Believe in Ohio

Student Project Workbook

Name:_____

Milepost 0
GET READY FOR YOUR JOURNEY!

Why Believe in Ohio? This is your opportunity to learn about and participate in the PROCESSES of innovation and entrepreneurship! These processes include **thinking creatively and critically** about how to better peoples' lives by:

1. Identifying a problem or need in society,
2. Generating a well thought out solution, and
3. Researching all the necessary aspects to make your solution a reality.

Plan Overview:

A STEM Commercialization Plan is a written document that describes how a new and/or an existing STEM concept, prototype, process, idea or technology (or a combination of multiple STEM concepts, processes, ideas or technologies) may be applied, or further developed to provide a solution to a marketplace or societal problem, need or opportunity. A STEM Commercialization Plan essentially provides a written "science & technology proof of concept" to support an innovative product or service concept or idea. A STEM Commercialization Plan includes both a persuasive science and technology assessment and plan and a discussion of the concept's likely commercial feasibility and viability.

A STEM Business Plan is a written document that describes how to apply a new or existing technology to create a new product or service or enhance an existing product or service with new features or capabilities that can be successfully developed into a real-world business opportunity and "taken to market." Thus, a STEM Business Plan provides a written "business & financial proof of concept" to support an innovative product or service that may be taken to market. A quality STEM Business Plan will not only include plans for taking a product to market, but should also include the student's assessment of the viability of the science and technology supporting the product or service idea.

STEM Commercialization–Students taking a science, technology, engineering, or math class.

STEM Business Plan–Students taking a business, economics, marketing, or entrepreneurship class

Action Step:

- What Believe in Ohio plan will you choose?

Milepost 1

What is your problem (aka “Pain Point”) or market opportunity that your idea addresses?

Look around you and come up with:

- Needs that aren't being fulfilled.
- Problems that remain unsolved.
- Things that don’t work.

Then, think about how technology developments could make possible products and services and solutions that simply weren’t possible before! Think creatively! Think outside the box. Try to keep it simple!

Action Steps:

1. **Brainstorm** to generate as many problems as you can!
2. Record using the post-it notes feature above (If you click on the "whiteboard" feature, you can access the stickies).
3. **Choose** the best problem from your brainstorming and **state** and **describe** the problem or market opportunity.
4. **Research** and i**dentify** the statistics of this problem. Why does this problem exist? How many people does this affect? What are some negative consequences of this problem on which you are working?

Whether developing a STEM Commercialization Plan or a STEM Business Plan, often the hardest part about getting started is coming up with an idea for a Plan. The first step is to put your imagination to work. In brainstorming an idea, remember that innovation and entrepreneurship are about challenging the status quo and transforming or developing new products, services, and solutions to meet the changing needs, wants, and problems of society. Start by looking around you at needs that are not being fulfilled, problems that remain unsolved, and things that do not work. Then think about how technology developments have made possible or could make possible products, services, and solutions that simply were not possible before.

If you are a STEM student doing a STEM Commercialization Plan, think about how a new and/or an existing STEM technology concept (or a combination of multiple new or existing STEM technology concepts) may be applied, or further developed to create a commercializable technology concept that might be applied to fill a marketplace need or solve a societal problem.

If you are a business student doing a STEM Business Plan, think about how a new or existing technology can be applied to create a new product or service or enhance an existing product or service with new features or capabilities that can be successfully developed into a real-world business opportunity and be “taken to market.”

Action Step::

1. **In a few words, note the Problem(s), “Pain Points” or Market Opportunities that your plan will address. Try to narrow it down to a specific problem.**

Milepost 2

What is Your Proposed Solution?

You may come up with many solutions. Ask yourself: **Does my solution truly address the problem?** Choose your BEST solution!

Action Steps:

1. **Brainstorm** to generate as many solutions to your problem as you can!
2. **Record** using the post-it note feature above (If you click on the "whiteboard" feature, you can access the stickies).
3. **Choose** the best solution from your brainstorming and **research** to see if your solution already exists.

- If yes, the solution already exists then how could you improve or change the idea to make it original? Then, **state** and **describe** your proposed solution.
- If no, the solution does not exist, then **state** and **describe** your proposed solution.

Mileposts 0, 1 and 2
Vocabulary

Entrepreneur

Innovator

Problem / Pain Point

Solution

Market Opportunity

STEM

Iterate

Milepost 3

What STEM concepts and principles underlie your proposed solution?

Technological change is the catalyst behind most of the innovation that will cause virtually every product, service, and aspect of life to be continuously reinvented. In this section, you will research, identify, and describe the key STEM concepts/background knowledge and advances in those areas that support your problem/solution. See the document in the resource section on how to conduct scientific research.

