Middle-level CTE Learning Experience Title**:** Entrepreneurship Educator: Liz Gallo, WhyMaker Length of Lesson: 14 days (40 minute periods) Grade Level: 8th grade	CTE Area: Technology Education CTE Theme: Career and Community Connections CTE Content: Design Date Created: 4/1/2019

PLANNING	
Curriculum Goal	Each student researches and interviews a first-generation small business to inquire about the evolution of the company: how it began, what has changed, and how the owner used problem-solving to improve the business. Examples of businesses include a local retail store, a private contractor, a craftsman, a manufacturer, or a service provider. Students report the findings through a poster, written report, or presentation.
Essential Question(s)	What knowledge and skills are necessary to demonstrate introductory understanding of the influences that societal, economic, and technological changes have on employment and the impact that employability skills, interests, and aptitudes have on individuals' career choices and postsecondary options? What do students need to understand about how to apply design processes to address human needs and wants?
National Standards	Common Career Technical Core Standards https://www.careertech.org/career-ready-practices Career Ready Practices 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 6. Demonstrate creativity and innovation 7. Employ valid and reliable research strategies 9. Model integrity, ethical leadership, and effective management 10. Plan education and career paths aligned to personal goals 11. Use technology to enhance productivity 12. Work productively in teams while using cultural global competence International Technology and Engineering Educators Association Standards for Technological Literacy https://www.iteea.org/39197.aspx The Nature of Technology 3. Students will develop an understanding of the relationships among technologies and the connections between technology and other fields Technology and Society 4. Students will gain an understanding of the cultural, social, economic, and political effects of technology G. Economics, political, and cultural issues are influenced by the development and use of technology

	6. Students will gain an understanding of the role of society in the development and use of technology D. Throughout history, new technologies have resulted from the demands, values, and interests of individuals, businesses, industries, and societies Design 8. Students will develop an understanding of the attributes of design. 9. Students will develop an understanding of engineering design. 10. Students will develop an understanding of the role of troubleshooting, research and development, invention and innovation, and experimentation in problem solving.
NYS Standards	New York State Career Development and Occupational Studies (CDOS) Standards Intermediate Level http://www.p12.nysed.gov/cte 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. Standard 2: Integrated Learning Students will demonstrate how academic knowledge and skills are applied in the workplace and other settings. Standard 3a: Universal Foundation Skills Students will demonstrate mastery of the foundation skills and competencies essential for success in the workplace
Learning Objectives	Career and Community Connections 3. Employability Skills Students will a) Identify personal characteristics such as abilities, interests, and values and examine how they might impact career choices b) Describe characteristics and behaviors that enable individuals to contribute to the success of a group in a variety of community and work situations c) List and describe employability skills and ways they benefit individuals in community and work situations d) Demonstrate personal development of employability skills through practice of these skills in a variety of classroom applications 5. Community Needs Assessment Students will a) List and describe the typical needs of community members at each stage in the lifespan b) Research community resources available to support individuals and families c) Explore the role adolescents can play in providing for the needs and enhancing the lives of community members 6. Participation in Community Activities

<table>
<tr><td></td><td colspan="2">Students will
a) Identify community programs and projects that could benefit from student participation
b) Demonstrate personal development of employability skills through practice of these skills in an activity to benefit a community program or project
Design
1.The Attributes of Design
Students will
a) Define design as a creative planning process used to develop products and systems
b) Elaborate on how every design has the potential to be improved
c) Define criteria and constraints and how they are applied as design requirements
2. Engineering Design
Students will
b) Collaborate with others through brainstorming as an open group problem-solving process
3. The Role of Troubleshooting, Research and Development, Invention and Innovation, and Experimentation in Problem-Solving
Students will
b) Differentiate between invention as turning imagination and ideas into new devices and systems and innovation as modifying existing products or systems to improve them
c) Demonstrate how experimentation can be applied to evaluate and solve a technological problem
4. Career Pathways
Students will
c) Assess personal employability skills for technical careers and evaluate personal suitability for such careers</td></tr>
<tr><td>Vocabulary</td><td>Academic
Empathy, Mindset, Interview, Focus Group, Design Thinking, Client, Customer, User, Need, Idea, Solution</td><td>Content
Entrepreneur, Small Business, Business Canvas Model, User Personas, Value Proposition, Revenue, Most Viable Product (MVP), Pitch</td></tr>
<tr><td>Materials and Resources</td><td colspan="2">A variety of products for students to examine (Pre-assessment)
Entrepreneurial Potential Self Assessment (Do Now)
https://www.bdc.ca/en/articles-tools/entrepreneur-toolkit/business-assessments/pages/entrepreneurial-potential-self-assessment.aspx
Eight Great Entrepreneurial Success Stories (Day 2)
https://www.entrepreneur.com/article/243099
How to Identify a Problem or Need (Day 2)
https://docs.google.com/presentation/d/1nk5e78yIWw1ReaZPktgkgo8SI0Z5M2gZ6BawE-2UWRQ/edit?usp=sharing
Interview Techniques (requires course enrollment, user, password) (Day 4)
https://teachinge.org/exec/lesson/what-to-ask-beta/
Customer Interview Script Generator (Day 4)</td></tr>
</table>

