Preparing students for a rapidly changing future: Interdisciplinarity and Entrepreneurship

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HUMAN CENTERED DESIGN & ENGINEERING
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Objectives

- Discuss the role of interdisciplinary inquiry in preparing students for digital transformation
- Present curricular interventions that advance interdisciplinary inquiry
- Discuss the role of entrepreneurship in preparing students for digital transformation
- Present curricular interventions that advance entrepreneurship education

Background

Academic and Entrepreneurial work

> Moving from Humanities to Engineering
> Moving from Academia to Entrepreneurship

The Value of Interdisciplinary Inquiry at Universities

Interdisciplinary inquiry plays a crucial role in preparing students for digital transformation

- Increasingly, impactful technologies require knowledge of more than one discipline
- University “alternatives” emphasize technical skills almost exclusively
- The strength of universities rests with their ability to provide education across multiple disciplines and prepare students for societal transformation, not just technical change

TECHNICAL TRAINING
Lambda School; Microverse; Codeacademy; General Assembly; Platzi; Juno College

FINANCING (ISA) &PLACEMENT:
Blair, ScholarMe, Outtalent, Make School

Example 1: Healthcare technologies

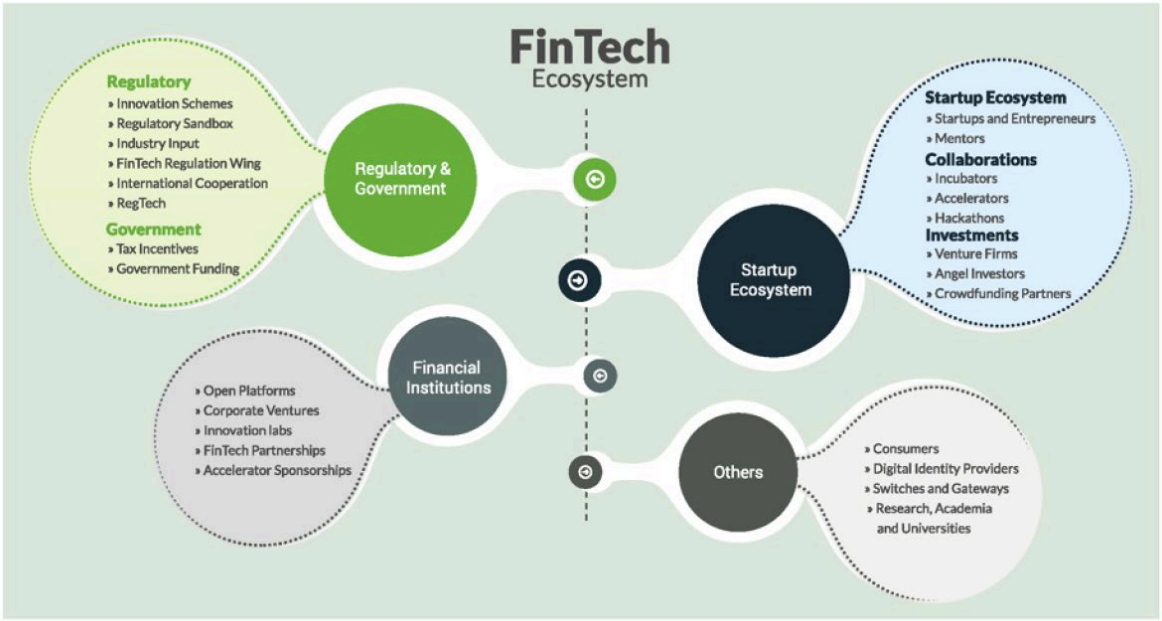
Bioengineering + Medicine + Nursing + Medical Anthropology + Healthcare Economics + Computer Science + User Interface Development + Usability +?

> Da Vinci surgery machines: Robotics as well as robot-human interaction
> Infusion pumps: Cloud-based drug libraries to reduce error, as well as alarm fatigue

Example 2: Financial technologies/Mobile Payments

Public Policy + Mobile Technology (Devices) + Infrastructure + Banking Regulations + Psychology ++

> "Fintech" – Technical component is the computer code to make mPesa, Paypal, Venmo, etc. work But there is much more:
> Regulatory issues with governments, banking industry
> How to create systems that users trust



Universities are the Institutions Best Equipped to Create Interdisciplinary Curricular Interventions

Institutional and Programmatic Interventions

1. Institutional: Require organizational buy-in and significant resources
    - > Example: Department of Human Centered Design & Engineering. HCDE is an amalgam of methods and theories that are designed for inquiry that identifies the problem spaces, maps out intervention opportunities, designs an intervention iteratively, and deploys that intervention with an evaluation component
2. Programmatic: Can be formal or semi-formal institutional offering – a course, an independent study, a research lab, et.al.
    - > Example: "Hackademia" → Directed Research Group to provide alternative pathways to "becoming technical" primarily through six identified dimensions of technical learning