A note on research: As you research, read each article/piece of information objectively. To do this, ask yourself the following as you read:

- Can the experiment/design be reproduced?
- Think critically and logically about relationships between the evidence given and the explanation provided. Does the explanation make sense? Did the author leave out any important information?
- Could there be another way to interpret and explain the results of the research?
- Did the author clearly communicate the science?
- Was the author being ethical in their reporting?
- What is the consequence of this research?
- Are there alternative explanations?
- Will this new information lead you to modify your solution? If it does, that is ok!!

Milepost 3

What STEM concepts and principles underlie your proposed solution?

Action Steps--Part 1:

1. **Brainstorm** STEM concepts to establish a background and support for your solution. (You may not utilize all areas of STEM but should find a few that are most directly related to your problem/solution.)
2. **Research** these STEM concepts (from your "sticky" notes) that provide a **background** and **application** for developing your solution. As you research, you may find more STEM concepts or advances in these areas that relate to your idea. Make note of these and continue to dive into the research!

As you research, ask yourself the following questions and fill them in on the graphic organizer. (Use 1 graphic organizer included in ProjectBoard for each source you research--fill in as much as you can for each part of the graphic organizer.)

- **WHAT** STEM **concepts** and **advances** are needed to develop my solution?
- **WHY** is this concept **needed** to **develop** my solution? --this is your background supporting your solution.
- **HOW** is the STEM concept **used** in **developing** my solution? --this is your application of the concept to developing your solution.
- **Describe** how this information has not been previously applied in the way you propose and how it provides strong evidence for the success of your solution.
- **Explain** any additional scientific research or development that may be required to create your solution.
- **Discuss** whether you came up with an alternate solution that could feasibly work in addition to your proposed solution.

Example: You may use the concept of electromagnetism, the concept of properties of metals, and the concept of advances in energy to provide background information and how the application of these concepts are used to develop your product/service.

Milepost 3

What STEM concepts and principles underlie your proposed solution?

Action Steps--Part 2:

At this point, you have identified your problem (pain point), solution, and engaged in STEM concept background and application research to understand what the scientific community already knows about your topic and what you plan to do with that knowledge.

Using this knowledge, now is the time to design your prototype (if you need one). Use the graphic organizer above to design, test, iterate, and modify your prototype.

- Draw your prototype using the graphic organizer.
- Describe its dimensions
- Describe what it is made of
- Describe how the parts work together.
- Next, analyze your data.
- Do you see patterns? If so, what do you observe?
- What variables did you change?
- Did changing variables affect your outcome?
- Did you find any anomalies in your data? If so, explain your findings.

Believe in Ohio

Stem Concept

_____

Background

Application

Why is this concept **important** to developing my solution?

Direct Quotes:

How is this concept **used** in **developing** my solution?

Direct Quotes:

Reference:

Graphic Organizer Milepost 3

Believe in Ohio

Prototype Design Graphic Organizer

adapted from teachingentrepreneurship.org

Draw your prototype

Label all parts

Test and Collect Data

What worked?

What needs improved?

Questions?
Ideas?

Prototype Design

What materials were used to build your prototype?

What are the dimensions?

How do the parts work together?

Data Analysis

Discuss your findings:

Do you notice any patterns? If so, what are they?

Did you change variables? If so, how did that affect the outcome?

Do you notice any anomalies? If so, what are they?

Milepost 3
Vocabulary

Research

Science

Technology

Engineering

Math

Feasible

Prototype

Objective thinking

Milepost 4

Who Are Your Target Customers and Intended Users?

Customers and actual users of your product may be different people. For example, if your idea is intended to be used by young children, the children will be the intended user, while their parents will be the intended customer. Will your idea be of value to these people….will they BUY your product/service?

Action Steps:

- **Research** and **identify** your customers/users.
- **Record** your ideas on the post-it note feature above.
- **Describe** target customers.
- **Describe** intended users.
- **Research** the population of your target customers. Go to www.census.gov to help identify population numbers.
- **Determine** and **discuss** the **size** of the market these people represent. (Will everyone buy your product or just the elderly, only children, etc.)
- **Conduct** surveys/focus groups of your identified customers.
- **Analyze the survey results** to determine if your target customers would buy your product/service.

Milepost 4
Vocabulary

Market

Value

Customer

User

Milepost 5

Who are your competitors?

Action Steps:

- **Research and identify** your direct and indirect competitors.
- **Describe the similarities and differences** between your competitors' products/services with your product/service. (For example: size, shape, weight, material)
- Optional: Do a patent search.

