

Middle-level CTE Learning Experience Title: Medical Inventions Length of Lesson: 6 days (40 minute periods) Grade Level: 6-8	CTE Area: Health Sciences CTE Theme: Problem Solving and Innovation CTE Content: Communication and Client Interaction Date Created: 8/27/2019
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PLANNING	
Curriculum Goal	Students identify medical inventions that have had an impact on human life. Students research information on how the invention was developed and what desirable and undesirable impacts it created. Students create a brochure and presentation that includes multiple information sources.
Essential Question(s)	What knowledge and skills are necessary to demonstrate introductory understanding of the application of problem-solving processes and the acquisition, evaluation, and application of the products of research for informed decision making?
National Standards	<p>Common Career Technical Core Standards https://www.careertech.org/career-ready-practices Career Ready Practices</p> <ol style="list-style-type: none"> 1. Act as a responsible and contributing citizen and employee 2. Apply appropriate and academic and technical skills 4. Communicate clearly and effectively and with reason 5. Consider environmental, social, and economic impacts of decisions 6. Demonstrate creativity and innovation 7. Employ valid and reliable research strategies 11. Use technology to enhance productivity 12. Work productively in teams while using cultural global competence <p>National Consortium for Health Science Education https://www.healthscienceconsortium.org/national-health-science-standards/</p> <p>Foundation Standard 2: Communications Demonstrate methods of delivering and obtaining information, while communicating effectively</p> <p>Foundation Standard 5: Legal Responsibilities Describe legal responsibilities, limitations, and implications on healthcare worker actions</p> <p>Foundation Standard 6: Ethics Understand accepted ethical practices with respect to cultural, social, and ethnic differences within the healthcare environment</p> <p>Foundation Standard 8: Teamwork Identify roles and responsibilities of individual members as part of the healthcare team</p>

NYS Standards	<p>New York State Career Development and Occupational Studies (CDOS) Standards Intermediate Level http://www.p12.nysed.gov/cte/</p> <p>Standard 1: Career Development Students will be knowledgeable about the world of work, explore career options, and relate personal skills, aptitudes, and abilities to future career decisions</p> <p>Standard 2: Integrated Learning Students will demonstrate how academic knowledge and skills are applied in the workplace and other settings</p> <p>Standard 3a: Universal Foundation Skills Students will demonstrate mastery of the foundation skills and competencies essential for success in the workplace</p>
Learning Objectives	<p>Problem Solving and Innovation</p> <p>1. Problem Solving Students will</p> <ul style="list-style-type: none">c) Define invention as new designs for technologies and systemsd) Define innovation as new applications for existing technologies and systems <p>4. Research Applications in CTE Students will</p> <ul style="list-style-type: none">a) Locate and gather information about a problemb) Evaluate information sources for value and applicability toward a problemc) Apply the products of research for informed decisions by<ul style="list-style-type: none">a. Locating and retrieving information, data, or reference materials to be applied to a given problemb. Applying the research sources for decision making when solving a given problemc. Rationalizing the selection of sources used in problem solving when differing or conflicting sources are foundd. Crediting information sources when documenting the results of a problem-solving effortd) Demonstrate personal development of research application skills through practice of these skills in a variety of classroom applications <p>Communication and Client Interaction</p> <p>4. Problem-Solving Students will</p> <ul style="list-style-type: none">a) Anticipate that novel situations will arise in health science work situationsd) Communicate the nature of a problem, the intended solution, and the probable outcomee) Demonstrate individual and group problem-solving skills through practice of these skills in a variety of classroom simulations

Vocabulary	Academic: communication, client, innovation, graphic organizer, brochure	Content Next-generation sequencing, 3D printer, immunotherapy, artificial intelligence, point-of-care diagnostics, virtual reality, social media, biosensors, trackers, convenient care, telehealth	
Materials and Resources	<p>The 10 Greatest Medical Inventions of the Last 50 Years (Day 1) http://www.healthcarebusinesstech.com/the-10-greatest-medical-inventions-of-the-last-50-years/</p> <p>Top Ten Innovations in Healthcare (Day 2) https://www2.deloitte.com/content/dam/Deloitte/global/Documents/Life-Sciences-Health-Care/gx-lshc-top-10-health-care-innovations.pdf</p> <p>Health Care Innovation Graphic Organizer (attached) (Day 2)</p> <p>Innovation Reflection handout (attached)(Day 5,6)</p>		
INSTRUCTION	What will the teacher do?	What will the students do?	How much time for each activity?
Pre-assessment	<p>Day 1 Teacher asks students to write a description of the word “innovation.” Teacher asks students to share their responses.</p> <p>Teacher leads a brief class discussion on why innovation is important to the healthcare field.</p>	<p>Day 1 Students will write a description of the word “innovation.” Volunteers share descriptions with the class.</p>	<p>40minutes 10 minutes</p> <p>10min</p>
Do-now/Hook	<p>Day 1 (cont) Teacher asks students to work with a partner. Teacher instructs partners to generate and rank a list of the top 5 medical innovations of the last 50 years. Teacher shares the article, “The 10 Greatest Medical Inventions of the Last 50 Years” and will ask the students to read it in pairs (see http://www.healthcarebusinesstech.com/the-10-greatest-medical-inventions-of-the-last-50-years/</p>	<p>Day 1(cont) Students work with a partner to brainstorm a list of the top 5 medical innovations of the last 50 years.</p> <p>Students pair read “The 10 Greatest Medical Inventions of the Last 50 Years.”</p>	20 minutes

