

ENTREPRENEURSHIP

What Is Entrepreneurship?

Entrepreneurship is the concept of developing and overseeing a new business for profit. Working inside a company and thinking like an entrepreneur by asking “how can we improve this process?” is just as important. Entrepreneurship means thinking beyond troubleshooting or problem solving. It involves taking extra effort that yields potential new products, services or processes.

Vocabulary

- **Entrepreneur**—An individual who starts a new business venture. Typically, the individual who takes on most of the risk and develops the business concept.
- **Venture**—A business enterprise in which the expectation of gain is accompanied by the risk of loss or failure.
- **Capital**—The wealth or assets available to invest in a business.
- **Business Model**—A description of how a business will be able to create and deliver value and become profitable.
- **Market Research**—Relevant data that helps demonstrate market potential for a business venture.
- **Intellectual Property**—Works or inventions that is the result of creativity to which one has rights and can apply for a patent, copyright, or trademark.

How will an entrepreneurial mindset be used in the workplace?

An Industry 4.0 technician of tomorrow needs creative entrepreneurial thinking as a new, expected skill. John Gruene is an automotive technician at Advanced Auto. Lately John and his team have experienced several customer complaints regarding repair times. Using an entrepreneurial mindset, John identified the problem and then researched possible solutions and their value propositions. He asked



questions like: how much is customer satisfaction and loyalty worth? and how much time and money can be saved through more accurate diagnosis and efficient repair? He then approached his supervisor about a potential solution he has researched that will provide better customer

service, shorter wait times, and fewer errors by the technicians, resulting in higher profits for the business.

In another example, Casey Sanders is a robotics technician at Cooper BioLogic, an automated filling and packaging company. Over the last seven days, a robot gripper has been dropping every hundredth vial. The fault affected everything down the line, to the point at which several boxes shipped to a customer were short a few vials. This is clearly not an acceptable business practice. Casey applied troubleshooting skills to



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determine which gripper was malfunctioning and replaced it. But next Casey went further and used an entrepreneurial mindset in thinking about the whole line. She calculated the current time from production to packaging and suggested that new technologies, such as soft grips, could be integrated into the process to increase efficiency and accuracy and decrease product time-to-customer.

Skills Needed for High-Paying Jobs Using an Entrepreneurial Mindset

- Thinking creatively, like an entrepreneur
- Researching (e.g. current products and markets)
- Networking strategically
- Solving problems and thinking critically
- Communicating clearly with all stakeholders
- Planning carefully and effectively
- Calculating finances accurately

Education

Your local community college provides the classes you will need. Skills for researching, planning, and starting a business based on an entrepreneurial idea are most often taught within a Business program but may also be included in an Engineering Technology or other technology program offering

associate degrees and one-year certificates. Entrepreneurship skills are also important in other technical fields in which you might start a company, invent a machine or process, or provide services. Community college course schedules are designed to accommodate the needs of working students and often include online and hybrid delivery formats. [Find your nearest community college here.](#)

Future Trends

- Design Thinking—Processes for designing products, buildings, and machines and for solving problems known and unknown
- Agility—The ability to shift priorities quickly
- Disruption—The effect on the market when when a new product “explodes” in popularity
- Mobile commerce—Buying electronically via website or app
- Home-based businesses—Online shopping, remote work, and the popularity of social media have made home based businesses thrive
- Niche markets—Customer focused businesses that can be tailored to defined markets of unique groups

Learn More

- [Understand the Basics of Creating and Financing a Successful Business](#)
- [How to Write a Business Plan](#) (video)
- [Learning about the Entrepreneurial Mindset](#)

ABOUT THE PROJECT

Preparing Technicians for the Future of Work, a project of the National Science Foundation Advanced Technological Education program, recognizes that technicians graduating today need an expanded skill set to remain competitive in the global economy. The project focuses on three skill areas: data knowledge and analysis, advanced digital literacy, and business knowledge and processes. Learn more at preparingtechnicians.org.

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Entrepreneurship is the process of starting a business or other organization. The entrepreneur develops a business model, acquires the human and other required resources, and is fully responsible for its success or failure. Entrepreneurship operates within an entrepreneurship ecosystem.

Entrepreneurship Competencies for Technicians

- Demonstrating consistent leadership
- Making decisions independently
- Staying focused and maintaining inner drive
- Computing company financial data -- costs and other business expenses; profit/loss, taxes, projected income, budgets, etc.
- Understanding marketing principles

Cross-disciplinary Skills

- Creating and interpreting spreadsheets
- Visualizing data
- Solving problems and improving processes through innovative solutions
- Understanding business cycles and supply/demand
- Demonstrating ethical behavior
- Managing time efficiently

- Communicating clearly, concisely, and persuasively to a variety of audiences, i.e. teams, management, clients, and suppliers

Manufacturing Scenario

Jane works as a technician at US Manufacturing. US manufactures customized components for the auto sector. The industry is extremely competitive, and US is looking for ideas on how to increase optimization, efficiencies, and develop new products. Jane approaches her supervisor about a concept she has thought about that would improve their error rates on the production line. The process involves removing one step in the process and changing the flow of the hand-off of the product. She has researched the process, demonstrated that it can take 15 seconds off the time, and would like to see if the final step can assist the finishing team. Jane worked with management to help define how this could provide value to US and its customers.

IT Scenario

Jim works for LMN Cabling in the field as an installer. Daily he is bombarded with customer complaints regarding other technicians. He notices a trend that most of the complaints are regarding a challenge with a switch and how to use it. When he is approached by customers, he takes the time to review the process and makes sure they have a good understanding on how to use it. Jim takes the initiative to go to his manager and suggest developing a user card for all the installers to walk through with the customer following the install. Management supports the idea and has Jim train the team on using the card and including it as a final check of the completed installation.



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Activity

The activity will place students in groups of 3-4 and assign them each a product, process, or service from their primary field of study. The students will be given instructions that the product is brand new to the market with preliminary market research on it. Students need to work collaboratively on creating a business plan.

Warm-Up

Introduce or review the components of a business plan. Show the 3-minute video, [“How to Write a Business Plan”](#) – a clear and concise overview of the elements needed. Entrepreneurs need to develop a business plan that ultimately serves as their guide with goals and objectives for their business. The process of developing a business plan includes identifying the problem the business solves, the market it serves, required resources, and financial planning and modeling. A thorough business plan will include in-depth market analysis, and financial projections to demonstrate the viability of the business concept.

Activity Steps

1. Students will be in groups of 3-4 and each group should determine a product, process, or service they wish to sell. (5 min)
2. Student teams will answer some essential questions about their business. (20 min)
 - a. What products or services will our business provide?
 - b. Who is our competition?
 - c. Who needs or wants this product, process, or service?
 - d. How large an investment will be needed to launch this start-up?
 - e. How soon can our business start providing the product, process, or service?
 - f. How many employees will we need at first?
 - g. Who can we ask for advice about this venture?
3. Students will report out on their new business idea and share how they approached planning. (5 min)

The whole group responds to each business idea. Will they predict success or failure? Why? (10 min)

Tools for Creating a Business Plan

- A well-organized blank Business Plan creation template with very good instructions and explanations can be downloaded free from the [SCORE site](#).
- Another tool is the Business Model Canvas. Read [The Business Model Canvas Explained](#) and then download the [blank template](#).

Read More

Students may have questions about patents and intellectual property rights. They can learn more from the [Small Business Encyclopedia](#). Additional ideas for teaching about entrepreneurship can be found in the NC-NET Employability Toolkit, [Module 8](#).

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