Equity-Centered Technology Design
Introduction

Together we are setting out to learn about various equity-centered approaches to edtech product design. Along the way, this guide will help navigate our conversations and illuminate the pathway ahead.

Before we dive in, it is important to note that we’ll be looking at inequities through the lens of specific design decisions and ways to shift the design mindset of our team, our partners, and the field. This is not the end-all-be-all on this topic, but rather a jumping off point toward an understanding of an achievable future—more diverse, equitable, and inclusive products that better serve our students.
INTRODUCTION

Tech Learning Sessions 02

Systemic Oppression

Let’s start at the beginning. Tracing the historical antecedents of systemic oppression will help us understand diversity, equity, and inclusion.

Inequities aren’t a new phenomenon and they don’t occur within a vacuum, so treating them as such is to risk perpetuating cycles of harm. Systemic oppression manifests as conscious and unconscious disadvantages for groups of people based on their identity markers while simultaneously advantaging members of the dominant, overrepresented group (gender, race, class, sexual orientation, language, etc). These manifestations can be visualized and examined through the 4 I’s of systemic oppression.

In this lens of systemic oppression we assume that all negative forms of prejudice and/or bias are learned and therefore can be unlearned. Similarly, we assume that oppression and injustice are human creations and therefore can be undone.

In other words, we recognize inequities as products of design, that can therefore be redesigned. Let’s explore the first component we believe can help with this: the Human-Centered Design framework.

Inequities aren’t a new phenomenon and they don’t occur within a vacuum, so treating them as such is to risk perpetuating cycles of harm. Systemic oppression manifests as conscious and unconscious disadvantages for groups of people based on their identity markers while simultaneously advantaging members of the dominant, overrepresented group (gender, race, class, sexual orientation, language, etc). These manifestations can be visualized and examined through the 4 I’s of systemic oppression.

In this lens of systemic oppression we assume that all negative forms of prejudice and/or bias are learned and therefore can be unlearned. Similarly, we assume that oppression and injustice are human creations and therefore can be undone.

In other words, we recognize inequities as products of design, that can therefore be redesigned. Let’s explore the first component we believe can help with this: the Human-Centered Design framework.

Four I’s of oppression

**Internalized**
An oppressed individual adopts the inaccurate myths and/or stereotypes imposed on them by dominant culture, impacting the way they view, think, and feel about themselves and those who share their identity markers.
*Dynamics: Identity and difference, stereotype threat*

**Interpersonal**
Problematic interactions between individuals both within and across groups, often marked by hurtful behaviors or language.
*Dynamics: Microaggressions, “xx-cist” interactions, gaslighting, dog whistling*

**Institutional**
Established laws, customs, and practices that systematically reflect and produce inequities based on identity. Rules are both written and unwritten, and define who can and cannot participate or succeed.
*Dynamics: Biased policies and practices, disproportionate outcomes and experiences, opportunity structures*

**Ideological**
A core belief that one group is somehow better than another, and in some measure has the right to control the other group.
*Dynamics: Explicit/implicit biases, mental models, and dynamics of power and privilege*
So, if inequities are learned products of human design, where do we go from here? This section introduces a tool we believe has the potential to help with this redesign: the Human-Centered Design (HCD) framework.
Introducing Human-Centered Design

Human-Centered Design is a problem solving framework popularized by IDEO that develops solutions through a strong, consistent focus on the human perspective.

This framework is used widely for technology product and service design, but can be applied to any process involving research, design, or problem solving. The exact Human-Centered Design process looks different at every company and on every team, but generally reflects an emphasis on (a) empathy building, (b) rapid ideation, (c) testing, and (d) iteration.
Inherent Risks of HCD

The Human-Centered Design framework provides a meaningful skeleton for problem solving. However, in order to use HCD to design for equity, we must first examine the possible risks of leveraging it.

Through our research, we’ve identified 5 risks that frequently surface when the HCD framework is used as a standalone process for technology design. Left unaddressed, these risks lead to the design and development of technology products which reinforce, rather than combat, systemic oppression.

Five Risks

**Status Quo Design**
Placing higher value on quantitative data at the expense of qualitative data often leads to solutions that benefit those at the center and cause further harm to those at the margins. Example: A new edtech product is developed without built-in support for assistive screen-reader technology.

**Misrepresentation of Users**
A lack of diversity on design teams and unchecked personal biases of designers may lead to incorrect and stereotypical categorizations of underrepresented users. Example: A product design team draws on unverified assumptions and one 30-minute interview to construct a persona of a low-income, Latinx student.