	<p>10-greatest-medical-inventions-of-the-last-50-years/</p> <p>Teacher then asks students to compare their lists to the list mentioned in the article Teacher explains that each of these innovations are meant to help solve problems in the healthcare industry.</p>	<p>Students compare the information in the article to the lists they brainstormed.</p>	
<p>Procedure for Instruction/ Learning Activities</p>	<p>Day 2 Teacher shares ten innovations in the future of healthcare:</p> <ul style="list-style-type: none"> • Next-generation sequencing • 3D-printed devices • Immunotherapy • Artificial intelligence • Point-of-care diagnostics • Virtual reality • Leveraging social media to improve patient experience • Biosensors and trackers • Convenient care • Telehealth <p>Teacher shares a brief description of each of these areas from https://www2.deloitte.com/content/dam/Deloitte/global/Documents/Life-Sciences-Health-Care/gx-lshc-top-10-health-care-innovations.pdf and reminds students to make notes on their Innovations in Healthcare graphic organizer (attached). Teacher explains that groups of students will work to research one innovation and develop a brochure</p>	<p>Day 2 Students listen as the teacher explains ten innovations in healthcare. Students make notes on the Innovations in Healthcare graphic organizer (attached).</p> <p>Students move into groups to research their chosen innovation and begin planning their brochure.</p>	<p>40 minutes</p>

	<p>to advertise the innovation.</p> <p>Teacher shows examples of brochures, taking time to explain how to make one successfully.</p> <p>Teacher explains student research should include:</p> <ol style="list-style-type: none"> 1) A description of the innovation 2) Pros of the innovation 3) Cons of the innovation 4) How the innovation may change the way healthcare workers interact with their clients. <p>Day 3 Teacher explains that students will work on their research and brochure. Teacher monitors and assists any group needing support.</p> <p>Day 4 Teacher explains that students will be sharing their brochures in the next class. Teacher reminds students about the four informational components required for their brochures:</p> <ol style="list-style-type: none"> 1) A description of the innovation 2) Pros of the innovation 3) Cons of the innovation 4) How the innovation may change the way healthcare workers interact with their clients. <p>Teacher provides time for students to prepare their presentation of their brochure.</p> <p>Teacher will need to have copies of each group's brochure for others to</p>	<p>Day 3 Students work in groups to research their innovation and to collaboratively plan/construct their brochures.</p> <p>Day 4 Students complete work on their brochures , checking that all informational components are included and sufficient.</p> <p>Students decide on the main points to be shared and who will share those points.</p> <p>Students submit completed brochures to teacher so copies can be prepared for next class.</p>	<p>40 minutes</p> <p>40 minutes 30min</p> <p>10min</p>
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	<p>view in the next class.</p> <p>Day 5 Teacher provides an opportunity for all groups to present their innovation via their brochure and allows other groups an opportunity to ask questions about the innovation.</p> <p>Teacher provides students with the Innovation Reflection form (attached). Teacher emphasizes how each innovation may change the way healthcare workers interact with their clients.</p> <p>Day 6 (Closure) Teacher reviews the ten innovations, their pros/cons and the way the innovation could impact communication and client care. Teacher asks students to share their thoughts on the future of healthcare, based on the information learned.</p>	<p>Day 5 Groups of students present the information on their innovations.</p> <p>Students fill out the Innovation Reflection graphic organizer during the presentations.</p> <p>Day 6 (Closure) Students participate in a summarization discussion of the innovations, their pros/cons and the way the innovations could impact their communication and care of future clients. Students share their thoughts on the future of healthcare, based on the information learned.</p>	<p>40 minutes</p> <p>40 minutes</p>
<p>Differentiation</p>	<p>Students will be placed in groups as heterogeneously as possible. The teacher will monitor groups and differentiate instruction, as necessary, to ensure that all students' needs are met. All directives in student Individual Education Plan (IEP) and 504 plans will be followed.</p>		
<p>Closure</p>	<p>Students participate in a summarization discussion of the innovations, their pros/cons and the way the innovations could impact their communication and care of future clients. Students share their thoughts on the future of healthcare, based on the information learned.</p>		
<p>ASSESSMENT</p>			
<p>College, Career, and Life Readiness Skills</p>	<p>See below Based on Middle-level Life/Career Rubrics available at https://nyctecenter.org/middle-level-life-career-rubric-database/rubrics</p>		