	https://customerdevlabs.com/script/?mbrStatus=noAlert Business Canvas Model Generation (Day 5) https://canvanizer.com/book/business-model-generation; https://canvanizer.com/new/lean-canvas LINK: Smart Dog Collars (Day 5) https://www.linkakc.com/ Empathy Mapping: The First Step in Design Thinking (Day 6) https://www.nngroup.com/articles/empathy-mapping/ How to Design a User Persona (Day 6) https://careerfoundry.com/en/blog/ux-design/how-to-define-a-user-persona/ How Might We? questions (Day 6) http://crowdresearch.stanford.edu/w/img_auth.php/f/ff/How_might_we.pdf "Creative Brainstorming Strategy for Students" (Day 7) https://venturelab.org/free-activity-fun-student-brainstorming/ Sweet Spot Identification(Day 8) https://drive.google.com/file/d/1FMcqTsfVc7umMfmdvzSbWAUlX-HWVWFR/view?usp=sharing Identifying Revenue Types (Day 8) https://drive.google.com/file/d/0B3CWTIUfaW2mYWFadWRCRC1MNTA/view Website builders, craft supplies, drawings, integration tools (google forms, calendars), 3D printers, robots, electronics kits, micro-controllers, etc. (Day 9-11) Value Proposition Canvas (Day 12) https://www.b2binternational.com/research/methods/faq/what-is-the-value-proposition-canvas/ Preparing for a Pitch(Day 13) https://mashable.com/2011/06/24/startup-pitch-presentation/#SLq5qBEukkq2 Teacher-developed audience feedback form (Day 14)		
INSTRUCTION	What will the teacher do?	What will the students do?	How much time for each activity?
Pre-assessment	Day 1 Teacher gives students products to examine. Teacher asks: Why did someone create this physical product? Does it serve its purpose? Who are all the types of users? How was this product made? How would you improve this product?	Day 1 Students examine the products and answer the teacher's questions to the best of their ability	40min 10min
Do-now/Hook	Day 1 (cont.)	Day 1 (cont.)	20min

	Teacher invites a small business owner or entrepreneur to discuss with the class the mindset, abilities, interests and values they have that allow them to be a successful entrepreneur. Teacher introduces the Entrepreneurial Potential Self Assessment and shares the link : https://www.bdc.ca/en/articles-tools/entrepreneur-toolkit/business-assessments/pages/entrepreneurial-potential-self-assessment.aspx	Students listen to the guest speaker and take notes about the mindset, abilities, interests and values needed to become a successful entrepreneur. Students take the Entrepreneurial Potential Self Assessment to identify personal abilities, interests, and values that may be suited for entrepreneurship	 10min
Procedure for Instruction/ Learning Activities	Day 2 Teacher reads article of startup stories, " Eight Great Entrepreneurial Success Stories" at https://www.entrepreneur.com/article/243099 Teacher leads a class discussion where students identify the problem each company is solving. Teacher describes 11 methods for discovering problems, using the slide deck , "How to Identify a Problem or a Need" at https://docs.google.com/presentation/d/1nk5e78yIWw1ReaZPktgkgo8SI0Z5M2gZ6BawE-2UWRQ/present?ueb=true&slide=id.g4eda301a1e_0_59 Day 3 Teacher describes reasons to focus	Day 2 Students attend to the 8 entrepreneurial success stories and prepare to identify the problem each company is solving. Students participate in class discussion. Students identify 20 problems they encounter in their daily lives. Students are encouraged to look at problems that would require a physical product solution. Students can complete this assignment for homework. Day3	40min 20min 10min 10min + Homework 40min 10min