**Uneven Power Dynamics**
Designers having the power to define who to solve for, what to solve, and how often creates a nonreciprocal relationship with their user communities. Example: A product design team that only engages with teachers at an under-resourced school during user research cycles that benefit the product team.

**Techno-solutionism**
The belief that technology alone can solve hard societal problems leads to solutions that treat symptoms of systemic oppression rather than root causes. Example: An edtech company decides to use chatbots to power its mental health messaging service for students of color, prioritizing scalability and “high-tech” status over a personal, relationship-based student experience.

**Accountability Deficit**
When teams don’t take account of the intentional and/or unintentional outcomes a solution may pose, they are at risk of amplifying oppressive forces that advances harm against marginalized populations. Example: A standardized test grading algorithm consistently underscores the writing of black students because the algorithm was built using sample data from white students and graders.
Section III: Integrating Equity

With these risks in mind, we believe the HCD framework must be retrofitted with an equity lens.

More specifically, we believe this can be accomplished by applying inclusive methodologies to the HCD framework, as they provide the two missing components that are necessary for equity-centered design:

1. Equity-centered principles
2. Specific tools, methods, and resources that put the principles and framework into practice

We’ve chosen to explore four methodologies: Inclusive Design, Participatory Design, Asset Based Community Development Design, and EquityXDesign. While this is not an exhaustive list of all inclusive methodologies, we feel these four are exemplars of how to leverage equity-centered principles, tools, methods, and resources to mitigate the 5 common risks of HCD as a standalone framework.

None of these methodologies attempt to be the definitive framework for practicing equitable HCD. For example, while EquityXDesign takes the most comprehensive approach to address all HCD risks, the Inclusive Design approach is more pointed toward designing for the margins.

Therefore, these methodologies should always be used in conjunction with one another, in a configuration that is most applicable to the specific problem to be solved.
Applying Inclusive Methodologies to HCD

Each multi-colored bar represents an inclusive methodology we’ll be covering today. Their mapping represents the subset of risks that are most effectively mitigated.

### Status Quo Design
Placing higher value on quantitative data at the expense of qualitative data often leads to solutions that benefit those at the center and cause further harm to those at the margins.

### Misrepresentation of Users
A lack of diversity on design teams and unacknowledged personal biases of designers may lead to incorrect and stereotypical categorizations of underrepresented users.

### Uneven Power Dynamics
Designers having the power to define who to solve for, what to solve, and how often creates a nonreciprocal relationship with their user communities.

### Techno-solutionism
The belief that technology alone can solve hard societal problems leads to solutions that treat symptoms of systemic oppression rather than root causes.

### Accountability Deficit
When teams don’t take account of the intentional and/or unintentional outcomes a solution may pose, they are at risk of amplifying oppressive forces that advance harm against marginalized populations.

---

**Inclusive Design**

**Participatory Design**

**Asset-Based Community Development Design**

**EquityXDesign**

---

Tech Learning Sessions 07
Inclusive Design

Inclusive Design draws on the full range of human diversity by including and learning from people with various perspectives, with the goal of designing a range of experiences for all.

Inclusive Design calls for understanding disabilities as a mismatch of experiences rather than a health condition. It views disabilities on a spectrum: they can be situational (ex. Not being able to hear at a loud concert), temporary (ex. Having a broken arm), or permanent (ex. Being born low vision). Moreover, it contends that while practicing inclusive design should make your products more accessible, it’s not a process for meeting all accessibility standards. Ideally, accessibility and inclusive design work together to make experiences that are not only compliant with standards, but open to all.

**POTENTIAL METHODS**

**Persona spectrums.** Rather than a singular persona, persona spectrums are focused on understanding the related mismatches and motivations across a spectrum of permanent, temporary, and situational scenarios.

**Persona networks.** Persona networks consider a persona spectrum’s context. Just as no person exists in isolation, neither does the Persona Spectrum. The Persona Network includes friends, coworkers, family members or even strangers.

**Inclusive Design Principles**

**Recognize Exclusion**
Checking personal biases, including those around disabilities and related limitations, to avoid conscious or unconscious exclusionary decisions.

**Learn from Diversity**
Letting research insights be driven by the unique perspectives of diverse individuals and the way they adapt to experiences not originally designed for them.

**Solve for One, Extend to Many**
Focusing on what’s universally important to all humans and understanding the power of solving along the continuum of permanent disabilities to temporary disabilities (e.g. broken arm) to situational impairments (e.g. loud crowd affecting your hearing).

