



Decision Education

K-12 Learning Standards

FIRST EDITION | 2022



ALLIANCE FOR
**DECISION
EDUCATION**



Dear Reader,

Over the past decade, there has been a significant, and ever-expanding national movement to raise awareness about the importance of explicitly teaching decision-making skills in schools. We (**Alliance for Decision Education**) are a “movement builder” for this effort and we partner with nonprofit organizations, educational policy and business leaders, and a wide range of scientists and researchers in our effort to create awareness, pilot solutions, establish evidence, secure funding, and drive widespread implementation of Decision Education in schools across the United States.

We are proud to publish the first edition of the Decision Education K-12 Learning Standards. Written by educators and researchers – and endorsed by business and military leaders, decision scientists, mathematicians, economists, psychologists, and a wide range of decision-makers – they represent the movement’s first best effort to provide a framework for what students should know and be able to do, with respect to learning how to be an effective decision-maker, as they progress from their elementary through high school years.

The Decision Education Standards are intended to be integrated into various classroom subject areas. And, over time, we hope that they inspire new ideas, meaningful shifts in pedagogy, new curricula, and school models that empower students to become skillful at making decisions as individuals and within groups.

As we continue to build a national movement for Decision Education, we encourage you to partner with us by reading the Standards, sharing them with your colleagues, putting them into practice, and offering your feedback to support efforts to turn these learning progressions into reality for this next generation and beyond.

There is no single lever greater for the improvement of one’s own life and the lives of those we care about than our own decision-making. Improving how we form and update our judgments, live our values, and make our decisions is, in essence, the field of Decision Education. These K-12 standards will continue to evolve as the movement grows.

Thank you for your participation in this important work.

Sincerely,

The Alliance for Decision Education

Decision Education

Teaching students how to determine for themselves what is true and what to do...

Decision Education is the teaching and learning of skillful judgment formation and decision-making.

Applied across K-12, the framework provides a set of competencies to support students in learning how to form more accurate judgments and make more skillful decisions, whether as individuals or as part of a group.

The skills and dispositions embedded within Decision Education empower students to make decisions proactively and rationally, and in developmentally appropriate ways to determine what they value, what is true, and what to do.

Decision Education draws from multiple fields including behavioral science, neuroscience, mathematics, decision analysis, philosophy, psychology, and education.

The following four K-12 Learning Domains include the key skills students will learn and carry with them through life.



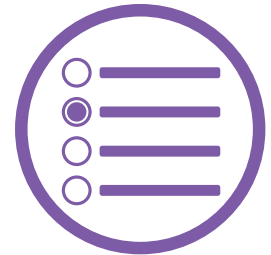
**Recognizing and Resisting
Cognitive Biases**



**Valuing and Applying
Rationality**



**Thinking
Probabilistically**



**Structuring
Decisions**

Decision Education K-12 Learning Standards, First Edition

The Standards at a Glance



Recognizing and Resisting Cognitive Biases

Like all of us, young people's minds rely on shortcuts – or heuristics – when they are forming judgments and making decisions. In general, these shortcuts are helpful – they decrease our mental load and increase our efficiency, usually without us even realizing it. However, the shortcuts often result in cognitive biases, a type of error in thinking when we are processing and interpreting information. The Cognitive Bias standards address how to recognize and resist cognitive biases to support better decision-making.

CB.1 Identify cognitive biases and heuristics and the role they play in our decision-making and our views of the world.

CB.2 Recognize and actively resist overconfidence bias and bias blind spot.

CB.3 Recognize and actively resist hindsight bias.

CB.4 Recognize and actively resist present bias.

CB.5 Recognize and actively resist the framing effect.

CB.6 Recognize and actively resist the availability heuristic.

CB.7 Recognize and actively resist the anchoring effect.

CB.8 Recognize and actively resist the tendency to ignore measures of likelihoods and relevant data when making judgments.

CB.9 Recognize and actively resist confirmation bias.

CB.10 Recognize and actively resist the tendency to overemphasize or overextend personal attributes when making judgments.

CB.11 Recognize and actively resist polarized thinking and in-group bias.

CB.12 Recognize and actively resist the sunk cost fallacy.



Valuing and Applying Rationality

How people approach their decisions can dramatically impact the outcomes of those decisions. Rationality involves deliberately developing dispositions that prioritize truth-seeking and help youth behave in ways that are consistent with their values and goals. The Valuing and Applying Rationality standards address these dispositions, as well as metacognition—how students pay attention to their thinking and work to improve it.

VAR.1 Embrace decisions as opportunities.

VAR.2 Recognize, practice, and demonstrate intellectual humility.

VAR.3 Recognize, practice, and demonstrate active open-mindedness.

VAR.4 Recognize, practice, and demonstrate a truth-seeking mindset.

VAR.5 Practice and demonstrate self-awareness of thought processes and behavior.

VAR.6 Practice and demonstrate self-regulation and self-direction.

VAR.7 Create and track sustainable and desirable habits.

VAR.8 Apply scientific reasoning to problem solving and decision-making.



Thinking Probabilistically

We live in a world with incomplete, imperfect, and sometimes misleading information. Like all of us, when young people make decisions, they are estimating what they know in the present and predicting what they think may happen in the future. The Thinking Probabilistically standards address numeracy skills and tools that empower youth to proactively navigate the uncertainty that exists in their knowledge of the past, present, and future.

