Overview of Design Thinking / Human-Centered Design

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College of Social Sciences & Public Policy
Interdisciplinary Social Science
Jim Moran School of Entrepreneurship
The Future of Jobs and Jobs Training

As robots, automation and artificial intelligence perform more tasks and there is massive disruption of jobs, experts say a wider array of education and skills-building programs will be created to meet new demands. There are two uncertainties: Will well-prepared workers be able to keep up in the race with AI tools? And will market capitalism survive?

BY LEE RAINIE (HTTP://WWW.PEWRESEARCH.ORG/STAFF/LEE-RAINIE/) AND JANNA ANDERSON (HTTP://WWW.PEWINTERNET.ORG/AUTHOR/JANDERSON/)
Five major themes about the future of jobs training in the tech age

HOPEFUL THEMES

Theme 1  The training ecosystem will evolve, with a mix of innovation in all education formats

- More learning systems will migrate online. Some will be self-directed and some offered or required by employers; others will be hybrid online/real-world classes. Workers will be expected to learn continuously.
- Online courses will get a big boost from advances in augmented reality (AR), virtual reality (VR) and artificial intelligence (AI).
- Universities still have special roles to play in preparing people for life, but some are likely to diversify and differentiate.

Theme 2  Learners must cultivate 21st-century skills, capabilities and attributes

- Tough-to-teach intangibles such as emotional intelligence, curiosity, creativity, adaptability, resilience and critical thinking will be most highly valued.
- Practical, experiential learning via apprenticeships and mentoring will advance.

Theme 3  New credentialing systems will arise as self-directed learning expands

- While the traditional college degree will still hold sway in 2026, more employers may accept alternate credentialing systems as self-directed learning options and their measures evolve.
- The proof of competency may be in the real-world work portfolios.

CONCERNS

Theme 4  Training and learning systems will not meet 21st-century needs by 2026

- Within the next decade, education systems will not be up to the task of adapting to train or retrain people for the skills that will be most prized in the future.
- Show me the money: Many doubts hinge upon a lack of political will and necessary funding.
- Some people are incapable of or uninterested in self-directed learning.

Theme 5  Jobs? What jobs? Technological forces will fundamentally change work and the economic landscape

- There will be many millions more people and millions fewer jobs in the future.
- Capitalism itself is in real trouble.
Theme 2: Learners must cultivate 21st-century skills, capabilities and attributes

Will training for skills most important in the jobs of the future work well in large-scale settings by 2026? Respondents in this canvassing overwhelmingly said yes, anticipating that improvements in such education would continue. However, many believe the most vital skills are not easy to teach, learn or evaluate in any education or training setting available today.

Tough-to-teach intangible skills, capabilities and attributes such as emotional intelligence, curiosity, creativity, adaptability, resilience and critical thinking will be most highly valued

Dozens of descriptive terms were applied by respondents as they noted the skills, capabilities and attributes they see as important in workers’ lives in the next decade.

While coding and other “hard skills” were listed as being easiest to teach to a large group in an online setting, “soft,” “human” skills were seen by most respondents as crucial for survival in the age of AI and robotics.

Devin Fidler, research director at the Institute for the Future, predicted, “As basic automation and machine learning move toward becoming

The skills needed to succeed in today’s world and the future are curiosity, creativity, taking initiative, multi-disciplinary thinking and empathy. These skills,
Mission: Cultivate, mentor, and support empathetic, creative, collaborative, informed, engaged, and effective leaders who apply an interdisciplinary innovation & entrepreneurship mindset to systemically address complex social & environmental problems in a diversity of settings.

TWO SIE PATHWAYS:

Jim Moran School: SEI Major & Minor

College of Social Sciences & Public Policy ~ Interdisciplinary Social Science: SIE Specialization & Concentration

CURRICULUM
Foundations of SIE
Human-Centered Design for Social Innov.
SIE Capstone Courses
Other SIE and Related Courses both within COSSP & Across FSU; SIE FIG

STAKEHOLDERS
Internal: COSSSP, JM School, ISS Program, Devoe Moore Center, Center for Leadership & SC; Undergraduate Studies/Research; Innovation Hub; I&E Council, International Programs; RSOs, Student Government; Other Colleges/Dpts.

