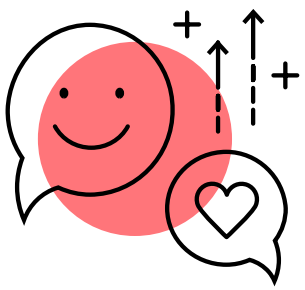
Pearson

Learning Design Principles

Welcoming Experience

Motivation and Mindset



Summary

What are Pearson's Learning Design Principles?

Our Learning Foundations describe the optimal conditions for learning and reflect the learner experience we hope our products will create. We do this by incorporating our Learning Design Principles.

Each of our Learning Design Principles goes into detail about a key principle, supporting product design and marketing by describing:

- the research that informs the principle
- why it matters in learning
- how we can apply it in practice

Our portfolio of Learning Design Principles will continue to grow over time.

Welcoming Experience
- Motivation & Mindset
- Social & Collaborative Learning

Minds in Mind
- Developing Understanding
- Attention & Cognitive Load
- Active Learning, Memory & Practice
- Desirable Difficulty & Scaffolding
- Feedback for Learning

Learning Behavior
- Self-Regulated Learning & Metacognition

Purposeful Design
- Objective Design
- Assessment & Evidence-Centered Design
- Personalized Learning & Adaptive Systems
- Authentic Learning

Learn Anywhere
- English Performance Standards
- Digital & Virtual Learning

Motivation and Mindset

When learners don't believe that learning is worth the effort, or don't value the outcome they're working towards, they won't be motivated to persist and achieve their potential.

How can we help learners achieve the motivation and mindset needed for lifelong learning?

Motivation is the driving force that gives direction and purpose to behavior. It is the willingness to exert effort in pursuit of a goal or outcome.

There are several theories of motivation. Taken together, they can help explain the role motivation plays in directing behaviors, as well as the factors that influence learners' experience of motivation.

- **Expectancy-Value Theory** explains how motivation is impacted by expectations of success in a learning context and the perceived value of the task. It suggests interventions to increase learners' expectations of success, such as challenging and scaffolded tasks, and to increase the perceived value of the task by connecting learning goals to learners' interests, relevance and career goals.
- **Intrinsic motivation** refers to the drive to engage in an activity because it is interesting or enjoyable, while **extrinsic motivation** refers to engaging in an activity to earn a reward or avoid a punishment. While both types of motivation can drive engagement and persistence in tasks, effects on learning are especially robust when learners are intrinsically motivated.
- **Self-Determination Theory** emphasizes the importance of autonomy, competence, and relatedness in promoting motivation and engagement in learning, suggesting that when learners feel a sense of control and choice over the task, feel competent and capable, and feel a sense of belonging and relatedness to the task, they are more likely to be motivated and engaged in learning.
- **A growth mindset** is the belief that abilities can be developed through effort and hard work, and that challenges and mistakes are opportunities for growth and learning. This mindset is important for learning as it encourages learners to persevere through difficulties, take risks, and learn from mistakes, which can lead to better motivation and learning outcomes.

Why it matters

Motivation is critical for supporting engagement and positive learning outcomes. Learners self-reporting higher levels of motivation have been associated with a wide range of positive learning outcomes, including engagement, persistence, effort, learning, and retention.

Motivation can be influenced by various factors, and small changes in learning environments can have powerful impacts on learning outcomes. Understanding motivation can help educators create learning environments that encourage engagement and success for their students.

Impact

When we successfully incorporate this principle into learning experiences, we can have an impact on these learner outcomes:

- learners enjoy what they are learning, because they have opportunities to exercise choice, work with peers, and connect learning to their personal interests
- learners perceive content as relevant to the real world because they are supported in articulating how they can use that knowledge outside of the learning environment
- learners are confident in their ability to learn because they are prompted to set specific, short-term goals
- learners exert appropriate effort and persist through difficulty, because they are provided with timely feedback that allows them to track their progress toward learning goals
- learners attain proficiency, because they are served appropriately challenging tasks

Motivation and Mindset

The big ideas

1

Interest sparked by elements of the learning experience can engage learners, but deeper **individual interests** motivate them to **apply effort and persevere**.

This is interesting, so I want to do more of it.

I get why I'm learning this and how I could use it.

2

Learners are motivated when they believe that their learning is **valuable and relevant** to them personally.

The more I try, the more I learn, the more I grow.