Milepost 5
Vocabulary

Competitors

Direct competition

Indirect competition

Feasibility

Milepost 6

What is the customer value proposition and how does the customer value proposition provide a competitive advantage?

Customer value creates competitive advantage. To show the customer value you should describe how your product/service will:

- Be **different** from competition
- Provide a **benefit** to the user
- **Solve a problem/improve the life** of the user.

To describe your competitive advantage, discuss **why** someone would buy **your** product/service over the competitor.

Action Steps:

- **Describe how** your product/service is DIFFERENT from your competitors.
- **Explain** what benefits your product/service provides to the user. For example: is it cheaper, easier to use, recyclable, etc.
- **Identify** how your product/service will solve a problem/improve the life of the user.
- **Summarize** these action steps to help you **describe** why someone would buy your product/service over the competition.

Milepost 6
Vocabulary

Customer Value Proposition

Competitive advantage

Milepost 7

What revenue streams do you expect?

When proposing revenue streams, think about where you will sell your product and how much you anticipate selling. These revenue streams can come from the following sources: transactions, services provided, or recurring (ex. subscriptions). See the attached guide for details on potential revenue streams.

Action Steps:

- **Research** and make a list of revenue streams you think will be useful to sell your product/service.
- **Describe WHY** you chose these particular revenue streams.
- **Predict** how much of your product/service you anticipate to sell through each of the streams you chose to use.

Milepost 7
Vocabulary

Revenue

Milepost 8

What startup and operating costs do you expect to incur?

You will research all aspects of what it will cost to make and sell your product.

Fill in the worksheets on the next pages to help with this Milepost.

******Choose Business Plan sheet or Commercialization Plan sheet.******

Action Steps:

1. **Determine** if you will manufacture a product/service yourself or outsource production/service.
2. **Infer** the number of people you will employ.
3. **Research** the amount you will pay employees. Will some need a specialized skill or college degree?

Research materials used and their costs.

- Include the facility and equipment needed to produce your product/service.
- Describe the cost of getting your product/service to market. Include packaging, shipping, transportation to distributors, office, etc.
- **Research** and **calculate** the cost of developing a prototype–if needed.
- **Research** and **calculate** the cost of testing the prototype–if needed.
- **Research** and **calculate** the cost of any additional research and development needed. This could include someone specialized in the area in which you need research or product development completed.

Commercialization Plan
Operational Costs Worksheet

Use this worksheet to help determine the operational costs for your business venture. Only fill in the areas you will need. This will help determine the commercial feasibility of your product/service.

Costs/Expenses:

- Materials–list all the materials needed to make your product and research the cost of each.

Material	Unit Cost
	Total:

- Job titles needed –college degree, training?
- Salary for your different job titles
- Number of employees
- Total cost for employees

Job Title	Salary/Hourly Cost	Number of Employees	Total Cost
			Total:

Commercialization Plan
Operational Costs Worksheet

- Facility where you will assemble and store your product–Search realtor.com for rental costs in the area your business is located. If you wish to purchase, search _____.
- Square feet required for space._____
- Cost of manufacturing equipment needed to make your product._____
- Cost of software needed to run equipment._____
- Cost of developing a prototype._____
- Cost of testing a prototype._____
- Cost of additional research and development. This could include someone specialized in the area in which you need research or product development completed._____

Business Plan
Operational Costs Worksheet

Use this worksheet to help determine the operational costs for your business venture. Only fill in the areas you will need. This will help determine the commercial feasibility of your product/service.

Ongoing Costs/Expenses:

- Cost of shipping materials (to your facility)–check Fedex, UPS, or USPS for shipping costs.

Material	Weight	Shipping Method	Cost
xxxxxx	xxxxxx	xxxxxx	Total:

- Distribution costs to get your product from warehouse to stores or directly to consumers.

Distribution Type	Cost
xxxxxx	Total:

- Cost for marketing your product/service

Marketing Type	Cost
xxxxxx	Total

Business Plan
Operational Costs Worksheet

- Cost for rent and utilities: gas, electric, water, trash service, and internet. ($1.00 per square foot of building space for each service).