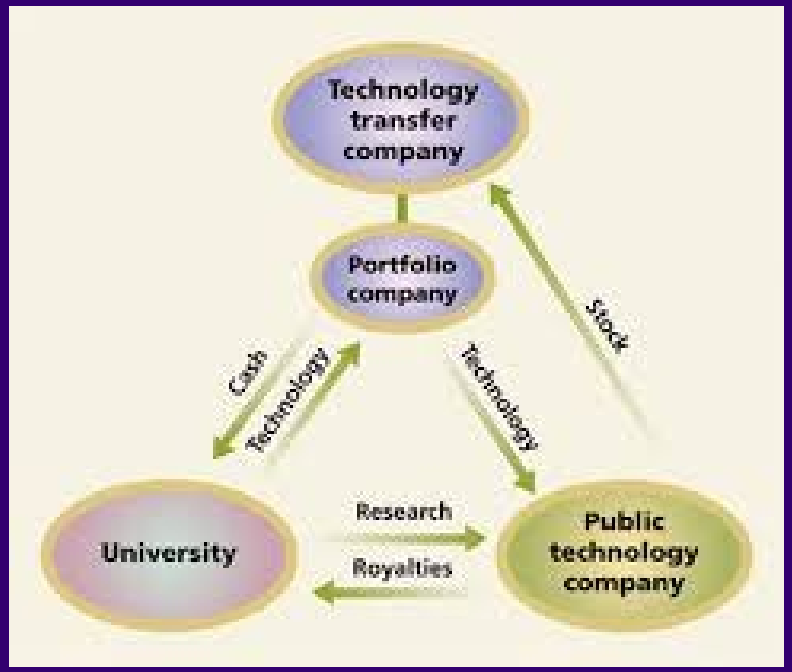
Entrepreneurship is essential to preparing students for a rapidly changing future

New technologies demand new models

- Learning to build technologies that address the most important challenges in the world requires students to understand not just these digital technologies, but also how those technologies affect users, communities and broader society
- This requires bringing entrepreneurship out of business schools and in conversation with disciplines across campus
- Old models of how to commercialize technology need updating to address this “full stack” innovation approach that considers context of use alongside the technical innovation

New pressures for tech innovation

Increasing rates of change demand new innovation models



- The “Technology Transfer” model common to universities prioritizes formal expertise
- Well-worn pathways that privilege existing institutional structures
- This can preclude an experimental or interdisciplinary mindset necessary to leverage digital transformation

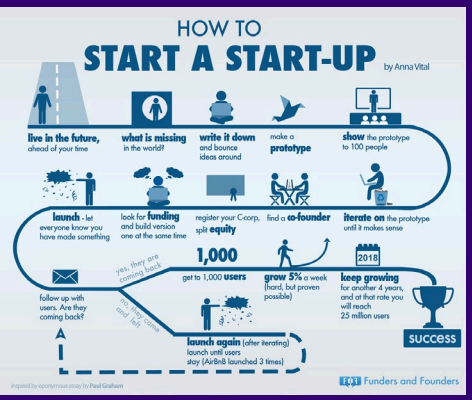
Example: Entrepreneurial thinking is opening up new kinds of enterprises

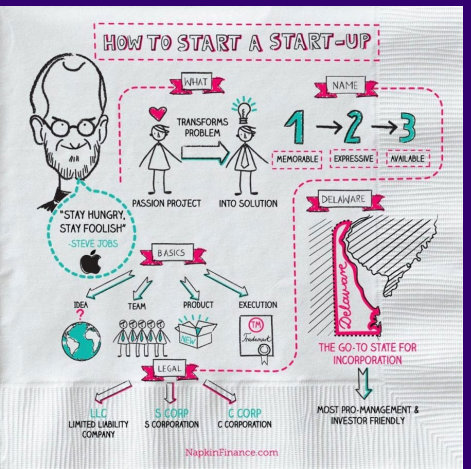
> No longer a clear line between “social enterprise” and “for-profit company” for many students
> This goes beyond Corporate Social Responsibility (CSR) for existing companies

> Environmental, Social, and Governance concerns become part of shareholder priorities
> Organizations push new business models

Curricular interventions that advance entrepreneurship education

Entrepreneurship provides a platform for thinking about the impact of new technologies in unexpected ways





- Go beyond the “How to Start a Start-up” approach
- Entrepreneurship as taught in Business Schools serves many important purposes
- We can do more to prepare students for the truly transformative
- It’s time to find other ways to approach entrepreneurial education
- Goal is to create frameworks that enable learners to explore new pathways for digital transformation

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Example: Interdisciplinary Entrepreneurship

Sample course offering: Building a Human Centered Venture

Course encourages students to rethink the categories of a business plan

- Course offering taught with a design perspective.
- Applying design not just to product, service, policy, etc. but also to organizational structure, business models, business practices, etc.
- Relatively simple intervention for universities that leverages their institutional strengths
- Complementary to existing tech transfer models
- Allows for innovative thinking in how to build and scale digital interventions

Conclusion

- The rate of change created by digital transformation across all segments of society means institutions need to prepare students with different ways of approaching problems
- Interdisciplinary education rooted in understanding core concepts of technology alongside their societal impacts is an essential first step
- Adding an entrepreneurial focus helps deepen students' understanding of how technologies can be developed to meet societal challenges and needs