External Partners: Domi; INIE; Local Social Enterprises & High-Impact Organizations; Internship Partners; Bali Institute; SE Corps; GLP; Other University Programs; Thinkers/Leaders in the Field; Ashoka U

FIELD WORK
Internships (Local & International)
Independent Research
Immersive Management Program
Social Enterprise Evaluation Teams

OPPORTUNITIES THAT CROSS THE CURRICULAR SPECTRUM

Social Entrepreneur Corps
Global Leadership Program
Study Abroad: Bali: Social Entrepreneurship & Innovation Immersion
Launching Social Enterprises & Innovation

CO-CURRICULUM
Student Orgs, Competitions, Events, Showcases, Workshops, Films, Site Visits, Mentors, Community/Civic Engagement; Courses Offered in the Community...

Manciagli ~ College of Social Sciences & Public Policy
A focus on nurturing unique human skills that artificial intelligence (AI) and machines seem unable to replicate: Many of these experts discussed in their responses the human talents they believe machines and automation may not be able to duplicate, noting that these should be the skills developed and nurtured by education and training programs to prepare people to work successfully alongside AI. These respondents suggest that workers of the future will learn to deeply cultivate and exploit creativity, collaborative activity, abstract and systems thinking, complex communication, and the ability to thrive in diverse environments.

One such comment came from Simon Gottschalk, a professor in the department of sociology at the University of Nevada, Las Vegas: “The skills necessary at the higher echelons will include especially the ability to efficiently network, manage public relations, display intercultural sensitivity, marketing, and generally what author Dan Goleman (https://www.slideshare.net/JavedIqbal105/emotional-intelligence-by-daniel-goleman) would call ‘social’ and ‘emotional’ intelligence. [This also includes] creativity, and just enough critical thinking to move outside the box.”

Another example is the response of Fredric Litto, a professor emeritus of communications and longtime distance-learning expert from the University of São Paulo: “We are now in the transitional stage of employers gradually reducing their prejudice in the hiring of those who studied at a distance, and moving in favor of such ‘graduates’ who, in the workplace, demonstrate greater proactiveness, initiative, discipline, collaborativeness – because they studied online.”

Other respondents mentioned traits including leadership, design thinking, “human meta communication,” deliberation, conflict resolution, and the capacity to motivate, mobilize and innovate. Still others spoke of more practical needs that could help workers in the medium term – to work with data and algorithms, to implement 3-D modeling and work with 3-D printers, or to implement the newly emerging capabilities in artificial intelligence and augmented and virtual reality. Jonathan Grudin, principal researcher at Microsoft, commented, “People will create the jobs of the future, not simply train for them, and technology is already central. It will undoubtedly play a greater role in the years ahead.”
Susan Price, a digital architect at Continuum Analytics, commented, “Increasingly, machines will perform tasks they are better suited to perform than humans, such as computation, data analysis and logic. Functions requiring emotional intelligence, empathy, compassion, and creative judgment and discernment will expand and be increasingly valued in our culture.”

Tiffany Shlain, filmmaker and founder of the Webby Awards, wrote, “The skills needed to succeed in today’s world and the future are curiosity, creativity, taking initiative, multi-disciplinary thinking and empathy. These skills, interestingly, are the skills specific to human beings that machines and robots cannot do, and you can be taught to strengthen these skills through education. I look forward to seeing innovative live and online programs that can teach these at scale.”

Ben Shneiderman, professor of computer science at the University of Maryland, observed, “Students can be trained to be more innovative, creative and active initiators of novel ideas. Skills of writing, speaking and making videos are important, but fundamental skills of critical thinking, community building, teamwork, deliberation/dialogue and conflict resolution will be powerful. A mindset of persistence and the necessary passion to succeed are also critical.”

Louisa Heinrich, founder at Superhuman Limited, commented, “Lateral and system-thinking skills are increasingly critical for success in an ever-changing global landscape, and these will need to be re-prioritised at all levels of education.”
Design Thinking

is a human-centered approach
to innovation.
Mindsets of a Human-Centered Designer

Human-centered design is as much about your head as your hands. These Mindsets uncover the philosophy behind our approach to creative problem solving, and show that how you think about design directly affects whether you’ll arrive at innovative, impactful solutions. Spend some time watching these seven Mindsets videos on the NovoEd platform.
Learn from Failure

“Don’t think of it as failure, think of it as designing experiments through which you’re going to learn.”

Failure is an incredibly powerful tool for learning. Designing experiments, prototypes, and interactions and testing them is at the heart of human-centered design. So is an understanding that not all of them are going to work. As we seek to solve big problems, we’re bound to fail. But if we adopt the right mindset, we’ll inevitably learn something from that failure.