Utilities	Cost
Rent	
Gas	
Electric	
Water	
Trash Service	
Internet	
xxxxxxxxxxxx	Total:

- Cost for management

Role	Salary
xxxxxxx	Total:

Business Plan
Operational Costs Worksheet

Start-Up Costs and Investments:

Cost to renovate your space._____
Cost of buying a franchise._____
Cost of manufacturing equipment._____
Cost of developing a prototype._____
Legal costs–insurance, LLC, licenses, permits, patents._____
Cost of office equipment: chairs, tables, printers, computers, paper, pens, etc._____
Other costs–fleet vehicles, vehicle insurance, vehicle registration, etc._____

- Inventory costs:

Item/Part	Cost
xxxxxx	Total:

Sales and Revenues:

- Determine the total cost of producing one product/service (called the **cost of sales**). Base this off of your cost of materials and labor_____
- What price will you set for your product?_____
- How many units will you produce in one day?_____
- How does your price compare to your competitors?_____
- How much profit will you make?_____

Milepost 8
Vocabulary

Startup Costs

Operating Costs

Research and Development

Outsource

Stop!

Traffic Light

In your opinion, does your solution and plan make commercial sense?

If not, then start again at Milepost 1 (or the milepost you feel needs updating) and repeat until you are satisfied that your solution makes commercial sense.

If yes, then write your plan by following through on Mileposts 9-11.

Talk to any business incubator or accelerator and they will tell you that it is rare, if ever, that someone's first idea is the one with which they move forward. Instead, what happens is that the entrepreneur or innovator takes to heart what they learned from their research and discussions with others and decides to make course corrections, or pivots. It is not uncommon for a new idea to pivot 5-6 or more times before it is ready to advance.

Therefore, it is OK, if you see problems as you research and develop your plan, and it is OK to go back and revise to make it better!

Milepost 9A

If a STEM Commercialization Plan, Develop a Science and Technology Proof of Concept.

This section is similar to a research paper. It should provide an in-depth explanation of the STEM concepts used to help you develop and support your product/service and provide evidence that your plan will be able to become a reality. This is called a proof of concept to determine the feasibility of your idea.

Action Steps:

- **Write** a **summary** describing what the scientific community already knows that is relevant to your solution–this is from your STEM concept/background research from Milepost 3. Cite all pieces of information that are not your own thoughts, ideas, or words. -- use the graphic organizer background part from Milepost 3 to develop this section.
- **Write** an **inquiry/design-based** discussion of the STEM concepts related to your idea, rather than simply summarizing current knowledge. Include the following to help guide your writing:
- **Explain** in detail **HOW** your STEM research findings directly impact HOW you chose to develop/design your solution–from the application part of the graphic organizer in Milepost 3.
- **Explain** your prototype/model (if applicable)–Why did you choose this design? How does it work?
- **Analyze** your data and **discuss** the results.
- **Explain** additional research, design, or analysis needed for your solution to be feasible.
- **Include:** data tables, graphs, charts, sketches, scaled drawings, flowcharts for app development, photographs of models or prototypes, computer models or mathematical models to properly support your plan.
- **Include** proper labels and legends (Table 1, Table 2, Figure 1, Figure 2, etc.) for all tables, graphs, and figures.
- **Cite** all data/picture sources that are from others.
- **Avoid** using copyright or trademark/service marked illustrations for which you do not have permission. If permission is granted, indicate Copyright and owner and date or trademark/service owner and date.
- Include a **summary sentence** that **justifies WHY,** based on all the information you provided in this section, your product/service is commercially feasible.

Milepost 9 A
Vocabulary

Proof of Concept

Feasibility

Commercialization

Milepost 9B

If a STEM Business Plan, Develop a Business and Financial Proof of Concept

This section provides an assessment of the business and financial feasibility of your business venture. In this section you will provide evidence that your plan will be able to become a reality. This is called a proof of concept to determine the feasibility of your idea.

Part A: Describe your operational plan to bring your product or service to market. Your operational plan includes all that is needed to make the solution to your problem a reality. They include ongoing cost/expenses, initial investment costs, sales and revenues, and profit. Only apply what is needed for your plan from the information listed below. Use the financial projections worksheet to help you with your calculations.

Start-up and Ongoing Costs and Expenses:

Action Steps—Part A1:

- **Describe who** will make your product/service? (Will you make it or will you outsource it to another company?)
- If another company will make your product/service, then **determine** the cost.
- **List** the materials needed to create your product/service. (If your product is an app, the cost will include the fee charged on the app store.)
- **List where** you will procure your materials.
- **List** the cost of your materials.
- **Describe** the facility size needed and **cost to rent or purchase** this facility. – you may use www.realtor.com to find the rate for leases or cost to purchase a facility in your area.
- **List** the cost of distributing your product (to stores, directly to consumers, etc.) (Trucking company prices or cost to ship via USPS, FedEx per ounce)
- **List** the number of employees you will hire.
- **Describe** the job title and salary for each employee.
- **Estimate** the cost to advertise your product/service.
- **List** and **estimate** the cost of your utilities: gas, electric, trash service, internet, and water. (Budget $1.00 per square foot for each utility.)