Performance Measure	Exemplary	Proficient	Developing	Beginning
Analyzes Career Opportunities	Analyzes career opportunities to determine requirements and compare effectively with personal strengths and skills to identify matches and gaps.	Analyzes career opportunities to determine requirement and compare effectively with personal strengths and skills.	Identifies career opportunities to determine requirements.	Unable to identify career opportunities and determine if personally interested.
Makes Connections Between Work and Needs of Community	Easily and accurately describes how work products and services benefit the community.	Describes how work products and services benefit the community.	See some connection in how work products and services benefit the community.	Fail to understand how work products and services benefit the community.
Manages Time to Complete Tasks by Deadline	Completes work ahead of schedule by creating a plan to finish early.	Completes work on time by using time management skills.	Completes work on time with reminders and supervision.	Rarely completes work on time; fails to use time management skills.
Seeks information on Career Opportunities	Extensively uses a variety of reliable sources and personal networks to inquire and locate information on career opportunities.	Uses a variety of reliable sources and personal networks to inquire and locate information on career opportunities.	Makes limited use of reliable sources and/or personal networks to inquire and locate information on career opportunities.	Fails to use reliable sources and personal networks to inquire and locate information on career opportunities.
Listens and Cooperates With Team Members	Consistently listens to others and their ideas; helps the team reach its full potential.	Listens to others' points of view and makes a definite effort to understand their ideas.	Sometimes listens to others, but often assumes others' ideas will not work. Tries to work well with the team.	Does not listen to group's opinions and ideas; wants things done own way.
Listens and Speaks when Appropriate	Engages in conversations/discussions and consistently understands when it is appropriate to speak and when it is appropriate to listen.	Engages in conversations/discussions and understands when it is appropriate to speak and when it is appropriate to listen.	At times, speaks when it is not appropriate and does not listen when it is appropriate.	Often needs to be reminded of appropriate times to speak and appropriate times to listen.
Shares Responsibility	Motivates members to share contributions equally by valuing all member's ideas and contributions.	Participates in and contributes to group's work. Values all member's ideas and contributions.	Attempts to share responsibility of group's work, but ends up completing little of the work by disregarding the input of others.	Does very little of the group's work; does not share ideas or respect others' ideas.
Uses Technology to Locate and Evaluate Information	Effectively and consistently uses multiple technology tools to collect, organize, evaluate, and/or communicate	Uses technology effectively as a tool to collect, organize, evaluate, and/or communicate information.	Uses popular technology tools to collect and/or communicate information.	Attempts to use technology to collect and/or communicate information are ineffective.

Works Effectively with Diverse Teams	information. Always listens to, shares with, and supports the efforts of others. Uses respectful and appropriate statements, responses, and body language.	Listens to, shares with, and supports others. Statements and responses are respectful, and appropriate body language is exhibited.	Most statements, responses, and body language are respectful, with only an occasional negative tone. Does not always listen to, share with, or support the efforts of others.	Statements, responses, and/or body language are not respectful. Rarely listens to, shares with, and supports the efforts of others.
Analyzes Critical Information	Thoroughly evaluates the reliability of the source and the information researched using internal and external validation.	Thoroughly evaluates information researched using internal and external validation.	Evaluates information researched but not thoroughly.	Does not evaluate information.
Maintains Focus to Completion of the Project	Stays focused consistently, prioritizes tasks, recognizes time constraints of projects, and avoids distractions while meeting deadlines.	Develops a timeline for the work to be completed and stays focused throughout the project.	Is occasionally off task in regards to accomplishing the project, thus only a portion of it is completed.	Is often off task and does not complete the project.

Health Care Innovations Graphic Organizer (Day 2)

Innovations in Healthcare

Name: _____

Innovation	Description	My Thoughts

Innovation Reflection (Day 5)

Innovation Reflection

Name:

Innovation	Pros	Cons	Potential Changes to Communication and Client Interaction

Middle-level CTE
Learning Experience Template
March 2019