3

When learners **believe** they are competent and can achieve their goals, they usually do. Experiences of succeeding and achieving goals help **build confidence**.

4

Helping learners **focus on growth** and reaching their own goals **encourages persistence** and aids success.

I succeeded on the last task, so I think I'll succeed on this one.

I belong here, so I'm not going anywhere.

5

Learners are more **motivated** when they **feel connected** to others and to the learning environment.

6

Learners are more **motivated** when they have a sense of **autonomy**, but for learning to be effective, they need support with their choices.

I feel in control of what I'm learning.

Big Idea 1

Sparking interest

Interest sparked by elements of the learning experience can engage learners, but deeper individual interests motivate them to apply effort and persevere.

What it feels like for learners

This is interesting, so I want to do more of it.

When learners are interested in a topic, they are more likely to actively seek out and engage with the material, which can lead to deeper understanding and retention. They are more likely to persist despite difficulties, which can lead to greater mastery and achievement.

Interest can be pre-existing, or it can be sparked by the situation.

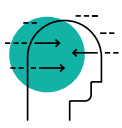
Sparked interest is initial, temporary interest that is triggered by a learning environment or experience. It is often dependent on external factors and may dissipate as the external factors change. It is often characterized by feelings of surprise, enjoyment, or curiosity, and can be thought of as a form of situational interest.

Existing interest, on the other hand, is interest that a person already has prior to a learning experience. It is often deeply rooted and personal, based on a person's values, goals, or previous experiences. It often leads to deeper engagement, persistence, and motivation in a task or subject.

If a learner is not already interested about a topic, their interest can be developed by sparking situational interest and nurturing it over time into sustained interest, by:

- connecting the learning material to the learner's personal interests and values
- facilitating collaborative work for peer interaction and the exchange of ideas
- offering opportunities for learners to explore and discover new information
- providing expert models to demonstrate relevance
- allowing learners to choose to re-engage with the topic by offering opportunities for choice and autonomy

Transitioning from situational to sustained interest is not a one-time event; it's a continuous process that requires ongoing support and scaffolding. Sustained interest is never guaranteed, and may vary depending on the learner's personal interests and background.



See this Learning Design Principle: Developing Understanding

See this Learning Design Principle: Personalized Learning and Adaptive Systems

What it means for designing learning experiences

- Spark situational interest with:
  - novelty
  - surprise or confusion (which triggers curiosity)
  - enjoyment
  - links to something they are already interested in
- Develop interest by transitioning from situational to individual interest, by:
  - frequent exposure to the situational interest topic
  - connecting to something personally meaningful, such as collaboration, or the learner's existing interests and values
  - displaying and modeling interest and involvement in the topic
  - enhancing positive feelings about the topic by connecting to relevance, competence, and self-concept
  - enhancing challenge, curiosity, and choice
- Personalize to existing individual interests
  - Provide content material and tasks that are personally meaningful and interesting to learners.

Big Idea 2

Demonstrating value and relevance

Learners are motivated when they believe that their learning is valuable and relevant to them personally.

What it feels like for learners

I get why I'm learning this and how I could use it.

Value and relevance are essential components of learning according to expectancy-value theory, and have been the focus of many studies. Demonstrating the value or relevance of learning to learners has strong effects on their engagement, achievement and persistence.

Value can be thought of as:

- utility value: how useful will this be in my life?
- attainment value: how important is it to do well on this?
- intrinsic value: how much do I enjoy this?
- cost: how much will doing this limit my access to other things?

Relevance can be thought of as:

- relevance to a learner's career (similar to utility value)
- relevance to the learner as a person (more like intrinsic value)

Interventions that aim to increase perceived value or relevance have produced robust effects on engagement, achievement, and persistence. Utility value interventions are particularly effective, as they highlight the usefulness of targeted content to the learner's future and career.

This is more effective when learners make these connections for themselves, rather than being told what is relevant or valuable by someone else.

Utility value can be supported by prompting learners to write about the relevance and usefulness of course material in their own lives, or even by providing testimonials about utility value.

These interventions are especially helpful for:

- learners with lower prior achievement
- learners with lower expectations of success
- learners from groups that are traditionally under-represented in higher education

See this Learning Design Principle: Authentic Learning

What it means for designing learning experiences

- Highlight the importance and usefulness (utility) of content and activities
  - Make relevance apparent.
  - Lessen the perceived cost of the learning activity.
- Build in opportunities for learners to see how their learning is useful and relevant
  - Reflect on the usefulness (utility) of what they're learning.
  - Generate their own ideas about how they might use it in the future.
- Provide personalized contexts around learning material to increase relevance and interest.