TP.1

Recognize the difference between the nature of uncertainty and randomness.

TP.2

Strategically apply appropriate numeracy and probability techniques.

TP.3

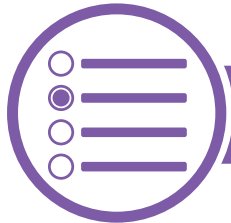
Use probabilistic thinking to evaluate evidence and truth claims, and to update beliefs.

TP.4

Use probabilistic thinking when making predictions and evaluating real-world contexts.

TP.5

Use probabilistic thinking to weigh decision options and their possible outcomes.



Structuring Decisions

We make multiple decisions every day; some are simple and some are complex, some we make as individuals and some as part of a group. Focusing on processes and skills for making quality decisions can improve students' ability to reach decisions that work best for them in both the short and long term. The Structuring Decisions standards address the most important steps of structuring a complex decision and guide students through deliberate practices for individual and group decision-making.

SD.1 Identify and frame what a decision is and is not about.

SD.2 Clarify the values and objectives of the decision-maker in a given decision.

SD.3 Generate and develop significantly different and criteria-aligned decision options.

SD.4 Gather and analyze information from multiple sources to evaluate decision options.

SD.5 Make predictions about the outcomes of each decision option.

SD.6 Explain and provide the rationale behind a decision.

SD.7 Reflect on and evaluate a decision-making process, and compare the quality of the process with the quality of the outcome.

How to Read the Learning Standards

XX.X ← Code

Standard
▼

Identify and frame what a decision is and is not about

Students will understand that every decision involves factors that are either within or outside their control. Students will identify what to focus on in a decision by assessing what they hope to accomplish (purpose), what considerations to include and exclude (scope), and how the point of view of the decisionmaker/s impacts the approach to decision-making (perspective).

▲
Definition/ Interpretation

Elementary School	Middle School	High School
<p>Students can differentiate between simple and complex decisions.</p> <p>Students can name what they are making a decision about.</p> <p>Students identify who will be impacted by a decision.</p> <p>Students determine what parts of a decision are under their control and who else needs to be part of the decision.</p>	<p>Students describe how different decision frames affect the scope of decisions.</p> <p>Students describe how a decision may impact others.</p> <p>Students identify who has the authority to make a decision.</p> <p>Students distinguish between decisions that require a deliberate process and those that can be made quickly.</p>	<p>Students generate multiple framing possibilities to widen or narrow the scope of a decision.</p> <p>Students evaluate how a change in decision frames may impact stakeholders.</p> <p>Students alter decision frames to ensure that decisions are actionable and under their control.</p>

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Learning Progression by grade band
(What students should be able to know and do)

Domain

Recognizing and Resisting Cognitive Biases (CB)

Our minds rely on shortcuts – or heuristics – when we are forming judgments and making decisions. In general, these shortcuts are helpful – they decrease our mental load and increase our efficiency, usually without us even realizing it. However, these shortcuts often result in cognitive biases, a type of error in thinking when we are processing and interpreting information. The Cognitive Bias standards address how to recognize and resist select cognitive biases to support better decision-making.

CB.1

Identify cognitive biases and heuristics and the role they play in our decision-making and our views of the world

Students will learn about the usefulness of heuristics or mental short-cuts, and the cognitive biases they sometimes lead to. They will recognize that multiple biases can occur simultaneously. Students will understand that the information they have about the world and their understanding of it is sometimes incomplete and/or erroneous. Students will identify and practice strategies for recognizing and resisting cognitive biases.

Elementary School	Middle School	High School
<p>Students understand that the brain follows predictable patterns in thinking that influence their decisions.</p>	<p>Students understand how mental shortcuts, or heuristics, support various aspects of cognition – from perception to decision-making – and identify how they utilize heuristics in their everyday lives.</p> <p>Students recognize that heuristics sometimes lead to errors in thinking.</p> <p>Students understand the fast and automatic thinking of <i>System 1</i> is largely based on the use of heuristics.</p>	<p>Students recognize <i>cognitive miserliness</i>—the tendency to solve problems in simple and less effortful ways—in themselves and others.</p> <p>Students apply knowledge of biases and heuristics in their decision-making and consider and practice strategies for engaging their <i>System 2</i> thinking to mitigate biases when possible.</p>

CB.2

Recognize and actively resist overconfidence bias and bias blind spot

Students will understand and recognize the tendency to be overconfident in one’s abilities and the tendency to notice bias less easily in oneself than in others. Students will understand that overconfidence in their abilities can sometimes lead to errors in thinking, including the failure to notice bias in themselves. Students will practice and apply strategies for self-reflection, emotional intelligence, rationality, and intellectual humility to support efforts to resist this bias.