Milepost 9B
If a STEM Business Plan, Develop a Business and Financial Proof of Concept

Discuss the startup costs and amount of money needed from investors to get your venture started. These are initial or one-time costs, known as “working capital”, to start a business. Only apply what is needed for your plan from the information listed below. Use the financial projections worksheet to help you with your calculations.

Initial Investment Costs:

Action Steps--Part A2:

- **Determine** the cost to renovate your space and **describe** your renovation plans.
- **Determine** the cost of and **describe** equipment needed to manufacture your product.
- **Determine** the cost of software to run your equipment.
- **Determine** your inventory cost –all of the supplies needed to make your product/service.
- Make a drawing illustrating the layout of your space (optional--could be done in the whiteboard option above).
- **Determine** the cost of buying a franchise if needed.
- **Determine** legal costs–cost of a patent, license, permit, etc
- **Determine** the cost of office equipment – tables, chairs, printers, computers, tables, etc.
- **Determine** the cost and describe the details of developing a prototype.
- **Determine** and **describe** other investment costs (vehicles, vehicle registration, vehicle insurance, etc.)
- **Investigate** and **determine** the types of investors you will use to get your business started: (personal money, investor money, or loans, etc.) and how much money you will need from each of those investors.
- **Calculate** and **discuss** the annual (yearly) Return on Investment (ROI) for the first 3 years. –use the 3-year financial projection worksheet to calculate this number

Milepost 9B
If a STEM Business Plan, Develop a Business and Financial Proof of Concept

Sales and Revenues:

Action Steps--Part A3:

- **Determine and describe** the total cost of producing one product/service. Base this off of your cost of materials, cost to pay workers, and cost to distribute your product/service.
- **Calculate** and **state** the price you set for your product.
- **Estimate** and **state** the number of units you will produce in one day.
- **Discuss** how your price point compares to your competitors?
- **Calculate** and **state** your revenues.
- **Calculate** and **state** your profit.

Part B: Discuss your marketing strategies for reaching your target market.

Action Steps:
Your marketing strategy will include a discussion of each of the following items below.

Advertising:

- **Explain** your advertising platform choices (newspaper, social media/web platforms, billboard, etc.) and WHY you chose them.
- **Determine** the cost of advertising through the platforms you chose.

Sales:

- **Explain** your sales strategy by discussing whether you will sell directly to the customer (B2C–Business to Customer), sell through stores (B2B–Business to Business), or a combination of B2B and B2C.
- **WHY** did you choose to sell via these avenues?

Milepost 9B
If a STEM Business Plan, Develop a Business and Financial Proof of Concept

Part C: Discuss the significant risks and uncertainties you expect to face. Include the following in your discussion if applicable:

Action Steps:

- **Analyze** your data and **describe** how sure you are that consumers will actually buy your product. Refer back to Milepost 4.
- **Describe** how you know your product/service will be delivered with quality and at a reasonable cost.
- **Describe** how you know the necessary human resources, materials, and suppliers will be reliably sourced.
- **Optional: Research and state** the cost of insurance needed to cover your business and all liabilities? Will you start an LLC? -- To answer this, investigate creating an LLC and finding proper insurance.

Part D: Include your three-year financial projection that confirms the financial feasibility of bringing your venture to market.

Action Step:

- Create a three-year financial projection using the template provided and Include a copy with your final report.

Part E: Summary Sentence

- Include a summary sentence that **justifies WHY,** based on your calculations and research of the information in this section, your product/service is commercially feasible.

Milepost 9B

Vocabulary

Proof of Concept

Feasibility

Milepost 10

Prepare an executive summary and elevator pitch of your entire plan.

Part A: Executive Summary

An executive summary of 250 words or fewer (½ page) provides a concise summary of your plan and its most important points. It must be written in a manner that a person who is not familiar with your topic can understand what your plan is about.

How to Create and Executive Summary:

- An executive summary should be 250 words or less (½ page or less)
- It should be written using formal language.
- As a suggestion, pick up the lead sentences of each section and weave a coherent summary of the entire project. You will likely have to write this numerous times and edit sharply to be competitive.

Action Steps--Part A:

Write your **executive summary** and include the following:

- Problem/Solution
- Main STEM concepts
- Target customers and users
- Competitors
- Customer value
- Competitive advantage
- Revenue streams
- Startup and operating costs
- How all this information makes your product/service feasible!

Milepost 10

Prepare an executive summary and elevator pitch of your entire plan.

PART B: Elevator Pitch

An elevator pitch is an engaging summary that describes how your idea can improve the lives of others. Your pitch should interest potential buyers, investors, or collaborators. A pitch is meant to be completed in the time it takes to ride an elevator!

