



DESIGN THINKING & LIBERATORY DESIGN

Our goal in education is to empower every student by developing habits of learning that render them into individuals who have the dispositions and learning practices to succeed in their future professions, projects, personal lives, and civic duties. They are future-ready, empowered citizens who can learn and have the confidence to complete tasks no matter the situation or circumstance; who are able to learn continuously in a world of constant change and innovation. We cannot predict the problems that students will face, but we can provide them with effective learning tools that will help them succeed in their future endeavors.

One of these learning tools is the design thinking methodology. Design thinking is an iterative process of mindsets and practices that focuses on human-centered design and is used to solve complex problems and real world challenges. This solution-thinking method allows problem-solvers to generate creative and innovative ideas to these complex problems and challenges.

The *Design Thinking Standards* (DTS) provide educators a foundation of what students are expected to learn and do when using the design thinking method. These learning goals are guidelines that educators can use, adjust and modify to meet the needs of their students. The DTS are designed to empower students by developing their confidence, competence, creativity, and their ability to collaboratively generate innovative solutions to solve complex problems.

It is important to note that this design process does not have to be used in a linear form; the design thinking practices of empathize, define, ideate, prototype, and test, can be applied through various sequences. Design thinking should be seen as a toolbox of “practices,” picking out and using a specific “practice” based on the immediate need. However, it can be beneficial to first start using design thinking in the beginning in a linear fashion to provide students with a little structure, to build that psychological safety required for innovative thinking as well as building their confidence in this sphere.

The following standards were inspired by the [work and teachings](#) of the [d.school](#) (Hasso Plattner Institute of Design at Stanford University), a leader in design thinking education, its [K12 Lab Network](#), a program that brings design thinking into schools. These standards also include practices from [liberatory](#)

[design](#), mindsets and modes to design for equity, an adaptation of the design thinking process that includes *Notice* and *Reflect*. These two practices help designers become aware of their own biases, identity, and values to produce equity-centered designs.

The structure of these standards are similar to the [Next Generation Science Standards](#). The *performance expectations* (standards) are actionable learning goals that describe what students should be able to do when using the design thinking process. These performance expectations are composed of [design skills](#) (skills that students will be able to do), *core design ideas* (knowledge that students will understand), and [design mindsets](#) (set of attitudes essential for effective application of design thinking). It is important to note that most of the design mindsets are involved in every stage of the design thinking process. However, specific design mindsets are listed under each stage depending on the significance of the mindset pertaining to the stage.

NOTICE

“[Notice](#) by practicing self-awareness, seeking context about the systems you design within, and exploring the history of oppression in those systems to develop an equity-based identity.”

PERFORMANCE EXPECTATIONS

Students who demonstrate understanding of the practice of *notice* can:

- DTS-NS-1: Practice self-awareness to explore one’s own identity, values, emotions, biases, and/or assumptions to reduce the harmful, unintentional impact they might have in equitable design.
- DTS-NS-2: Seeking context about the systems you design within, and exploring the history of oppression in those systems to develop an equity-based identity
- DTS-NS-3: Reflect on the power dynamics or relationship power between themselves and the users to develop a partnership of true collaborative work.

SKILLS

Students will be able to ...

- Explore self-identity, power dynamics, context and the designer-user partnership to reduce unintentional impact behind outcomes.
- Co-create with users by de-centering themselves and seeing users as assets to the creative problem-solving process.

CORE IDEAS

Students will understand that ...

- Self-awareness is the act of examining ourselves, our thinking and our perspectives, so that we minimize the effects of our biases when creative problem-solving.
- Users are assets to the creative problem-solving process. It is important to see their skills, background, and experiences as crucial assets to the creative problem-solving process.
- Everyone has cognitive bias. Many times are not aware of them, and these biases can deter us from making more intelligent decisions and generate innovative ideas, and can result in unintended negative consequences.
- Reflecting on power dynamics and privilege can help us to reduce the impact of patterns of oppression.

MINDSETS

[Liberatory Design Mindsets](#)

Students who have a liberatory design mindset will ...

- Focus on Human Values
- Recognize Oppression
- Practice Self-Awareness
- Work to Transform Power
- Build Relational Trust

EMPATHIZE

The *empathize* practice involves the designer gaining a deep understanding of the users and the context of the design challenge through observations, interviews, and the immersion of the user experience.