Elementary School	Middle School	High School
<p>Students understand they are susceptible to thinking errors even when they are aware they exist.</p>	<p>Students recognize and describe <i>overconfidence bias</i> and <i>bias blind spot</i> in themselves and in others.</p> <p>Students generate questions for feedback that may help them uncover their biases.</p>	<p>Students develop habits to actively check for bias within themselves.</p>

CB.3

Recognize and actively resist hindsight bias

Students will understand and recognize the tendency to ignore the unpredictability of the world and imagine that one could have predicted the outcome of an event before it occurred. Students will examine the tendency to misidentify their past behavior or past beliefs as more aligned to the real outcome of an event or decision than they were in reality. To resist this tendency, students will utilize strategies, such as journaling, throughout their decision-making to capture their actual thinking.

Elementary School	Middle School	High School
<p>Students identify and describe surprising decision outcomes, and explain how they differ from the outcomes they were expecting.</p>	<p>Students recognize and describe <i>hindsight bias</i> in themselves and in others.</p> <p>Students assign values to their predictions to quantify uncertainty and communicate levels of confidence.</p>	<p>Students consider potential <i>hindsight bias</i> about past decisions to inform predictions for current decisions.</p> <p>Students rely on tools, such as decision trees and decision journals, to document their levels of confidence over the course of a decision.</p>

CB.4

Recognize and actively resist present bias

Students will understand and recognize the tendency to overprioritize immediate opportunities over more valuable future opportunities. Students will examine the value of delaying instant rewards for the opportunity of more valuable future gains. To resist this tendency, students will develop the skill of imagining and considering their future selves when making a decision.

Elementary School	Middle School	High School
<p>Students evaluate how they feel about a decision outcome in the present, and predict how they would feel about the same decision outcome in the future.</p> <p>Students differentiate between things they need right now and things they can wait for.</p> <p>Students identify when rewards are worth waiting for.</p>	<p>Students recognize and describe <i>present bias</i> in themselves and others.</p>	<p>Students analyze how <i>present bias</i> affects the quality of decision-making.</p> <p>Students calculate and compare expected values across options.</p> <p>Students evaluate, and if appropriate, justify, when they are over-prioritizing immediate options versus future options.</p> <p>Students describe factors that might lead people to discount future opportunities in different ways.</p>

CB.5

Recognize and actively resist the framing effect

Students will understand and recognize the tendency to be influenced by the framing of a situation rather than its objective details. They will examine how the ways in which a situation is described or presented can bias decision-makers towards a certain choice. To resist this tendency, students will pause to assess and focus selectively on the most pertinent information when making decisions.

Elementary School	Middle School	High School
<p>Students identify differences across multiple framings of a problem and consider how those differences might influence decision-making.</p>	<p>Students recognize and describe the <i>framing effect</i> in themselves and others.</p> <p>Students identify the <i>framing effect</i> in advertisements, marketing, and other types of media.</p>	<p>Students analyze how the <i>framing effect</i> influences decision-making.</p> <p>Students analyze the potential implications of an alternative frame for a decision.</p>

CB.6

Recognize and actively resist the availability heuristic

Students will understand and recognize the tendency to confuse memorability with likelihood. They will examine the tendency to erroneously over-rely on information that comes to mind quickly and easily when making decisions and will understand that more memorable events are not necessarily more likely to be true in the future.

Elementary School	Middle School	High School
<p>Students identify memorable events that have influenced their opinions and judgments.</p> <p>Students identify factors that might make an event memorable.</p>	<p>Students recognize and describe the <i>availability heuristic</i> in themselves and others.</p> <p>Students distinguish between what is most memorable and what is most probable.</p>	<p>Students analyze how the <i>availability heuristic</i> influences decision-making.</p> <p>Students research trends and patterns to judge the likelihood of specific events rather than relying on memorable outlier events.</p>

CB.7

Recognize and actively resist the anchoring effect

Students will understand and recognize the tendency to over rely on initially acquired information when making decisions. They will examine the tendency to place too much emphasis on an initial anchor, or the first piece of information they are given about a topic, and to interpret newer information as it relates to that anchor instead of seeing it objectively.

Elementary School	Middle School	High School
<p>Students understand that the order in which information is acquired can skew its perceived importance.</p>	<p>Students recognize and describe the <i>anchoring effect</i> in themselves and others.</p> <p>Students resist the tendency to over-weigh the first piece of information learned on a topic when making decisions.</p>	<p>Students analyze how the <i>anchoring effect</i> influences decision-making.</p> <p>Students identify external anchors, determine their validity, and evaluate the extent to which they should influence future predictions.</p>

CB.8

Recognize and actively resist the tendency to ignore measures of likelihoods and relevant data when making judgments

Students will understand and recognize cognitive errors, such as representativeness heuristic, base rate neglect, and sample size neglect. Students will utilize and analyze data from credible sources, discern whether data has been represented accurately, and resist the temptation to make quick judgments based on limited information.

Elementary School	Middle School	High School
<p>Students identify what information they know and what information they may be missing when making decisions.</p>	<p>Students recognize and describe cognitive traps, such as <i>base rate neglect</i>, <i>probability neglect</i>, <i>representativeness heuristic</i>, and <i>sample size neglect</i>.</p> <p>Students understand how concepts such as base rates, sample size, and other measures of probability can provide additional insight when making decisions.</p>	<p>Students analyze how cognitive traps such as <i>base rate neglect</i>, <i>probability neglect</i>, <i>representativeness heuristic</i>, and <i>sample size neglect</i> affect the quality of decision-making.</p> <p>Students research and incorporate base rates when making decisions.</p> <p>Students consider sample size when interpreting data.</p> <p>Students resist the tendency to make judgments about people based on an overemphasis on characteristics they share with certain groups.</p>

CB.9

Recognize and actively resist confirmation bias

Students will understand and recognize the tendency to overemphasize or underemphasize information to protect already-held beliefs or self-image. They will understand that seeing the world from limited perspectives can sometimes lead to faulty decision-making. This can be especially problematic if only perspectives from similar “in-group” members are considered. To resist this tendency, students will actively seek diverse perspectives when researching and analyzing information about the world, with the purpose of expanding their thinking when appropriate.