Example Elevator Pitch:

Approximately 84% of prosthesis users report issues with current prosthetic limb technology including dead batteries, wires, and size of device. *Prosthesis Safety Device* provides audio and visual signals via Bluetooth technology when a residual limb is correctly locked in its socket enabling users to experience greater freedom and flexibility in their daily lives. Purchase this product on Amazon or in your local medical supply store for $12.99 and enjoy your new freedom.

How to Write an Elevator Pitch:

- Use informal language that anyone without the background knowledge of your idea can understand.
- Create a positive and lasting impression about your idea on your audience.
- Write it in the 3rd person. (do not use “I, we, or me” and instead use “the company, the business, it”)
- Contain a maximum of **three** sentences.

Action Steps--Part B:

Write your elevator pitch using the following guidelines:

- The first sentence should include your problem, users, and data quantifying the magnitude of the problem (if available).
- The second sentence should discuss your solution and the value it provides to the user.
- The third sentence should discuss how you are going to provide that value by selling it, customizing, making it available in your town and pricing.

Milepost 10

Vocabulary

Executive Summary

Elevator Pitch

Final Report
Guidelines

STEM Commercialization Plan & STEM Business Plan Preparation Instructions

Expectations of plan report: Reports must be typed. Clear and concise writing is expected. Please avoid using personal pronouns in the text. Do not use cute project titles. Title MUST reflect the contents of the report. Edit text sharply removing needless words and proof carefully. Expect to write numerous drafts. Number all pages except for the cover sheet (which is page 1). If requested, electronic versions (use your last + first name as the file name e.g., SmithCarol.pdf) must contain the entire report in a single Adobe PDF file for regional or State competition.

Format of report: The written report shall not exceed 12 single-spaced, typewritten pages. Reports may be single or 1.5-spaced. Type all pages "flush left." Do not justify paragraphs. Optional indentations for first lines of paragraphs. Please keep type size reasonable, at least 10 points; preferably 12 points for better legibility except in tables or on graphs, sketches or engineering drawings. We recommend 10, 11, or 12 point Times New Roman, Century Schoolbook, Arial, Calibri or Myriad Pro.

Report must include and follow section headings but do not break pages between headings. Section headings (Parts) need not be numbered. Type continuously, starting on page 2 immediately (on the same page) following the Executive Summary.

NOTE: Reports are to be typed into the Believe in Ohio Templates for formatting accuracy.

References

In-text citation is required for both STEM Commercialization and STEM Business plans. Best practice for writing a scientific research paper, such as a STEM Commercialization Plan, requires that references be cited within the text and that there be a 1:1 concordance between in-text citations and the list of cited references at the end of the plan. The safest way to avoid plagiarism is to cite all references within the text.

Here is an excerpt from an actual student plan showing in-text citations and 1:1 concordance with full references.

Natural biological systems and structures are often soft and adaptive in design; however, for many years researchers have been trying to imitate these useful structures by means of traditional electrically powered motors and rigid supports (Majidi, 2014). With the introduction of soft robotics, however, researchers can more closely mimic the qualities of the naturally occurring soft and adaptive biological systems and structures found in any number of organisms, including humans (Majidi, 2014). Soft robotics now enables researchers to create continuously distributed actuation in a manipulator, such as the continuous curvature found in nature as elephant trunks or octopus tentacles (Lipson, 2014). This continuous structure can be applied to robot manipulators with versatile and dexterous results (Trimmer, 2014).

Lipson, H. (2014). Challenges and opportunities for design, simulation, and fabrication of soft robots. Soft Robotics, 1(1), 21-27. doi:10.1089/soro.2013.0007

Majidi, C. (2014). Soft robotics: A perspective–Current trends and prospects for the future. Soft Robotics, 1(1), 5-12. doi:10.1089/soro.2013.0001

Trimmer, B. (2014). A journal of soft robotics: Why now? Soft Robotics, 1(1), 1-4.

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Oftentimes, we are not successful without the help and input from others. Please acknowledge those that helped to get you to the finish line.

Pitch Video

A pitch video is used to illustrate your idea visually, while the written summary is used to document your idea when video is not available. These two methods ensure you are engaging as many audiences as possible!

How to Create Your Elevator Pitch Video: –see the graphic organizer

PROBLEM:

- Ask the audience a question regarding the problem/pain point.
- Discuss how you discovered this problem.
- Identify the customer and user.
- Quantify the magnitude of the problem to illustrate how it can improve lives.