PERFORMANCE EXPECTATIONS

Students who demonstrate understanding of the empathize stage can:

- DTS-E-1: Observe the behaviors, feelings, and patterns of the user in the context of their lives and design challenges.
- DTS-E-2: Engage with users through conversations and interviews that incorporate open ended questions to dig deeper for stories, feelings, emotion, and what is important to the user.

SKILLS

Students will be able to ...

- Observe and engage with users, and immerse in the user experience.
- Identify the needs and insights of the users.

CORE IDEAS

Students will understand that ...

- Empathy brings understanding of people, their physical and emotional needs and wants, the things that they do in their lives, and the context of the design challenge.
- Engagement with users through interaction and interviews exposes insights that can be utilized to create a more innovative solution.
- A beginner's mindset maintains an attitude of openness and puts aside biases that can restrict a person's ability to empathize.

MINDSETS

Design Thinking Mindsets

Students will demonstrate a set of attitudes that will help them ...

- Human Centered
 - Gain inspiration and direction from users and respond to human needs by placing the user at the center of all empathy work.
- Mindful of Process
 - Be thoughtful and reflective of the work being done, how the work is being done, and how the work will improve.
- Radical Collaboration
 - Collaborate and create partnerships with people of different disciplines as well as the users to develop innovative ideas and solutions.

DEFINE

Within the *define* practice, designers use the information they gathered in their empathy work and organize them under *needs* (user's goals) and *insights* (information advantageous in creating an innovative solution). The most significant needs and insights are used to develop an actionable problem statement that brings clarity and focus to the design challenge.

PERFORMANCE EXPECTATIONS

Students who demonstrate understanding of the define stage can:

- DTS-D-1: Synthesize empathy and research work (learnings, realizations, and patterns) into *needs* and *insights* that can be leveraged to create innovative solutions.
- DTS-D-2: Articulate a clear, actionable problem statement that integrates the specific users, their needs, and insights to guide the process of generating high quality solutions.

SKILLS

Students will be able to ...

- Synthesize learnings and realizations into *needs* and *insights*.
- Articulate a clear, actionable problem statement.

CORE IDEAS

Students will understand that ...

- Needs are the necessities that are essential to the user and what you want the user ultimately wants to accomplish.
- Insights are discoveries that can be used to enhance the design of a solution.
- Problem statements are actionable statements based on what was learned and discovered that brings clarity and focus to the design challenge.

MINDSETS

Liberatory Design Mindsets

Students who have a design mindset will ...

- Embrace Complexity
- Practice Self-Awareness

IDEATE

The *ideate* practice involves designers brainstorming large quantities of ideas by combining their imagination with the information gathered from the empathy work to move towards prototyping.

PERFORMANCE EXPECTATIONS

Students who demonstrate understanding of the ideate stage can:

- DTS-I-1: Develop short prompt questions based on the problem statement to initiate brainstorming sessions.
- DTS-I-2: Visually generate a large volume and variety of ideas for innovative solutions to the problem statement without evaluation or making judgements.
- DTS-I-3: Identify multiple ideas for prototyping based on how well the ideas would likely meet the criteria for success.

SKILLS

Students will be able to ...

- Generate visual representations of ideas
- Analyze ideas and solutions based on criteria

CORE IDEAS

Students will understand that ...

- Ideation is the process of combining empathy work with the designer's imagination to generate a large volume of ideas for solutions to the problem statement.
- Innovation potential can increase by thinking beyond the obvious solutions, uncovering unexpected areas of exploration, and adding upon the ideas of others.
- Innovation potential can be preserved by bringing in multiple ideas into the prototyping stage.

MINDSETS

Liberatory Design Mindsets

Students who have a design mindset will ...

- Liberatory collaboration.
- Bias toward experimentation.
- Build emotional trust.

PROTOTYPE

Within the *prototype* practice, designers undergo an iterative process of creating and improving prototypes that can be utilized and/or experienced by the end user, and elicits feedback and answers specific questions about a concept.

PERFORMANCE EXPECTATIONS

Students who demonstrate understanding of the prototype stage can:

- DTS-P-1: Create a prototype of a tangible product or an experience that the end user can engage and interact with based on the criteria for success.

SKILLS

Students will be able to ...

- Create and improve prototypes for users to use, interact, and experience.

CORE IDEAS

Students will understand that ...