Elementary School	Middle School	High School
<p>Students name popularly held beliefs and ask questions to challenge those beliefs.</p> <p>Students provide reasons for when their opinion on a topic changes.</p> <p>Students recognize when others do not share their opinions and understand why others may have different views.</p>	<p>Students recognize and describe <i>confirmation bias</i> in themselves and others.</p> <p>Students identify the positions and opinions of different groups and individuals.</p> <p>Students resist the tendency to search only for information that confirms what they already believe.</p>	<p>Students analyze how <i>confirmation bias</i> affects the quality of decision-making.</p> <p>Students identify groups and individuals that promote certain positions and analyze their motivations.</p> <p>Students question and check the validity of information they acquire, especially when it confirms beliefs they already hold.</p>

CB.10

Recognize and actively resist the tendency to overemphasize or overextend personal attributes when making judgments

Students will understand and recognize cognitive biases, such as the fundamental attribution error and halo effect. Students will examine the tendency to overemphasize or overextend the influence of someone else’s personal attributes versus their situation when making judgments about their behavior. To resist this tendency, students will pause to appropriately weigh personal attributes and consider contextual factors when making judgments.

Elementary School	Middle School	High School
<p>Students differentiate between facts and opinions related to themselves and others.</p> <p>Students understand that decision outcomes can be influenced by both the personal attributes of the decision-maker and the context surrounding the decision.</p>	<p>Students recognize and describe cognitive traps, such as <i>fundamental attribution error</i> and <i>halo effect</i>.</p> <p>Students evaluate how the connections they have to others may influence why they agree or disagree with them.</p>	<p>Students analyze how <i>fundamental attribution error</i> and <i>halo effect</i> influence decision-making.</p> <p>Students identify and assess how context and personality factors contribute to decision-making.</p> <p>Students evaluate their judgments to determine the degrees to which they are influenced by personal opinion and objective information.</p> <p>Students resist the tendency to overemphasize any single piece of information about an individual.</p>

CB.11

Recognize and actively resist polarized thinking and in-group bias

Students understand and recognize the tendency to classify situations into distinct opposing categories. Students examine the tendency to categorize information in an overgeneralized way. Students will understand that this tendency, while sometimes useful, can lead one to oversimplify situations into two opposing categories.

Elementary School	Middle School	High School
<p>Students identify keywords in varied media that may indicate polarized thinking.</p> <p>Students name examples of polarized thinking in their own judgments and exercise curiosity about those judgments.</p>	<p>Students recognize and describe <i>polarized thinking</i> and <i>in-group bias</i> in themselves and others.</p> <p>Students identify real-world situations that result in polarized views of complicated topics.</p> <p>Students recognize that extreme judgments of complex situations sometimes miss important information.</p> <p>Students examine how they may be influenced by groups they identify with.</p>	<p>Students consider nuance around a topic and recognize when extreme judgment is inappropriate.</p> <p>Students will explore how adherence to group identities can perpetuate polarized thinking.</p>

CB.12

Recognize and actively resist the sunk cost fallacy

Students will understand and recognize the tendency to persist when it is no longer useful. Students will examine the tendency to continue to invest time, effort, or resources in an endeavor even when it is no longer productive. They will learn to evaluate if it is appropriate to continue or let go of a task, project, or idea based on its future utility. Students will understand that despite the sense of “giving up” in the short-term, moving on from “sunk” efforts can lead to better outcomes.

Elementary School	Middle School	High School
<p>Students assess and justify when it is appropriate to continue or abandon a project.</p>	<p>Students recognize the <i>sunk cost fallacy</i> in themselves and others.</p> <p>Students recognize that they may feel discomfort leaving a project or endeavor before completion even when leaving it is justified.</p>	<p>Students analyze how the <i>sunk cost fallacy</i> influences decisions.</p> <p>Students evaluate the value of a future endeavor independent of past effort.</p>

Domain

Valuing and Applying Rationality (VAR)

Acting rationally includes adopting goals that are aligned with one’s values, holding beliefs that are commensurate with available evidence, making decisions skillfully given one’s goals and beliefs, and taking appropriate action. It means pursuing one’s life goals using the best means possible.

VAR.1

Embrace decisions as opportunities

Students will view decisions as opportunities to exercise agency in their lives. Students will develop tools that enable them to effectively tackle the parts of a decision that they have control over. They will understand that decisions can lead to more than either/or outcomes and that decisions are often composed of several connected choices. Students will understand that decision-making incorporates a skill-set that can be learned.