Make It

“You’re taking risk out of the process by making something simple first. And you always learn lessons from it.”

As human-centered designers, we make because we believe in the power of tangibility and we know that making an idea real is a fantastic way to think it through. When the goal is to get impactful solutions out into the world you can’t stay in the realm of theory. You have to make your ideas real.
Creative Confidence

“Creative confidence is the notion that you have big ideas, and that you have the ability to act on them.”

Anyone can approach the world like a designer. Often all it takes to unlock that potential as a dynamic problem solver is creative confidence. Creative confidence is the belief that everyone is creative, and that creativity isn’t the capacity to draw or compose or sculpt, but a way of approaching the world.

Empathy

“I can’t come up with any new ideas if all I do is exist in my own life.”

Empathy is the capacity to step into other people’s shoes, to understand their lives, and start to solve problems from their perspectives. Human-centered design is premised on empathy, on the idea that the people you’re designing for are your roadmap to innovative solutions. All you have to do is empathize, understand them, and bring them along with you in the design process.
Embrace Ambiguity

“We may not know what that answer is, but we know that we have to give ourselves permission to explore.”

Human-centered designers always start from the place of not knowing the answer to the problem they’re looking to solve. And though that’s not particularly comfortable, it allows us to open up creatively, to pursue lots of different ideas, and to arrive at unexpected solutions. Embracing ambiguity allows us to give ourselves permission to be fantastically creative.

Be Optimistic

“Optimism is the thing that drives you forward.”

We believe that design is inherently optimistic. To take on a big challenge, especially one as large and intractable as poverty, we have to believe that progress is even an option. If we didn’t, we wouldn’t even try. Optimism is the embrace of possibility, the idea that even if we don’t know the answer, that it’s out there and that we can find it.
Iterate, Iterate, Iterate

“What an iterative approach affords us is that we gain validation along the way...because we’re hearing from the people we’re actually designing for.”

Human-centered design is an inherently iterative approach to solving problems because it makes feedback from the people we’re designing for a critical part of how a solution evolves. By continually iterating, refining, and improving our work we put ourselves in a place where we’ll have more ideas, try a variety of approaches, unlock our creativity, and arrive more quickly at successful solutions.
Design Thinking

Human-Centered Design
APPROACHES/METHODOLOGIES TO INNOVATION

Social Impact Framework
- Investigate
- Innovate
- Implement

Design Thinking
- Inspiration
- Ideation
- Implementation

Human-Centered Design
- Hear
- Create
- Deliver

Creative Problem Solving
- Fact Finding
- Problem Finding
- Idea Finding
- Solution Finding
- Acceptance Finding
“Designers don’t try to search for a solution until they have determined the real problem, and even then, instead of solving that problem, they stop to consider a wide range of potential solutions. Only then will they finally converge upon their proposal. This process is called DESIGN THINKING.”

Don Norman,
Author, *The Design of Everyday Things*
# Social Innovation & Entrepreneurship

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**INSPIRATION**
I have a design challenge.
How do I get started?
How do I conduct an interview?
How do I stay human-centered?

**IDEATION**
I have an opportunity for design.
How do I interpret what I’ve learned?
How do I turn my insights into tangible ideas?
How do I make a prototype?

**IMPLEMENTATION**
I have an innovative solution.
How do I make my concept real?
How do I assess if it’s working?
How do I plan for sustainability?
Another way of describing the process is that it’s often messy and ambiguous on the front end. This is true of any innovation effort when the outcome and/or path is not exactly clear at the outset. However, the HCD methodology enables teams to work through and emerge from the haze much faster and with greater clarity than more traditional approaches to problem solving.
Wicked Problems

Problems are never completely solved

Every problem is unique

Can take a *long* time to evaluate solutions

There is no clear problem definition

Solutions are not right/wrong, but better/worse

Are multi-causal multi-scalar & interconnected

Every solution ramifies throughout the system

Multiple stakeholders with conflicting agendas

Every wicked problem is connected to others

Straddle organizational & disciplinary boundaries

Based upon Rittel and Webber (1973)
What is design?

Design is the purpose, planning, or intention that exists behind an action, fact, or material object.

Unfortunately design has historically been relegated to creativity through some medium. The industrialized world has separated design as its own activity and created a **division of labor model called plan, design, build**.
What is design?