**TOOLS TO IMPLEMENT**

**Microsoft Inclusive Design Toolkit**
An overview of inclusive design, its principles, and related resources. Includes activity cards to help you integrate inclusive design principles and methods into each phase of the design process.

**Humaaans**
Design library for creating diverse stock imagery.

**Accessibility Guidelines Checklist**
A short Medium article that outlines the basics of web accessibility guidelines and how to get started.

**Accessibility Color Palette Checker**
Tool that allows you to measure the accessibility of any color combination.

**VoxMedia Accessibility Checklist**
Checklist to build accessibility into your process no matter your role or stage in a project.
Participatory Design

Participatory Design works to involve all stakeholders (e.g. customers, employees, partners, citizens, consumers, etc.) in the design process as a means to better understand user needs.

**Participatory Design is not meant to make users do a designer’s job for them, but rather is meant to create a more democratic design process. The intended benefits of leveraging the participatory design methodology include a reduction in the risk of failure, boosting confidence and self-reliance of end users, managing resistance to change, and fostering stronger relationships in the community.**

**Potentially Method**

Design workshop. A semi-structured, interactive session with a group of target users, who engage in collaborative activities with a design team. Workshop activities might include journey mapping, sketching, paper prototyping, or scenario-based role-play.

**Participatory Design Principles**

- **Develop Cultural Awareness**
  Learning who the community is, their history, and cultural norms. Additionally, bringing that respect of the culture throughout the entire design process.

- **Build Trust**
  Being present within the community and building trust with neighborhood leaders, both formally and informally.

- **Create Meaningful Partnerships**
  Listening to the needs of residents, identifying key stakeholders within the community, and developing interdisciplinary partnerships to address needs.

- **Build Sustainability**
  Pulling in community stakeholders who are affected by the design process or want to be involved. Maintaining that relationship by empowering local residents to take ownership of prototypes.

- **Encourage Ownership**
  Allowing for residents to own the design outcome and being flexible to meet their needs as they evolve.

**Tools to Implement**

- **Participate in Design**
  High-level overview of participatory design, including example methods and tools. [participatedesign.org/approach/what](http://participatedesign.org/approach/what)

- **Choosing Participatory Design Methods**
  Three prompting questions to help structure participatory design research. [dlrtoolkit.com/assets/resources/participatory_design_guide.pdf](http://dlrtoolkit.com/assets/resources/participatory_design_guide.pdf)

- **Gamestorming Methods**
  A set of co-creation tools for collaborative brainstorming with end users. [gamestorming.com](http://gamestorming.com)
Asset-Based Community Development Design

Asset-Based Community Development Design (ABCD) inverts the common “needs-based” design process to focus instead on amplifying a community’s existing strengths and assets.

“Needs-based” approaches often frame communities in a negative light, casting their members as dependents or “clients” and potentially undermining community leadership. ABCD focuses on identifying and amplifying the assets a community already has, which may be underutilized due to resource scarcity or invisible to outsiders due to institutional, cultural, or class bias. “Asset” is purposefully broadly-defined and can include skills of community members as well as physical resources such as buildings, organizations, and relationships.

POTENTIAL METHODS

- Appreciative Inquiry: An interviewing technique that engages the community at hand to define themselves based on successes rather than deficiencies, using a combination of memory and imaginings.
- Asset mapping: A method that synthesizes community findings to create an organized catalog of a community’s assets, including its skills, institutions, and relationships.

Asset-Based Community Development Design Principles

Recognize Everyone’s Gifts
People can and want to contribute. Gifts must be discovered.

Build Community via Relationships
See them, make them, and utilize them. An intentional effort to build and nourish relationships is the core of ABCD.

Find What People Care About
Agencies and neighborhood groups often complain about apathy. Apathy is a sign of bad listening. People in communities are motivated to act. The challenge is to discover what their motivation is.

Identify Motivations
People act on certain themes they feel strongly about, such as concerns to address, dreams to realize, and personal talents to contribute. Every community is filled with invisible “motivation for action”. Listen for it.

Ask Questions Instead of Giving Answers
People in communities are usually asked to follow outside expert’s answers for their community problems. A more powerful way to engage people is to invite communities to address ‘questions’ and find their own answers—with agencies following up to help.