Big Idea 3

Building confidence

When learners believe they are competent and can achieve their goals, they usually do. Experiences of succeeding and achieving goals help build confidence.

What it feels like for learners

I succeeded on the last task, so I think I'll succeed on this one.

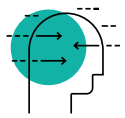
Self-efficacy is the belief in one's ability to successfully complete a specific task or goal. It is a strong predictor of persistence, achievement, and effort.

Confidence is sometimes used informally to describe general competence beliefs or task-specific self-efficacy.

Learners gain confidence (and motivation) when they experience success or believe they can succeed. Learning experiences can build learners' confidence in a few ways.

- **Goal setting**
  Set appropriately challenging, specific, short-term goals. When learners achieve their goals, they will experience success and gain evidence that they can succeed.
- **Mastery experiences**
  When a learner experiences succeeding or improving on a challenging task, they gain evidence that they have overcome a challenge. This makes them more confident that they can overcome the next challenge, too.
  - The most powerful way to build self-efficacy
  - More likely to occur if the task is appropriately challenging (i.e., in the learner's Zone of Proximal Development)
- **Watching peers succeed**
  If a learner does not have enough prior knowledge for a mastery experience, showing others like them succeeding is also helpful.
- **Verbal encouragement**
  Can be effective, but a learner's own experiences of success or failure are more powerful.
- **Reframing emotions**
  A learner's physiological responses to a learning environment, such as stress or anxiety before an exam, can influence their self-efficacy; techniques for emotional reframing designed to address these responses can reduce their impact.

High confidence and self-efficacy are helpful for learning, but are not enough on their own. Learners must also value what they are learning (see Big Idea 2) and feel like they belong (see Big Idea 5).



See this Learning Design Principle: Desirable Difficulty & Scaffolding

See this Learning Design Principle: Self-Regulated Learning & Metacognition

What it means for designing learning experiences

- Encourage setting achievable short-term goals, so learners have an opportunity to experience success
  - Set achievable goals.
  - Support learners towards goals.
  - Acknowledge and reflect on goal achievement.
- Provide experiences with success for the learner, aka mastery experiences
  - Provide appropriately challenging activities.
  - Support learning with clear guidance and feedback.
  - Provide opportunities to acknowledge and celebrate success.
- If a learner cannot experience success directly, provide alternative experiences to build their self-belief through:
  - peers
  - encouragement
  - emotional reframing

Big Idea 4

Focusing on growth (mindset)

Helping learners focus on growth and reaching their own goals encourages persistence and aids success.

What it feels like for learners

The more I try, the more I learn, the more I grow.

Goals

Learning is most effective when the learner's goal is to understand the content thoroughly. This is known as a mastery goal.

- The purpose of a **mastery goal** is to develop competence, gain skill, and do one's best.
  - associated with interest, optimism, self-regulation, and persistence
  - use better study strategies, deeper learning and transfer
- The purpose of a **performance goal** is to demonstrate one's superior competence by outperforming others.
  - predicts performance but can also be associated with anxiety
  - more shallow learning strategies

Mindsets

Mindset refers to the set of self-perceptions, attitudes, or beliefs that people hold about themselves, which influence the way they handle situations. When it comes to learning, there are two types of mindset.

Fixed mindset: the belief that talents are innate and unchangeable, that abilities in a domain are innate, and that you are either good at something or not.

A learner with a fixed mindset will avoid challenging activities and mastery goals.

Growth mindset: the belief that ability can be developed through hard work, good strategies, and input from others, and that abilities in a domain are the result of practice and effort. Research suggests that individuals with a growth mindset tend to have better motivation and learning outcomes.