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- Idea
  - “Thinking” Frameworks
  - “Creating” Concepts
  - “Making” Systems

Plan(ners)
- intent & outcomes
- specifications

Design(ers)
- creativity
- concepts

Build(ers)
- assemble
- release
Design thinking is focused on better futures through the art of the possible

If an idea has any value to the world, it should have an intended benefit to a group of people.

Motivated by a better future, design thinking culture and practices are used to thoughtfully address and validate an idea over time.
Design thinking is focused on better futures through the art of the possible

If an idea has any value to the world, it should have an intended benefit to a group of people.

Motivated by a better future, design thinking culture and practices are used to thoughtfully address and validate an idea over time.

This is accomplished by:

- having a clear goal which provides a sense of purpose
- balancing intuition & rationality to avoid rigidity or ideology
- multidisciplinary co-intelligence that brings diversity of skills and experiences

The goal of design thinking is to drive collective understanding and alignment by generating key insights which drive informed & impactful solutions. It is then about capacity building for self-sufficiency.
HUMAN-CENTERED DESIGN

CREATIVITY

AND

INNOVATION
Creativity is unleashing the potential of the mind to conceive new ideas.
Innovation, on the other hand, is completely measurable. Innovation is about introducing change into relatively stable systems.

By identifying an unrecognized and unmet need, an organization can use innovation to apply its creative resources to **Design** an appropriate solution…
Organizations often chase creativity, but what they really need to pursue is **innovation**.

Theodore Levitt puts it this way:

“What is often lacking is **not creativity in the idea-creating sense but innovation in the action-producing sense**, i.e. putting ideas to work.”
Busting the “silos”

Design is being embraced by many fields using a wide range of human centered practices that improve both organizational & market outcomes.

Working in cross-disciplinary radical collaboration, learning together is the new “norm.” Heavy handed planning is giving way to lightweight practices that are expedient, iterative, and outcomes-focused.
Busting the “silos”

*Design is being embraced by many fields using a wide range of human centered practices that improve both organizational & market outcomes.*

Working in cross-disciplinary *radical collaboration*, learning together is the new “norm.” Heavy handed planning is giving way to lightweight practices that are expedient, iterative, and outcomes-focused.
What is radical collaboration?

It is bringing different skills & experiences together through authentic engagement without ideology to create value to someone.

<table>
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<tr>
<th>Challenges Assumptions</th>
<th>Presumptions or things an individual takes for granted as “universal”</th>
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<td>Challenges Stereotypes</td>
<td>Preconceived oversimplified impressions of people &amp; situations</td>
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<td>Challenges Biases</td>
<td>Prejudices and what is comfortable</td>
</tr>
<tr>
<td>Addresses Blind Spots</td>
<td>Professional, skill or experience gaps</td>
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What is radical collaboration?

It is bringing different skills & experiences together through authentic engagement without ideology to create value to someone.

Diversity provides the widest perspectives on “reality.” To feel part of a team is where your contributions matter. This is driven by a social contract which defines the right behaviors for collaboration to get the right performance results.
Approach to design thinking

Creating Choices

Increasing understanding of problem

Focused understanding of solution

Making Choices
### Approach to design thinking

<table>
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<tr>
<th>Goal</th>
<th>Question</th>
<th>Observe</th>
<th>Reflect</th>
<th>Propose</th>
<th>Prototype</th>
<th>Transform</th>
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<tr>
<td>Start with the outcome in mind</td>
<td>Questions about the goal to explore further</td>
<td>As-Is State</td>
<td>What do we know? What do we think we know? What don't we know?</td>
<td>To-Be State</td>
<td>Small Proof of Concept Pilot</td>
<td>Fail fast and iterate to learn</td>
</tr>
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Turning ideas into reality is usually difficult

A large percentage of organizational initiatives fail. Why?
Having an idea of a desirable outcome and immediately achieving viability is too large of a gap . . .

Desire
ASKING THE RIGHT QUESTIONS

- Do they want this? Desirability
- Should we do this? Viability
- Can we do this? Feasibility

The most valuable design
Desirability

Will this solution fill a need?
A great place to start is by checking to see if the project is adding value to the world.

Will it fit into people’s lives?
Understanding the people using our solution tells us how they live and in what way our solution supports or conflicts with their lifestyle and use cases.