TOOLS TO IMPLEMENT

ABCD Toolkit
ABCD Talking Points, Asset Mapping tools, and ABCD Facilitation Tools.
resources.depaul.edu/abcd-institute/resourcePages/tool-kit.aspx
EquityXDesign merges the consciousness of racial equity work with design thinking. It is guided by three central beliefs: innovation’s need for inclusion and intentional design, the indistinguishable relationship between the past and the present, and our moral imperative to live in the future we desire to create.

EquityXDesign is the only mentioned methodology that explicitly adds two new phases to the HCD framework, pulling directly from the Liberatory Design methodology developed out of the Stanford d.school. The first is a new start phase for the framework called “Notice.” The second is a new ending phase for the framework called “Reflect.” Both of these additions are meant to encourage ongoing equity pauses while designing to check biases and assumptions.

**HCD PHASE ADDITIONS**

**Notice.** An additional phase of the HCD process that prompts self-awareness of one’s own identity, values, emotions, biases, assumptions, and situatedness to allow for better empathizing with the target user.

**Reflect.** A transparent, ongoing phase in the HCD process. It prompts team members to notice, focus and reflect on their actions, emotions, insights, and impact on end users.

**EquityXDesign Principles**

- **Design at Margins**
  Building for marginalized communities who are most hurt by oppression, and bringing them into the design process.

- **Start with Self**
  Recognizing personal mental models, including how biases and assumptions impact solutioning on both a conscious and unconscious level.

- **Cede Power**
  Providing power to underrepresented individuals that are brought into the design process, and making it a safe space for speaking truth to injustices.

- **Make the Invisible Visible**
  Recognizing, explicitly calling out, and actively challenging hegemonic practices that have historically advantaged dominant groups over marginalized groups.

- **Speak to the Future**
  Finding new language to complement the design of a new, equitable future, such as defining an innovation as an increase in equity and reduction of racism.

**TOOLS TO IMPLEMENT**

- **EquityXDesign Overview**
  In-depth look at the EquityXDesign methodology, including core beliefs.

- **Liberatory Design**
  Provides a base for the design phases used in EquityXDesign.
  dschool.stanford.edu/resources-collections/le libertary-design

- **National Equity Project**
  Primer on an education-focused lens of systemic oppression and the questions you can ask to combat it.
  nationalequityproject.org/resources/ featured-resources/lens-of-systemic-oppression

- **Ethics for Designers Tools**
  Tools to help uncover, explore and discuss the ethical aspects of designs.
  ethicsfordesigners.com/tools

- **Design for Diversity**
  Tools to help uncover, explore and discuss the ethical aspects of designs.
  thecreativeindependent.com/guides/how-to-begin-designing-for-diversity

- **EthicalOs Toolkit**
  A guide to anticipating the future impact of today’s technology.
  ethicalos.org
Section IV: Products

You may be thinking, “looks good on paper, but how does this translate to the real world?” Let’s look under the hood of six edtech products and programs that demonstrate what’s possible when teams use equity-centered design processes.

Code Jumper

Code Jumper is a physical programming kit designed to teach computational concepts to students who are blind or low vision through the use of audio.

<table>
<thead>
<tr>
<th>ORGANIZATION</th>
<th>Microsoft Research + American Printing House for the Blind</th>
</tr>
</thead>
<tbody>
<tr>
<td>HEADQUARTERS</td>
<td>Redmond, WA and Louisville, KY</td>
</tr>
<tr>
<td>FOUNDED</td>
<td>July 2015</td>
</tr>
</tbody>
</table>

| POPULATIONS SERVED  | Students aged 7-11 who are blind or low vision Grade 3-6 teachers |
| SYSTEM OPPRESSION 4 I’S | Institutional Interpersonal |

| DESIGN METHODOLOGIES | Inclusive Design Participatory Design |

kidappolis

Kidappolis is a suite of digital, analog, and in-person resources that provide families of bilingual pre-schoolers with personalized recommendations for out of school learning opportunities.

Comadre

Comadre was a free, bilingual SMS service that delivered curated information about local, low-cost enrichment learning opportunities for middle-school students in Latinx families.

**ORGANIZATION**

Kidappolis
LitLab
LitLab

**HEADQUARTERS**

Oakland, CA

**FOUNDED**

2014

**POPULATIONS SERVED**

Parents of low income, emergent bilingual Spanish children up to grade 3

**SYSTEM OPPRESSION 4 I’S**

Institutional

**DESIGN METHODOLOGIES**

Participatory Design

**ORGANIZATION**

Comadre
The Connected Learning Lab at UC Irvine

**HEADQUARTERS**

Irvine, CA

**FOUNDED**

2017

**POPULATIONS SERVED**

Low-income Latinx families with middle school students

**SYSTEM OPPRESSION 4 I’S**

Institutional

**DESIGN METHODOLOGIES**

Asset-Based Community Development Design
Participatory Design
MindRight is an SMS-based socioemotional coaching service for Black and Brown teens. MindRight’s network of coaches are trained under an anti-racist equity model.

