Concept	HSI 1.1 Differentiate between private and public/government healthcare settings (managed care).	Invite guest speakers (healthcare professionals), and tour healthcare facilities.			
Two Skill/Concept	HSI 1.2 Collaborate and communicate effectively with colleagues, patients/residents, and/or family members.	Speaking and listening skills in teamwork, role playing,			
Three Strategic Thinking	HSI 1.3 Classify personal traits or attitudes desirable in a member of the healthcare setting.	Select a health science career pathway that is of interest.			

Following business/industry review, state staff will revise the standards documents as necessary to incorporate business/industry suggestions. The revised documents will be shared with participants in the standards development process and, eventually, with teachers of law and public safety courses throughout the state for their feedback. Final documents will be taken through public hearings and delivered to the State Board of Education for adoption.