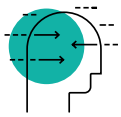
- supports achievement by influencing the learner's goals, strategies, beliefs, and attributions
- encourages learners to see challenges as opportunities for growth and learning, rather than as threats to their abilities
- promotes willingness to take risks, persevere through difficulties, and learn from mistakes

We can influence a learner's mindset and goals:

- indirectly, through the learning environment and how we structure tasks (structuring lessons around experimenting and building understanding, for example)
- directly, by teaching them about growth mindsets and fixed mindsets, and their effects on learning

Try saying:

- "Each new kind of problem you try grows your math brain"
- "You said 'I'm not a math person' — did you forget the 'yet'?"
- "That feeling that math is hard? That's your brain growing"



See these Learning Design Principles:
Desirable Difficulty & Scaffolding
Feedback for Learning

What it means for designing learning experiences

- Learning for understanding is the ultimate goal, and learning is a process of improvement
  - Experiences should focus on mastery, learning, and understanding course and lesson content.
  - Avoid focusing on performance or grades at the expense of true understanding.
  - Use task, reward, and evaluation structures that promote mastery, learning, effort, progress, and self-improvement standards more than social comparison or norm-referenced standards.
- Encourage a growth mindset, where learning can be accomplished with effort, and mistakes are learning opportunities
  - Frame challenges and incorrect answers as a part of the learning process and not indicators of the learner's ability.
  - Support the idea that one can achieve with enough effort. Intelligence and ability is not fixed.
- Provide feedback that reinforces improvement, growth, and effort, not ability

Big Idea 5

Fostering a sense of belonging

Learners are more motivated when they feel connected to others and to the learning environment.

What it feels like for learners

I belong here, so I'm not going anywhere.

Relatedness (learners' feelings of connection with teachers and peers) is a key component of motivation according to Self-Determination Theory.

Belonging is the degree to which learners feel connected to the people in their environment and that their contributions are valued and important.

Academic belonging includes:

- positive emotions toward the learning environment and one's role in it
- positive relations with peers and teachers
- the energy and willingness to get involved in the environment in a meaningful way
- an ability to adjust and adapt to situations or other people

Learners who feel like they belong believe more in their own competence. They engage, persist, and make more of an effort, and are more likely to stay in class. They have better mental wellbeing, and achieve better learning outcomes.

Multiple factors in a learning environment, including instructors, peers, and instructional activities, can influence learners' experiences of relatedness and belonging. Instructor support and positive personal characteristics have the biggest influence on belonging.

Learning environments can foster a sense of belonging by:

- making learners feel valued and supported
- offering autonomy (see Big Idea 6)
- fostering peer relations

See this Learning Design Principle: Social & Collaborative Learning

What it means for designing learning experiences

- Create a psychologically safe environment where all members feel a sense of belonging
  - Organizational and management structures should encourage personal and social responsibility and provide a safe, comfortable, and predictable environment.
  - Encourage inclusion and respect.
  - Ensure there is no stereotype threat.
- Foster a sense of relatedness and belonging among learners by:
  - making them feel valued and supported
  - offering opportunities for autonomy
  - fostering peer relations
- Support potentially marginalized learners through a focus on values and goals
  - Establish a sense of belonging by focusing the learners on their values and goals, thus reinforcing their sense that this learning and community is for them.

Big Idea 6

Offering autonomy

Learners are more motivated when they have a sense of autonomy, but for learning to be effective, they need support with their choices.

What it feels like for learners

I feel in control of what I'm learning.

Like belonging, autonomy is a core component of motivation. Choice leads to greater engagement, interest, perceived value, persistence, enjoyment, perceived competence, perceived autonomy, and learning outcomes. A sense of autonomy can increase motivation, but choices must be scaffolded to support effective learning.

Learners tend to feel like they have more autonomy when they are given:

- some choice over how or what they learn (often regardless of instructional relevance)
- A rationale for why they should do certain tasks

Offering autonomy to support motivation

- Choice is motivating when learners see the options as relevant, not too complex, and congruent with their interests and culture; and see themselves as capable of making the choice.
- Instructionally relevant choices need to be scaffolded, as learners are often not aware of their own learning progress or what will be most effective for them. Guidance or shared control can provide the support learners need to make productive choices.
- Choice can be a way to personalize content to learners' interests.
- Rationales are most effective when they present the value in terms of mastery, not performance, and do not appear controlling.

See this Learning Design Principle: Personalized Learning & Adaptive Systems

What it means for designing learning experiences

- Give learners interest-driven, instructionally irrelevant choices
  - Superficial, instructionally irrelevant choices can be sufficient to improve motivation.
  - Choice is an opportunity to link to learner interests and relevance.
  - Support autonomy and choice to align with interest and relevance.
- If giving learners instructionally relevant choices, provide support
- If no choice is given, offering a rationale can still help support autonomy

Making it inclusive

We aim to design a great learning experience *for everyone*. These considerations will help you get closer to designing a truly inclusive experience.