	on solving problem with your business. Teacher places students in groups based on interests. Teacher describes ways entrepreneurs can interact with users to determine more details about their problems. Entrepreneurs can gather feedback through Surveys, Focus Groups, Interview Techniques. Students need to develop ways to gather information and ways to record information collected from users: video or audio recordings, handwriting, typing. Day 4 Teacher reviews good practices for interviewing users using "Interviewing Action Plan" and/or "What to ask During Customer Interviews" video at https://teachinge.org/exec/course/exec-experiential-entrepreneurship/ Teacher assists students as they create their customer interview scripts. Day 5	Students choose one problem that they want to solve and want to create a business around. (Note: In Technology & Engineering classes students should be encouraged to choose a solution that will have a physical product as a solution.) Student groups determine what information they want to learn from users, how they are going to collect it and how they are going to record it. Day 4 Students attend to teacher presentation and take notes on main ideas. Student groups create an interview script using the Customer Interview Script Generator at https://customerdevlabs.com/script/?mbrStatus=noAlert Students practice interviewing each other. Students begin to schedule interviews and send out surveys. Day 5	30min 40min

	Teacher describes the Lean Business Canvas Model (BCM) at https://canvanizer.com/book/business-model-generation; https://canvanizer.com/new/lean-canvas Teacher reviews each section and what information should be in each section.	Students follow teacher review of the business canvas model .	40min 10min
	Teacher walks through completing one with smart dog collars at LINK: Smart Dog Collars https://www.linkakc.com/	Students research a company they are familiar with and complete a BCM to describe that business. Students complete a BCM for their business.	10min 20min
	Day 6 Teacher describes ways to create a user persona; "Empathy Mapping: The First Step in Design Thinking" at https://www.nngroup.com/articles/empathy-mapping/ How to Design a User Persona https://careerfoundry.com/en/blog/ux-design/how-to-define-a-user-persona/	Day 6 Students compile their recorded data from interviews, surveys and focus groups into a User Persona.	40min 30min
	Teacher discusses the purpose of a "How Might We?" question, see http://crowdresearch.stanford.edu/w/img_auth.php/f/ff/How_might_we.pdf	Students create a 'How might we' question	10min
	Day 7 Teacher explains the purpose of brainstorming, set no rules and no limitations. Teacher engages students in an	Day 7 Students play a brainstorming game. Students brainstorm at least 15 ideas for solutions to their questions for their business problem.	40min

	exciting brainstorming game, such as the "Creative Brainstorming Strategy for Students" at https://venturelab.org/free-activity-fun-student-brainstorming/		
	Day 8 Teacher explains how to choose the best solution, "Sweet Spot Identification," see https://drive.google.com/file/d/1FMcqTsfVc7umMfmdvzSbWAUlX-HWVWFR/view?usp=sharing Teacher encourages students to hypothesize about what their solution will do.	Day 8 Students engage in Sweet Spot identification.	40min 15min
	Teacher defines different revenue types, see https://drive.google.com/file/d/0B3CWTIUfaW2mYWFadWRCRC1MNTA/view	Students match revenue type with definition. Students identify the revenue model for their businesses.	10min 15min
	Day 9-11 Teacher describes the Most Viable Product (MVP); it is like a prototype. Teacher assists students build out their products, using resources such as: website builders, craft supplies, drawings, integration tools (google forms, calendars), 3D printers, robots, electronics kits, micro-controllers, etc.	Day 9-11 Students design and build the MVP for their business solution.	40min x 3 days
	Day 12 Teacher describes ways students can test a product and record the	Day 12	40min 10min

	results of a product. Possibilities include: focus groups, video recordings, experiments, etc.		
	Teacher discusses ways to validate the solution of the business based on the original "How Might We" question, the specifications, and the constraints.	Students test their solution and determine how well it met the "How Might We" question. Students will develop a 'This we believe…' statement.	30min + Homework
		Students can complete a value proposition canvas chart at https://www.b2binternational.com/research/methods/faq/what-is-the-value-proposition-canvas/	
	Day 13 Teacher guides students to develop their final pitch presentation. It must include: Title, Problem Statement, Solution, User Stories, Business Model Canvas, Revenue Type, and Summary. See "Preparing for a Pitch" https://mashable.com/2011/06/24/startup-pitch-presentation/#SLq5qBEukkq2	Day 13 Students create a presentation pitch for their product. They will prepare to present it to real world customers.	40min + Homework
	Day 14 (closure) Teacher invites a real-world audience to view student groups' pitch presentations. Audience could include users of the product, business owners, mentors and other leaders in the school community.	Day 14 Student groups pitch their products to an authentic audience.	40min 30min
	Teacher provides audience members with a feedback form that will be shared with student groups	Students review audience feedback forms. Group members collaborate to produce a bulleted list of changes to their product that they might consider, based on audience feedback.	10min