Elementary School	Middle School	High School
<p>Students identify the types of decisions they make in their lives in and out of school.</p> <p>Students understand that decision-making is a skill that can be learned.</p> <p>Students exercise agency in their daily choices.</p>	<p>Students categorize decisions by the significance and duration of their impact.</p> <p>Students plan for and seek assistance in making important decisions.</p>	<p>Students actively reflect on past decisions to inform future decisions.</p> <p>Students develop strategies for making in-the-moment decisions and deliberate decisions.</p>

VAR.2

Recognize, practice, and demonstrate intellectual humility

Students will monitor and calibrate their confidence as they acquire new information, and will recognize that their thinking may be impacted by blind spots, or unconscious processes that influence their thinking. Intellectually humble students demonstrate a mindset that allows them to entertain the possibility of being wrong and learning from the experience and expertise of others. They will exercise this disposition as they research, discuss, and debate information related to individual and group decisions.

Elementary School	Middle School	High School
<p>Students demonstrate curiosity about their own viewpoints and consider that they might be wrong.</p> <p>Students understand that they may have incomplete or incorrect information on a topic.</p> <p>Students listen to and ask questions of others in group discussions.</p> <p>Students expect mistakes and view them as essential to the learning process.</p> <p>Students understand that their knowledge of a topic can continually evolve.</p>	<p>Students reevaluate their opinions when presented with new evidence.</p> <p>Students approach debate and discussion with a learner’s mindset.</p>	<p>Students identify possible blind spots and areas of uncertainty in their thinking on a topic.</p> <p>Students identify people or resources that can deepen their understanding of a topic.</p> <p>Students create space for and seek to include others’ expertise in group decisions.</p> <p>Students will monitor and calibrate their confidence in their views and predictions as they acquire new information.</p>

VAR.3

Recognize, practice, and demonstrate active open-mindedness

Students will develop a mindset that leads them to actively seek evidence that will help them deepen, refine, or recalibrate their beliefs. Actively open-minded students demonstrate a willingness to question their initial intuition and accept that their initial judgments may be flawed or limited by incomplete information. They will practice cognitive empathy, or the ability to see things from another’s perspective, and in so doing, will identify areas where their values and goals may intersect with or diverge from others’. Students will search for nuance in perspectives that counter their beliefs.

Elementary School	Middle School	High School
<p>Students compare and contrast differing viewpoints on the same topic.</p> <p>Students describe moments when their initial judgment was incorrect.</p> <p>Students name and give reasons for when their opinions on a topic change.</p>	<p>Students research and analyze multiple perspectives on a topic.</p> <p>Students ask questions about their initial judgments to uncover the information they might be missing.</p> <p>Students identify factors that lead them to change or update their beliefs, goals, or values.</p>	<p>Students conduct research to learn about what motivates an individual’s or group’s perspective.</p> <p>Students utilize credible and diverse sources when conducting research.</p> <p>Students identify and resist thinking traps that limit their judgments.</p>

VAR.4

Recognize, practice, and demonstrate a truth-seeking mindset

Students will develop a mindset that leads them to attempt, as much as possible, to improve their understanding of the world as it actually is rather than as they might wish it to be. Truth-seeking students understand that information about how the world works is often incomplete, ask probing questions about the evidence that underlies their views and assumptions, and pursue evidence wherever it may lead, even when it challenges their beliefs.

Elementary School	Middle School	High School
<p>Students identify what they know and do not know about a topic.</p> <p>Students ask questions about their assumptions and the claims of others.</p>	<p>Students evaluate their own viewpoints for assumptions and cognitive biases.</p> <p>Students distinguish between substantiated and unsubstantiated claims.</p> <p>Students weigh the value of new information, and adjust their thinking as appropriate.</p> <p>Students understand that their definition of what is true in a given situation may not converge with that of others.</p>	<p>Students evaluate their viewpoints and those of others for assumptions and biases.</p> <p>Students pursue information that may challenge their own viewpoints.</p> <p>Students fact-check information they read in memes, infographics, and social media posts.</p> <p>Students justify their reasoning for when a new piece of information leads them to update their beliefs.</p>

VAR.5

Practice and demonstrate self-awareness of thought processes and behavior

Students will develop metacognition, or an awareness of, their own thought processes and behaviors. Students will explore the fast, automatic thought processes associated with System 1 thinking, and the deliberate, effortful thought processes associated with System 2 thinking. Students will exercise self-awareness in their approach to decision-making. They will plan intentionally for decision-making, reflect on their decision processes, and notice thinking traps that get in the way of rational decision-making and follow-through.

Elementary School	Middle School	High School
<p>Students identify behaviors and emotions that support or hinder decision-making.</p> <p>Students reflect on their thinking when problem-solving individually or with others.</p>	<p>Students understand <i>System 1</i> and <i>System 2 thinking</i>, and identify examples of when each is utilized.</p> <p>Students use self-reflective strategies when problem-solving or making decisions individually or with others.</p>	<p>Students identify whether a decision requires <i>System 2 thinking</i>, and utilize strategies to engage <i>System 2</i> when necessary.</p> <p>Students consistently monitor and evaluate the accuracy of their thought processes.</p>

VAR.6

Practice and demonstrate self-regulation and self-direction

Students will practice and develop strategies for monitoring and managing their emotional states. Students will notice and name their emotions, and reflect on how they impact their reasoning and conclusions. They will adapt their behavior as necessary to align with their values and achieve their personally chosen goals.