Accessibility

Accommodations provided to allow learners with specific needs to participate in a learning experience

- Help all learners experience success by providing support on self-regulation strategies specific to the domain or task (e.g., 'Use the 5-step process to write an essay or solve an equation'). Structuring lessons around experimenting and building understanding can help build mastery and therefore motivation
- Learning environments or tasks, such as taking a test, can have barriers and/or induce stress that negatively impacts confidence. Include support for access and/or self-regulation to help reduce these stressors

Availability and access

Barriers — often external and systemic — that affect whether the tools and resources needed for learning are available to learners

- Set appropriately challenging and specific short-term goals that can be completed in manageable, chunked intervals. These actions can build a learner's motivation to learn and efficiently schedule learning around their daily life

Identity

The combination of dimensions that define who learners are to themselves and others

- Self-efficacy and motivation can be affected by learners' perceptions of past performance and stigma due to stereotypes. Create psychologically safe learning environments where all learners feel a sense of belonging
- Encourage development and content teams to include prompts that support the ideas that one can succeed with enough effort, and that intelligence and ability is not fixed

Culture

Shared patterns of behaviors and interactions, cognitive constructs, and affective understanding that learners acquire through socialization

- Work with learning designers and engage with individuals from various cultural backgrounds to create and offer learners authentic, real-world scenarios and choices to elicit relevance, interest, and engagement
- Design learning components that provide variety and diversity to support motivation

In partnership with CAST

CAST is a nonprofit education research and development organization that created the Universal Design for Learning framework and UDL Guidelines, now used the world over to make learning more inclusive.

Authors

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Elizabeth Richey received her PhD in cognitive psychology from the University of Pittsburgh and has worked as a professor, researcher, and pedagogical coach. As a researcher and educator, she builds connections between research and practice in the areas of learning and motivation. Her research focuses on educational technology, motivation, example-based learning, explanation, collaboration, and belonging. Through laboratory experiments and classroom studies, she examines cognitive, metacognitive, and motivational factors that influence math and science learning from elementary school through college.

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Selected references

- Belenky, D. M., & Nokes-Malach, T. J. (2013). Mastery-approach goals and knowledge transfer: An investigation into the effects of task structure and framing instructions. *Learning and individual differences*, 25.
- Bernacki, M. L., & Walkington, C. (2018). The role of situational interest in personalized learning. *Journal of Educational Psychology*, 110(6), 864-881.
- Boston, C., & Warren, S. R. (2017). The Effects of Belonging and Racial Identity on Urban African American High School Students' Achievement. *Journal of Urban Learning, Teaching, and Research*, 13, 26-33.
- Deci, E. L. & Ryan, R. M., (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. American Psychologist, 55(1), 68–78.
- Eccles, J. S., & Wigfield, A. (2020). From expectancy-value theory to situated expectancy-value theory: A developmental, social cognitive, and sociocultural perspective on motivation. *Contemporary Educational Psychology*, 61, 101859.
- Hidi, S., & Renninger, K. A. (2006). The four-phase model of interest development. *Educational Psychologist*, 41(2), 111-127.
- Katz, I., & Assor, A. (2007). When choice motivates and when it does not. *Educational Psychology Review*, 19(4), 429-442.
- Lazowski, R. A., & Hulleman, C. S. (2016). Motivation interventions in education: A meta-analytic review. *Review of Educational research*, 86(2), 602-640.
- Stankov, L., Morony, S., & Lee, Y. P. (2014). Confidence: the best non-cognitive predictor of academic achievement?. *Educational Psychology*, 34(1), 9-28.
- Wigfield, A., & Eccles, J. S. (2020). 35 years of research on students' subjective task values and motivation: A look back and a look forward. In *Advances in motivation science* (Vol. 7, pp. 161-198). Elsevier.
- Wu, Z., Spreckelsen, T. F., & Cohen, G. L. (2021). A meta-analysis of the effect of values affirmation on academic achievement. *Journal of Social Issues*, 77(3), 702-750.
- Yeager, D. S., & Dweck, C. S. (2020). What can be learned from growth mindset controversies? *American Psychologist*, 75(9), 1269–1284.