	following their pitch presentations.		
Differentiation	Students will be grouped by their abilities and interests. Teacher will provide scaffolded support where needed. Students who prefer video content, will be able to watch video lessons. Students who have physical disabilities will be accommodated for. Students who are meeting all of the expectations will be challenged to go above and beyond.		
Closure	Student groups pitch their products to an authentic audience. Students review audience feedback forms. Group members collaborate to produce a bulleted list of changes to their product that they might consider, based on audience feedback.		
ASSESSMENT			
College, Career, and Life Readiness Skills	See below Based on Middle-level Life/Career Rubrics available at https://nyctecenter.org/middle-level-life-career-rubric-database/rubrics		

Performance Measure	Exemplary	Proficient	Developing	Beginning
Acts Responsibly in the Interests of Others	Contributes extensively to a community organization or event; thoughtfully reflects on the importance of own actions within the community.	Contributes to a community organization or event and reflects on the importance of personal involvement within the community.	Participates in, but does not contribute to, a community organization or event and attempts to reflect on personal involvement within the community.	Does not contribute to a community organization or event or reflect on the importance of involvement within the community.
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.
Sets and Meets Goals	Sets measurable goals and	Defines and meets goals using	Defines goals and strategies	Has goals but no strategies to

	action steps to accomplish them.	the strategies.	but has not met goals.	achieve them.
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.
Shares Responsibility	Motivates members to share contributions equally by valuing all members' ideas and contributions.	Participates in and contributes to group's work. Values all members' 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 information.	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	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.
Contributes New Ideas	Appropriately contributes new and innovative ideas based on reliable resources.	Often contributes new and innovative ideas based on known and reliable resources and skills.	Contributes some new and innovative ideas based on known resources and skills.	Rarely contributes new ideas as skills and resources are not developed enough.
Demonstrates Originality and Inventiveness	Consistently demonstrates creativity in new situations.	Demonstrates creativity in many new situations.	Demonstrates creativity but does not always understand how to express it.	Does not demonstrate creativity.
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.

Assessment of Design Work				
	Unsatisfactory	**Satisfactory**	**Above Average**	**Excellent**
Identification of product	Product and design parameters identified.	Product and design parameters identified Market Research establishes need.	Product and design parameters identified. Market Research establishes need. Evidence of research and investigation.	Product and design parameters identified. Market Research establishes need. Evidence of research and investigation. Minimum of 10 design ideas brainstormed.
Identification of criteria and constraints	Design proposed Not indication of development plan	Development or production plan outlines	Development or production plan outlines Evidence to indicate consideration of resources	Development or production plan outlines Evidence to indicate consideration of resources Trade-offs defined
Use of prototype modeling	Observed lab safety	Observed lab safety Prototype or mold appropriate	Observed lab safety Prototype or mold appropriate Alternatives considered but not reflected in model	Observed lab safety Prototype or mold appropriate Multiple design iterations modeled Reflection of criteria and constraints apparent
Evaluation of design	Evaluation of product No indication or consideration of market need	Evaluation of product Market need reflected in evaluation	Evaluation of product Market need reflected in evaluation Design solution evaluated against criteria and constraints	Evaluation of product includes critique of the design process and the final product Market need reflected in evaluation Design solution evaluated against criteria and constraints Future designs recommendations proposed.
Organization	No sequence to presentation.	Only beginning and end stages of product design detailed.	Entire design process detailed. Maker research and concept creation not presented.	Entire design process, market research, and concept creation detailed.
Content Relevancy	Graphics and/or sketches highlight final product. No reflection of the development process.	Graphics and sketches highlight product development process Little reflection of the development process	Graphics and sketches highlight product development process Narrative highlights product development process Reflection questions addressed	Graphics and sketches highlight product development process Narrative highlights product development process Reflection questions addressed Narrative highlights environmental analysis
Presentation	No narrative provided to highlight design process.	Narrative indicate student reflection Minimum of 4 graphics or sketches.	Narrative indicate student reflection Minimum of 7 graphics or sketches.	Narrative indicate student reflection Minimum of 10 graphics or sketches. Captions detail illustration Aesthetically pleasing

Adapted from: Advancing Excellence in Technological Literacy: Student Assessment, Professional Development and Program Standards. ITEEA © 2003