SOLUTION:

- Introduce yourself and describe how your solution solves the problem.
- What existing solutions (the competition) are used to address the problem and HOW is yours different (value proposition)? -- main STEM ideas used, more cost effective, faster, durable, reliable, or accurate?
- What challenges did you encounter and how did you resolve these challenges?
- Why or how will your solution change customer's lives?

PROOF:

- Explain your proof of concept (solution feasibility): -- your proof of concept includes the following:
- How have you tested your product/service? What do others think? Do you need to revise your design?
- Where to buy your product/service.
- Cost of product/service.

END:

- Provide a catchy ending.

LENGTH:

- Your pitch video should be 1.5 -- 2 minutes.

Pitch Video

Video Design Suggestions:

- Think of your setting. If filming indoors, do not stand in front of a window. Make sure you film in a well-lit area and the lighting is coming toward you, rather than from behind.
- Wear appropriate clothing–you are acting as a professional promoting your product/service!
- Create any props, presentation with illustrations, or anything else that helps describe your product/service.
- Hold the camera at eye level.
- If using a phone to film, hold it horizontally.
- Write down what you want to say using the elements listed above.
- Remain positive, relaxed, smile, emphasize important words, and speak slowly.
- PRACTICE, PRACTICE, PRACTICE–you want to know your pitch well enough that you don't have to read it from a script.

How to Create a YouTube Channel:
https://support.google.com/youtube/answer/1646861?hl=en

How to Upload Videos to your YouTube Channel:https://www.businessinsider.com/how-to-upload-a-video-to-youtube

- Choose "Unlisted" and copy the link and paste it into the Pitch Video form.

Pitch Video

Graphic Organizer

PROBLEM?	SOLUTION!	PROOF!	END!
Hook your audience with an engaging question asking if they have a problem with….	Introduce yourself and describe your solution.	Have you tested your product/service? If so, what do others think?	Catchy ending!
Identify the customer and user.	What existing solutions (the competition) are used to address the problem and HOW is yours different (value proposition)?--more cost effective, faster, durable, reliable or accurate?	Where to buy your product/service.	
Quantify the magnitude of the problem to illustrate how it can improve lives.	Why or how will this change customers' lives?	Cost of product/service.	

Combine all the pieces of your pitch and write what you will say in your video.

Click to add text

Other Vocabulary

Franchise

Accounts Payable

Accounts Receivable

Liability

Investor

Permit

License

Limited Liability Company (LLC)

Inventory

Lean Startup Model

Non-Profit

Viability

Design Thinking

Entrepreneurial Mindset

Critical Thinking

Supporting Documents

Roadmap

Supporting Documents

Milepost 7: Potential Revenue Streams—Lean Canvas Business Model

Revenue is the income (money) that comes into a business or enterprise from its normal income generating activities.

- Any enterprise that does not generate enough revenues to exceed its costs and expenses will eventually fail. In developing your plan, one of the first things you must do is find an appropriate and realistic revenue model that can generate enough revenue to make your entrepreneurial venture a success.

Asset sale–The most widely understood Revenue Stream derives from selling ownership rights to a physical product. Amazon.com sells books, music, consumer electronics, and more online. Fiat sells automobiles, which buyers are free to drive, resell, or even destroy.

Usage fee–This Revenue Stream is generated by the use of a particular service. The more a service is used, the more the customer pays. A telecom operator may charge customers for the number of minutes spent on the phone. A hotel charges customers for the number of nights rooms are used. A package delivery service charges customers for the delivery of a parcel from one location to another.

Subscription fees–This Revenue Stream is generated by selling continuous access to a service. A gym sells its members monthly or yearly subscriptions in exchange for access to its exercise facilities. World of Warcraft Online, a Web-based computer game, allows users to play its online game in exchange for a monthly subscription fee. Nokia's Comes with Music service gives users access to a music library for a subscription fee.

Lending/Renting/Leasing–This Revenue Stream is created by temporarily granting someone the exclusive right to use a particular asset for a fixed period in return for a fee. For the lender this provides the advantage of recurring revenues. Renters or lessees, on the other hand, enjoy the benefits of incurring expenses for only a limited time rather than bearing the full costs of ownership. Zipcar.com provides a good illustration. The company allows customers to rent cars by the hour in North American cities. Zipcar.com's service has led many people to decide to rent rather than purchase automobiles.

Licensing–This Revenue Stream is generated by giving customers permission to use protected intellectual property in exchange for licensing fees. Licensing allows rights holders to generate revenues from their property without having to manufacture a product or commercialize a service. Licensing is common in the media industry, where content owners retain copyright while selling usage licenses to third parties. Similarly, in technology sectors patent holders grant other companies the right to use a patented technology in return for a license fee.