Kolibri is an open-sourced library of resources that delivers learning content offline to under-resourced communities through existing or low-cost devices.
EF+Math Program

EF+Math is a 5-year funding and capacity building program for educators and R&D teams focused on developing new approaches to math learning with an emphasis on executive function skills.

ORGANIZATION
NewSchools Venture Fund

HEADQUARTERS
Oakland, CA

FOUNDED
August 2019

POPULATIONS SERVED
Students in grades 3-8 in traditionally under-resourced schools, and the teachers who serve them

SYSTEM OPPRESSION 4 I’S
Institutional
Interpersonal
Ideological

DESIGN METHODOLOGIES
EquityXDesign
Co-Design (Similar to Participatory Design)
Asset-Based Community Development Design
There is plenty to learn when it comes to building equitable tech products. We’ve included some additional resources here for your learning journey.

Many edtech products include an AI/ML component, but if the incorporation of AI doesn’t involve applying an equity lens there is significant risk of amplifying biases. These are just a few of many trusted resources consider when building responsible AI.

**Resources**

**Google AI Handbook**
A guidebook for building human-centered AI products. Includes best practices to avoid common mistakes, design excellent experiences, and focus on people during the creation of AI-driven applications.
[pair.withgoogle.com/intro/](pair.withgoogle.com/intro/)

**Partnership on AI: HumanxAI Collaboration Framework and Case Studies**
A 36-question framework to identify characteristics that differentiate human-AI collaborations and 7 case studies where it has been applied.
[partnershiponai.org/human-ai-collaboration-framework-case-studies/](partnershiponai.org/human-ai-collaboration-framework-case-studies/)
Key Questions to Ask During Any Design Process

To help you take the first leap towards equity, we've compiled a set of thought-provoking questions from Project Inkblot and the National Equity Project and tagged them to each of the 5 HCD risks we’ve identified.

**Status Quo Design**
- What are the population and geographic targets for our effort? Specifically, for whom and where are we trying to make a difference?
- What are the specific disparities/inequities we are seeking to eliminate?
- Who might you be excluding?

**Misrepresentation of Users**
- How do identities within your team influence/impact design decisions?
- How can I build my practice as a leader for equity starting with who I am and what I bring because of who I am (implicit/explicit biases)?
- How are oppression, internalized oppression and transferred oppression playing out right here, right now? (In this school, in this group, in this organization, in this district?) What will I do about it?

**Uneven Power Dynamics**
- How will you engage the people you want to reach within your design process, equitably?
- How is leadership constructed here? What forms does it take? Who is missing? What can we do to make room for different cultural constructions of leadership?
- How is it safe here for different people to share their truth?
- Who has power here? What is power based on here? How are relationships and power differentials affecting the truth that is told and constructed at any given moment?
- How can I ensure I’m solving for an actual need that this community has, rather than one I may be incorrectly perceiving they have (implicit/explicit biases)?

**Techno-solutionism**
- How do we understand the forces behind the inequity we see? What forces are perpetuating the disparities we seek to address?
- What barriers are in the way of achieving an equitable outcome?
- How are relationships and power differentials affecting the truth that is told and constructed at any given moment?
- How have we actively questioned and examined whether a tech solution is the right solution for this problem?
- Are we ignoring a potentially deeper issue, either because it doesn’t seem scalable or profitable? What harm are we perpetuating if we don’t tackle that need?

**Accountability Deficit**
- Is the ongoing process of improving your product/service informed by your target users?
- What will equity or racial equity in our outcome look like? How will we know we have made progress? When do we expect to see results? What is our timeframe?
- Have we considered and discussed a plan to build the outside alliances necessary to move forward?
- What are the potential unintended consequences of our proposed solutions/actions?
- Do the proposed solutions ignore or worsen existing disparities for the group in which we are focused?

**Additional Resources**
- National Equity Project
  - nationalequityproject.org/resources/featured-resources/lens-of-systemic-oppression
- Project Inkblot
  - thecreativeindependent.com/guides/how-to-begin-designing-for-diversity