Elementary School	Middle School	High School
<p>Students use a wide spectrum of vocabulary to identify and communicate their emotions to others.</p> <p>Students identify behaviors and thought patterns that support or hinder their well-being.</p> <p>Students practice strategies for managing their emotions.</p> <p>Students reflect on their behaviors individually and with others.</p>	<p>Students notice when to interrupt and redirect their thought patterns, feelings, or behaviors.</p> <p>Students notice when their emotions impact effective decision making and seek support as needed.</p> <p>Students identify and communicate their values and goals in a given situation.</p> <p>Students seek feedback and insight from others to inform their future actions.</p>	<p>Students develop individualized strategies to manage their behaviors and emotions for effective decision-making.</p> <p>Students plan how they will allocate their time and energy in a given task.</p>

VAR.7

Create and track sustainable and desirable habits

Students will understand that habits are automated decisions that can be inspected and managed consciously. They will understand the positive and negative long-term and cumulative effects that habits can have on their lives. They will understand the components of a habit loop (cue, behavior, and satisfaction or negative side effects) and will learn how to create automaticity around habits that matter to them. Students will learn how developing desirable habits can help relieve cognitive stress around decision-making.

Elementary School	Middle School	High School
<p>Students understand that a habit is a behavior that becomes automatic from repeating it often.</p> <p>Students identify habits they have in different areas of their lives.</p> <p>Students recognize the benefits and consequences of their habits.</p>	<p>Students identify the parts of a <i>habit loop</i> (cue, behavior, satisfaction, negative or positive effects) and explain how they work together.</p> <p>Students evaluate how habits in their own lives follow the <i>habit loop</i>.</p> <p>Students recognize habits in their lives that negatively impact their time, health, or wellbeing, and identify ways to improve them.</p>	<p>Students practice and apply new <i>habit loops</i> to dismantle harmful habits or nurture habits that matter to them.</p> <p>Students develop sustainable habits to support decision-making.</p>

VAR.8**Apply scientific reasoning to problem-solving**

Students will apply scientific reasoning and inquiry-based thinking to their decision-making. They will be methodical in gathering, analyzing, and critiquing information. They will think critically and make logical inferences using quality evidence to determine the best approach to a decision.

Elementary School

Students engage in inquiry and experimentation to deepen their knowledge of a problem or decision.

Middle School

Students identify when it is beneficial to conduct an experiment to learn more about a problem or inform a decision.

High School

Students design and conduct self-directed, bias-free, replicable experiments to learn more about a problem or to inform a decision.

Domain

Thinking Probabilistically (TP)

We live in a world with incomplete, imperfect, and sometimes misleading information. When we make decisions, we are estimating what we know in the present and predicting what we think may happen in the future. Thinking Probabilistically improves our decision-making by aiding our judgments about the possible outcomes associated with our options. The Thinking Probabilistically standards address numeracy skills and tools that empower youth to proactively navigate the uncertainty that exists in their knowledge of the past, present, and future.

TP.1

Recognize the difference between the nature of uncertainty and randomness

Students will understand that uncertainty is a state of doubt that results from not knowing for sure what is true in the present or what will occur in the future. Students will understand that uncertainty is a natural response to the world, and is impacted by incomplete, imperfect, or misinformation. Students will differentiate between the nature of uncertainty (something within themselves), and randomness, which characterizes events that are truly unpredictable regardless of the quantity or quality of information available. Students will understand that no decision outcome is entirely under their control, and is influenced by both skillful decision-making and randomness or chance events.

Elementary School	Middle School	High School
<p>Students identify what factors in a decision are under their control and what factors may be influenced by chance.</p> <p>Students use words and numerical values to express how likely they think something is to happen.</p> <p>Students identify examples of random events in their lives and in the world.</p>	<p>Students understand that the influence of chance and decision-making skill on an outcome varies depending on the type of activity.</p> <p>Students imagine possible chance events that might impact a decision outcome.</p>	<p>Students understand that the available information about a given situation is usually incomplete and imperfect.</p> <p>Students identify when events are random and resist finding patterns that do not exist.</p> <p>Students imagine possible chance events that might impact a decision outcome and predict how likely each event is to occur.</p> <p>Students analyze and evaluate decision outcomes to assess the impact of decision-making skill and chance events on the outcome.</p>

TP.2

Strategically apply appropriate numeracy and probability techniques

Students will understand key concepts such as base rates, confidence intervals, weighted averages, expected values, and dependent and independent events, and will apply a practical understanding of mathematics to decision-making contexts.