- Prototypes can be anything that the user can interact with such as a role-playing activity, a gadget, or storyboard.
- The process of prototyping provides opportunities to empathize, ideate, problem-solve, discover new insights, and identify valuable variables.
- Creating low-resolution prototypes in the early stages of prototyping allows designers to fail faster and learn quicker in less time and with less resources and money.

MINDSETS

Liberatory Design Mindsets

Students who have a design mindset will ...

- Liberatory collaboration.
- Bias toward action.
- Build relational trust.
- Show don't tell.

TEST

Within the *test* practice, designers provide users with their prototype to use or experience in a real or realistic situation. The interaction of users and prototypes provide designers with new ideas and insights that can help improve the next iteration of prototypes.

PERFORMANCE EXPECTATIONS

Students who demonstrate understanding of the test stage can:

- DTS-T-1: Plan and carry out tests where users interact with the prototype(s) in the context and scenario in which the prototypes will be used.
- DTS-T-2: Observe and engage with the users while they experience the prototype to gain empathy and solicit feedback.
- DTS-T-3: Use new learnings from the tests to inform the next iterations of prototypes for improvement.

SKILLS

Students will be able to ...

- Plan and carry out tests in appropriate context and scenario.

CORE IDEAS

Students will understand that ...

- Testing is another opportunity to gain empathy of the user and insight of the design challenge through observation and engagement.
- Designers must solicit feedback from users through questions about the experience and continually ask them “Why?”.
- Information gained from the testing stage will inform the next iterations of improved prototypes.

MINDSETS

Liberatory Design Mindsets

Students who have a design mindset will ...

- Practice self-awareness.
- Bias toward experimentation.
- Share, don't sell.

REFLECT

PERFORMANCE EXPECTATIONS

Students who demonstrate understanding of the notice stage can:

- DTS-R-1: “[Reflect](#) on team health, design intentions, and the impact our design process is having on us individually, interpersonally, institutionally, and systemically to support continual growth and healing.”

SKILLS

Students will be able to ...

- Notice, focus and reflect on their actions, emotions, insights and impact in regards to equity in design
- Share their learning and progress to identify what needs to be improved regarding equity-centered design.

CORE IDEAS

Students will understand that ...

- Reflection is an ongoing and transparent practice that occurs throughout the design thinking process.
- Reflection allows designers to gain self-awareness and increase equity, inclusiveness, and aesthetics.

MINDSETS

Liberatory Design Mindsets

Students who have a liberatory design mindset will ...

- Focus on Human Values
- Recognize Oppression
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- Work to Transform Power
- Build Relational Trust

RECOMMENDATIONS FOR APPLYING STANDARDS

Here are some recommendations for teachers when applying the DTS into your curriculum.

- The teacher may want to convert the term *user* into another descriptor when developing and introducing the project scenario to students. The descriptor should identify the specific person or group that students will co-creating with. Here is an example of a driving question for a design thinking challenge for 2nd grade students: *How will you as toy designers develop and manufacture a toy for kindergarten-age children?*

- The design thinking process does not have to be used in a linear form; the design thinking stages can be applied through various sequences.
- Most of the design mindsets are involved in every stage of the design thinking process. However, specific design mindsets are listed under each stage depending on the significance of the mindset pertaining to the stage.
- Use the *How* section of the [Liberatory Mindset Cards](#) spreadsheet to assess students' design thinking mindsets.
- Use the *Key Questions* section of the [Liberatory Design Moves](#) document to develop essential questions for UbD units.

REFERENCES

- [The Virtual Crash Course Playbook \(d.school\)](#)
- [An Introduction to Design Thinking: Process Guide \(d.school\)](#)
- [Understand Mixtape: discovering insights via human engagement \(d.school\)](#)
- [Ideate Mixtape: generating unexpected ideas via reframing your challenge \(d.school\)](#)
- [Experiment Mixtape: advancing your solution via prototyping \(d.school\)](#)
- [K12 Lab Equity-Centered Design Deck \(d.school\)](#)
- [Liberatory Design: Your Toolkit to Design for Equity](#)
- [Mindset and Process Powerpoint](#)
- [Liberatory Design Moves](#)
- [Liberatory Mindset Cards](#)
- [Liberatory Design](#)
 - “Anaissie, T., Cary, V., Clifford, D., Malarkey, T. & Wise, S. (2021). Liberatory Design. <http://www.liberatorydesign.com>.”

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