Brokerage fees–This Revenue Stream derives from intermediation services performed on behalf of two or more parties. Credit card providers, for example, earn revenues by taking a percentage of the value of each sales transaction executed between credit card merchants and customers. Brokers and real estate agents earn a commission each time they successfully match a buyer and seller.

Advertising–This Revenue Stream results from fees for advertising a particular product, service, or brand. Traditionally, the media industry and event organizers relied heavily on revenues from advertising. In recent years other sectors, including software and services, have started relying more heavily on advertising revenues

https://www.strategyzer.com/business-model-canvas/revenue-streams

Supporting Documents

Milepost 9B: Types of Investors

1. **Angel Investors**

Angel investors are high net-worth individuals who provide financial backing to startups, entrepreneurs, or small businesses. The typical amount for an angel investment can vary greatly. In some cases, angel investors invest $100,000 or more. Angel investors usually ask for a share (partial ownership) of the company.

2. **Peer-to-Peer Lenders**

Peer-to-peer lending, or P2P lending, is a way in which the investor is matched with potential borrowers to receive money for a loan. The lender will request crucial information to decide if they want to lend you, the borrower, the money, including credit rating history, income, yield range, and more. Each month, you pay back the loan with interest.

3. **Personal Investors**

Businesses can turn to their **family, friends, and networks** for their first investments. Talk to an expert if you have people eager to help; only a certain amount of people can invest in startups and you'll need to provide thorough documentation. You will pay the investor back with interest.

4. **Banks**

Banks are a classic source for **business loans.** Before your application is approved, you will need to produce proof of a revenue stream or collateral. Because of this, banks are usually a better option for established businesses, but you don't need to be a mogul to get financing. You will pay the bank loan back with interest.

5. **Venture Capitalists**

Venture capitalists typically invest millions of dollars in startups, entrepreneurs, and small businesses by securing a share in the company. This is known as equity capital. This is done with the assumption that the equity capital will increase, and the venture capitalist will receive a positive return on their investment.

6. **Crowdfunding**

With crowdfunding, startups rely heavily on **donations** from both personal and professional networks. The success of crowdfunding efforts is often bolstered by a savvy marketing strategy and social media amplification.

Supporting Documents

Patent, intellectual property and publication discussions and understandings:

It is important for inventers, innovators and entrepreneurs to understand how to obtain a patent and protect one's ideas. Yet the topic is frequently complex and abstract and replete with nuance that oftentimes makes it challenging to understand and apply. With that in mind, the Believe in Ohio program makes available a number of informational videos and discussions for teachers, students and parents to review when considering the merits of seeking patent and intellectual property protection. We encourage you to make use of these resources.

Basic rules for filing a provisional patent application from the US Patent & Trademark Office (USPTO):

Inventors seeking protection for their ideas should consider filing a provisional patent application. The requirements for filing a provisional patent application are set forth in 35 U.S.C. 111(b) and 37 CFR 1.53(c). A non-provisional application must be filed within twelve months of the filing date of a provisional application in order for the inventor to claim the benefit of the provisional application under 35 U.S.C. 119(e)(3).

For more information on how to file a provisional patent application, please check the USPTO web site at http://www.uspto.gov/patents/resources/types/provapp.jsp

For information about the overall patent filing process, check out the USPTO website at:
process: http://www.uspto.gov/patents-getting-started/patent-process-overview

Believe in Ohio informational videos:

Patents & Intellectual Property 101 – Video Part 1 – "IP² = profits"
In this first of three videos, Intellectual Property Attorney, Ms. Cindy Murphy discusses how many of Ohio's largest companies built their businesses by applying their patents in a video lecture titled "IP² = profits" (15 minutes)
Click here to view the
video: http://www.ohioinnovates.org/sites/2015course/regionalsites/commoncourse2015/tracke/e04.html

Patents & Intellectual Property 101 –Video Part 2 – "The invention of the ice cream cone
In this second of three videos, Intellectual Property Attorney, Ms. Cindy Murphy uses the example of the invention of the ice cream cone to indicate what may or may not be patentable. (22 minutes)
Click her to view the video:
- http://www.ohioinnovates.org/sites/2015course/regionalsites/commoncourse2015/tracke/e05.html

Patents & Intellectual Property 101 – Video Part 3 – The America Invents Act and its implications for entrepreneurs
In 2011 the US Congress passed legislation that fundamentally changed the country's patent laws. Ms. Murphy explains how the new law works and the many benefits it provides to small inventors and entrepreneurs. (10 minutes)
http://www.ohioinnovates.org/sites/2015course/regionalsites/commoncourse2015/tracke/e06.html