Elementary School	Middle School	High School
<p>Students make reasonable estimates about quantities and measurements.</p> <p>Students represent the likelihood of simple chance events through ratios, fractions, and probabilities</p>	<p>Students understand the concept of <i>expected value</i>, or the anticipated average value of something in the future.</p> <p>Students utilize <i>confidence intervals</i> to communicate an estimate plus or minus a margin of error.</p> <p>Students calculate <i>weighted averages</i> that take into account the varying degrees of importance of the numbers in a data set.</p> <p>Students understand the concept of a <i>base rate</i>, to measure or understand the frequency of events or characteristics in a population.</p>	<p>Students differentiate between <i>dependent events</i>, which affect or are affected by the probability of other events occurring, and <i>independent events</i>, which do not affect and are not affected by the probability of another event happening.</p> <p>Students consider <i>base rates</i> and other probability concepts when formulating <i>confidence intervals</i>.</p> <p>Students make choices about when and which probability concepts to apply to decision-making.</p> <p>Students reference probability concepts when defending their reasoning about a decision or prediction.</p>

TP.3

Use probabilistic thinking to evaluate evidence and truth claims, and to update beliefs

Students will take into account relevant prior information about the world when encountering new information and updating their beliefs. Students will understand the importance of analyzing truth claims through a probabilistic thinking lens, and will utilize probability concepts to assess their degrees of belief.

Elementary School	Middle School	High School
<p>Students ask and answer questions as they gather and interpret data or new information.</p> <p>Students communicate what they believe about a topic and cite evidence to support their beliefs.</p> <p>Students communicate what they know about a topic and consider what information they might be missing.</p>	<p>Students explain if, how, and why new information influences their belief around a claim.</p> <p>Students provide <i>confidence intervals</i> for their estimates of how likely something is to be true.</p> <p>Students identify what data they know about a topic and ask and answer questions to uncover what data they are missing.</p>	<p>Students understand the concept of <i>conditional probability</i>—or the likelihood of an event or outcome occurring based on the occurrence of a previous event or outcome.</p> <p>Students determine if their degree of belief about a claim is supported by sound probabilistic reasoning.</p> <p>Students determine if their degree of belief about a claim is supported by credible evidence.</p> <p>Students determine what data may be missing or misrepresented when encountering information that takes a strong stance on an issue.</p>

TP.4

Use probabilistic thinking when making predictions and evaluating real-world contexts involving uncertainty

Students will conduct research and combine information to form accurate probability judgments and make reasonable predictions or forecasts about real-world events involving uncertainty.

Elementary School	Middle School	High School
<p>Students collect data on the frequency of different events or occurrences in their classrooms and communities.</p> <p>Students recognize when more information is needed to make a reasonable judgment.</p> <p>Students interpret data and facts to make predictions.</p>	<p>Students use available data to forecast the likelihood that an event will or will not occur.</p> <p>Students explain why their estimates are reasonable.</p>	<p>Students utilize known or estimated base rates as a reference for their estimates of the likelihood of an event.</p> <p>Students justify and defend their decisions against known or estimated base rates.</p> <p>Students combine information from diverse sources to make predictions about real world events.</p> <p>Students adjust initial forecasts as new data becomes available.</p>

TP.5

Use probabilistic thinking to weigh decision options and their possible outcomes

Students will understand that the world can unfold in more ways than it will unfold, and that their preferred outcome is sometimes not the most likely outcome. Students will utilize various probability techniques to assess the risks and rewards associated with outcomes of possible decision options, including calculations of expected value, expected utility, weighted averages, and base rates.

Elementary School	Middle School	High School
<p>Students are able to name several ways that a situation may resolve, including outcomes that are less desirable</p> <p>Students name risks and rewards related to choices.</p>	<p>Students understand the concept of <i>expected utility</i>, or the anticipated usefulness of something in the future.</p> <p>Students utilize <i>subjective probabilities</i>, derived from their own personal judgment, to communicate predicted likelihoods of realistic future events or outcomes.</p>	<p>Students calculate net <i>expected values</i> when analyzing and making predictions about decision options.</p> <p>Students understand and explain why <i>expected utility</i> may vary in value among different people.</p> <p>Students utilize <i>subjective</i> and <i>objective probabilities</i> to communicate risks and rewards associated with different decision options.</p>

Domain

Structuring Decisions (SD)

We make multiple decisions every day; some are simple and some are complex, some we make as individuals and some as part of a group. Focusing on processes and skills for making quality decisions can improve our ability to reach decisions that work best for us in both the short and long term.

SD.1

Identify and frame what a decision is and is not about

Students will understand that every decision involves factors that are either within or outside their control. Students will identify what to focus on in a decision by assessing what they hope to accomplish (purpose), what considerations to include and exclude (scope), and how the point of view of the decisionmaker/s impacts the approach to decision-making (perspective).

Elementary School	Middle School	High School
<p>Students can differentiate between simple and complex decisions.</p> <p>Students can name what they are making a decision about.</p> <p>Students identify who will be impacted by a decision.</p> <p>Students determine what parts of a decision are under their control and who else needs to be part of the decision.</p>	<p>Students describe how different decision frames affect the scope of decisions.</p> <p>Students describe how a decision may impact others.</p> <p>Students identify who has the authority to make a decision.</p> <p>Students distinguish between decisions that require a deliberate process and those that can be made quickly.</p>	<p>Students generate multiple framing possibilities to widen or narrow the scope of a decision.</p> <p>Students evaluate how a change in decision frames may impact stakeholders.</p> <p>Students alter decision frames to ensure that decisions are actionable and under their control.</p>

SD.2

Clarify the values and objectives of the decision-maker in a given decision

Students will identify objectives and values (what they care about) as they relate to specific decisions for both individual and group decision-making. Students will prioritize values and will analyze how competing values require decision-makers to make tradeoffs.