Will it appeal to them? Will they actually want it?
All entrepreneurs are trying to solve a problem - to create a product or service that meets the real needs of their customers.
Needs First
not Ideas First

Studies comparing successful and unsuccessful innovation have found that the primary discriminator was the degree to which user needs were fully understood.
“If I had an hour to solve a problem I'd spend 55 minutes thinking about the problem and 5 minutes thinking about solutions.”
“If I had an hour to solve a problem I'd spend 55 minutes thinking about the problem and 5 minutes thinking about solutions.”

Albert Einstein
Understanding the Problem:

Social, Political, Economic, Cultural, & Environmental Dimensions

Needs/Jobs/Outcomes of the Primary Beneficiaries and Other Stakeholders

Identify Constraints, Synergies, Conflicts, Resources
“People don't want to buy a quarter-inch drill. They want a quarter-inch hole!”

Theodore Levitt, 1975
JOB
Defines the functional and/or emotional goals that people want to accomplish and problems they are trying to resolve.
Defines the action for which a product or service may be needed.
Functional Jobs

Emotional Jobs

Social Jobs
JOBS-TO-BE-DONE

UNDERSTANDING
POTENTIAL CONFLICTS &
SYNERGIES

EXAMPLE: 3RD GRADE CLASSROOM
Empathize (Re)Frame

Insight Gathering Opportunity Framing

Converse

Ideate

Conversation of Possibilities

Prototype

Conversation of Reality

Test

Diverge

Converge

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ASKING THE RIGHT QUESTIONS

- Do they want this? Desirability
- Should we do this? Viability
- Can we do this? Feasibility

The most valuable design
Feasibility

Is the technology (or resources) needed to power the design solution available or within reach?
Sometimes the goal is to create a new technology, but sometimes we need to work with what we’ve got. Determine what your goal is on this front early on.

How long will this take?
Is it realistic?

Can the organization actually make it happen?
During the convergent phase of the ideation process of a project, we have to look at questions of feasibility. A solution only works when the team can actually make it work in the long run.
Viability

Will the design solution align with the organization’s long-term goals? By understanding what the business wants to accomplish, we can focus our energy in the right direction.

Is the solution cost-effective?

Is the solution sustainable? What will the return on the investment look like?

Measure the effort needed to execute on a solution with the potential payoff in terms of desired outcomes—whether they’re financial, social impact-related, or some other quantifiable measure. If the investment far outweighs the benefits, it may be worth focusing on a different solution.
FRAMING THE PROBLEM
FRAMING THE PROBLEM

EXAMPLE:

PARKING ON CAMPUS
## Parking on FSU’s Campus

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
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<tbody>
<tr>
<td>Academic staff</td>
<td>5,517[7]</td>
</tr>
<tr>
<td>Administrative staff</td>
<td>6,280[8]</td>
</tr>
<tr>
<td>Students</td>
<td>41,773[9]</td>
</tr>
<tr>
<td>Undergraduates</td>
<td>32,621[9]</td>
</tr>
<tr>
<td>Postgraduates</td>
<td>9,152[9]</td>
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### Location
- Tallahassee, Florida, United States
- **Urban area**

### Parking
- 6 Parking Garages x 1,000 = 6,000 + 3,000 = Approx. 9,000

### Main Campus
- 474.5 acres
- (1.920 km²)
How Do We Frame This Problem?
Problem Statement

How can we increase parking spaces for students?

or

How can we build more parking spaces on campus?
“No problem can be solved from the same level of consciousness that created it.”

-Albert Einstein
“You never change things by fighting the existing reality. To change something, build a new model that makes the existing model obsolete.”

-Buckminster Fuller
Effective Problem Statement

How can we increase access for students to campus resources (including classes, library, events, meetings, facilities, faculty…)}
OpenIDEO is a global community working together to design solutions for the world’s biggest challenges.

SIGN UP
JOIN A CHAPTER
“WHY?”

“How might we...?”

“What if?”

QUESTIONS
“WITHOUT A GOOD QUESTION, A GOOD ANSWER HAS NO PLACE TO GO.”

Clayton Christensen
Jennifer: *Why do we have to wait for the picture?*
IDEATING

PROTOTYPING

TESTING, VALIDATING

ITERATING
IMPLEMENTATION
<table>
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<td>Investigate</td>
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Many investors say they invest in people over ideas.

Core Team ~ Immediate Needs

Interdisciplinary/Complementary

Non-Core Members (Mentors/Advisors, Freelancers, Interns…)

Good Fit (Attributes, Values, Passions/Motivations)

Create a Healthy Culture

When Realistic/Possible, Build for Future

Consider Turnover