Transforming CTE and Academics through Entrepreneurship

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My Background....

- B.S. Mechanical Engineering
- M.S./Ph.D. Biomedical Engineering and Nanotechnology
- Product Development Engineer, 3M
- Founder of nanotech company, NANOTaxi
- Manager, Idea to Product Program, UT Austin
- Director, Center for Entrepreneurship, Trinity Univ.
- CEO/Founder, VentureLab
What is Entrepreneurship?
An Entrepreneur is…….

- **Inventor/Innovator**: creates something new or better – a new idea, process or product

- **Entrepreneur**: puts together all the resources needed and takes on risk to bring an innovation to market or create value for a customer.
What Does an Entrepreneur Look Like?

doctors, attorneys, artists, musicians, teachers
What are Some Entrepreneurial Traits?
Traits of an Entrepreneurial Mindset

- Grit
- Growth Mindset
- Determined
- Curious
- Opportunity-seeking
- Problem-solving
- Creative
- Hard workers
- Optimistic
- Persuasive
- Resourceful
- Confident
- Flexible with change
- Visionary
- Calculated risk taker
- Not afraid to try and fail
Failure is the Key to Success!
Entrepreneurs Who Failed/Succeeded

Bill Gates – Microsofot
JK Rowling – Harry Potter
Henry Ford – Ford Motors
Walt Disney – Disney
Thomas Edison – The light bulb

"I didn’t fail 1,000 times. The light bulb was an invention with 1,000 steps.”
Are Kids Prepared for the Future?

Boys and girls need the skills to understand and feel comfortable with technology, to innovate, and to create new products, services, companies that will benefit society.
ESTEAM Framework

Entrepreneurship + STEAM

- Transdisciplinary
- Project-based
- Real-world skills
Entrepreneurship Ties Together All Fields of Study

- **Plant biology** – design/develop a hydroponics kit and create a plan to sell hard-to-get produce
- **Geography or social studies** – design/develop a product/company to help people in arid regions get potable water
- **Robotics** – develop a mind-controlled device that assists doctors and create a business model
- **Physics or materials** – develop a way to make solar energy more affordable using 3D printed materials and sell it
- **Coding** – develop a game that helps fight obesity
Teaching Entrepreneurship

Entrepreneurial Thinking

Idea Generation/Brainstorming

Market Research/Customer Validation

Design Thinking

Prototyping (using web design, app design, 3D printing, etc.)

LeanLaunchPad/Business Model Methodology

Pitching to an audience
Create a Culture of Creativity

Innovative

Fun

Safe Atmosphere for All
Make Learning Seem like Play

No success or failure to play – safe to experiment and discover.

Play nurtures curiosity and curiosity stimulates creativity.

Many creative works from musical compositions to high tech inventions and medical innovations began from play—ie. Penicillin
Idea Generation
The Law of 1%

If you force yourself to come up with 100 ideas, one of them will be great.

When a photographer goes on a photo shoot, he or she does not take 3 perfect pictures. They take hundreds of pictures and choose the great ones.
BRAINSTORMING
What Inspired Us?
Brainstorming Rules

• Let your mind spread its wings. Ask “What if…?”
• Impractical does not mean impossible.
• Observe and interact with your surroundings.
• Draw pictures.
• Pretend you’re someone or something else.
• Get loud, get active.
• Say, “Yes, and ….”
The Big 2

There are no bad or wrong ideas! Never say an idea (your own or another’s) is bad or stupid.

Think of as many ideas as possible and write them ALL down!
Let’s Make Pigs Fly
Who is Your Market?

If you are an entrepreneur you don’t want to market snowboots to someone that lives in the Tropics.
Get Out and Talk to Customers!
PROTOTYPING
Design Cycle

1. Design
2. Build Prototype
3. User Test Prototype
4. Evaluate Feedback
5. Refine Prototype
6. Final Product
Prototyping Attitude

• Have the intent to TEST. What do you need to try to learn?
• Prototype for **look and feel** - What does it look like? What is it made of?
• Prototype for **functionality** - What does your product or service do? How do people use it?
• Let your customers experience your prototype and get their feedback.
• **FAIL Early and FAIL Fast.**
## BUSINESS MODEL

<table>
<thead>
<tr>
<th>Product:</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem</td>
<td>Solution</td>
</tr>
</tbody>
</table>

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<tr>
<th>Key Partners</th>
<th>Key Metrics</th>
<th>Value Proposition</th>
<th>Unfair Advantage</th>
<th>Customer Segments</th>
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**Table:**
- **Key Partners**
- **Key Metrics**
- **Value Proposition**
- **Unfair Advantage**
- **Customer Segments**
- **Key Resources**
- **Channels**
- **Revenue Streams**
- **Cost Structure**
Key Points

- What is the problem?
- What is your solution?
- Who are you selling to? (your market)
- How do you make money?
- Why is your product unique? How do you provide value to your customers?
- Who are you? (cred grab)
- What do you need? (ask)
High Level Points

• Tell a story; hook the audience
• Make it simple and clear
• One thought per slide
• Use images to convey thoughts
• Record yourself PRACTICING!!
• Be passionate
MiniStartup Challenge: Product Pitch

1. Take a card from each pile.
2. Brainstorm a product and company name using the 3 cards.
3. Create a paper prototype or drawing of your product.
4. Develop a 90 sec sales pitch for the product.

Remember the key points:
- Start with a hook.
- What is the problem?
- What is your solution?
- Who are you selling to? (your market)
- How do you make money?
- Why is it unique? How do you provide value to your customers?
- Who are you? What is your ask?
Making A Difference

Anne Frank Inspire Academy
Bonham Academy
Harris Middle School
Lowell Academy
Rhodes Middle School

1500 students taught
67% female participation
3 companies and $240K raised
Why is Entrepreneurial Education Important

• Provides students with creative and strategic decision making skills
• Stimulates higher order thinking
• Allows students to apply their knowledge in STEM and envision careers
• Engages students with real-world problems
• Creates safe environment for hands-on learning and experimentation - Failure is expected and redefined as a learning opportunity
• Engages students in collaborative learning
• Teaches students to confidently articulate their ideas to others
• Prepares kids for the 21st century
Testimonials

“Great lessons - engaging and though provoking. Brings out creativity.”  - Bonham Elementary School Teaching Cohort

“I’m so excited to finally bring something real to my GT students.”   - Rita Sanches, Rhodes Middle School

“Has a lot of higher order thinking…canvas helped them focus on the task at hand.”   - Bonham Elementary School Teaching Cohort