Elementary School	Middle School	High School
<p>Students can name what's important to them related to a decision.</p> <p>Students imagine and ask what others care about in relation to a decision.</p>	<p>Students identify and prioritize their values related to individual and group decisions.</p> <p>When relevant, students speculate on the values of others who may be impacted by a decision.</p> <p>In group decision-making, students inquire about the values of the other decision-makers in the group.</p>	<p>Students rank and prioritize values by order of importance.</p> <p>Students identify and describe competing values and assess the implications of each value.</p> <p>In group decision-making, students recognize others' values and seek areas of common-ground or overlapping preferences.</p>

SD.3

Generate and develop significantly different and criteria-aligned decision options

Students will understand that the quality of any decision is limited by the quality of the options they generate for it. Students will search for and identify decision options for themselves and others that align with the values of the decision-maker/s. Students will determine how well different options demonstrate various characteristics, such as being under the decision-maker/s' control, significantly different from other options, and doable.

Elementary School	Middle School	High School
<p>Students can generate more than two options to choose from in a decision.</p>	<p>Students generate options that are aligned with their values.</p> <p>Students compare options to ensure they are significantly different from each other.</p> <p>Students assess if the options are doable.</p>	<p>Students generate options for a decision that are significantly different, aligned with their values, and actionable.</p> <p>Students imagine how each option will impact those affected by the decision.</p> <p>Students analyze if and how biases or decision traps interfere with their process for generating options.</p>

SD.4

Gather and analyze information from multiple sources to evaluate decision options

Students will gather and analyze information with the purpose of reducing uncertainty and understanding more about the possible consequences of each decision option. Students will determine the value of information sources by assessing whether a source is credible and unbiased and whether the source is timely and relevant to the decision under consideration. Students will search for credible sources with different viewpoints on the same topic, and update their beliefs as relevant.

Elementary School	Middle School	High School
<p>Students formulate questions they need to answer about different decision options.</p> <p>Students collect data [or information] from a variety of sources including print and digital media, asking adults, or consulting with experts.</p> <p>Students collect information about the perspectives of others.</p>	<p>Students identify what type of information is knowable and unknowable as it relates to their decision options.</p> <p>Students research and analyze information related to their decision options from multiple sources.</p> <p>Students evaluate and assess the credibility, timeliness, and relevance of information sources.</p> <p>Students determine if the information is applicable and important to a decision.</p> <p>Students adjust their confidence about a decision as they gather information.</p>	<p>Students identify what information is most important to the decision process and develop a plan for gathering it.</p> <p>Students analyze conflicting information sources to investigate the degree and nature of biases.</p> <p>Students identify which voices and perspectives are centered in their sources and which perspectives might be missing, marginalized, or not yet understood.</p>

SD.5

Make predictions about the outcomes of each decision option

Students will make predictions about the possible outcomes of distinct decision options, with consideration for how much value each outcome might deliver in terms of various factors (e.g. happiness, health, time) and how likely each outcome is to occur. Students will utilize probability concepts to assess risk, consider what is up to chance and what can be influenced, and acknowledge tradeoffs.

Elementary School	Middle School	High School
<p>Students can name and discuss possible outcomes of different decision options.</p> <p>Students predict how possible outcomes will make them feel in the future.</p>	<p>Students generate several distinct predicted outcomes for each decision option.</p> <p>Students assign numerical subjective probabilities to their predictions.</p> <p>Students recognize that the outcomes of a decision might vary from one person to another.</p>	<p>Students factor in known or estimated base rates, as well as extreme probability events in their predicted outcomes of each decision option.</p> <p>Students recalibrate their predictions as they acquire new or updated information.</p> <p>Students use or calculate subjective and objective probabilities to quantify the likelihood of different decision outcomes.</p>

SD.6

Explain and provide the rationale behind a decision

Students will communicate a narrative about the reasoning that led them to arrive at a decision conclusion, such that a listener can follow the line of reasoning. Explaining their decision process may include describing the decision context, justifying the choice of methods, citing evidence, and specifying their criteria and values.

Elementary School	Middle School	High School
<p>Students explain their motivations for making a decision.</p> <p>Students describe the steps that led them to make a decision.</p>	<p>Students explain what they decided, their justification for that decision, and what outcome they expect.</p> <p>Students track their process for major decisions using tools, such as decision journals, to aid them.</p>	<p>Students explain, orally or in written form, what they decided, their justification for that decision, what outcome they expect, and the predicted likelihood of that outcome.</p>

SD.7

Reflect on and evaluate a decision-making process, and compare the quality of the process with the quality of the outcome

Students will revisit each step in the decision process to identify strengths in their decision-making and areas where they can improve. Students will focus specifically on evaluating the quality of the decision-making process to avoid resulting or mistakenly evaluating the quality of decisions based on their outcomes.

Elementary School	Middle School	High School
<p>Students use tools to evaluate the quality of their decisions.</p> <p>Students distinguish between a poor outcome and a poor decision.</p>	<p>Students evaluate the quality of each of the steps of their structured decision process to identify effective strategies and areas for improvement.</p> <p>Students understand the concept of <i>resulting</i>, or erroneously judging the quality of a decision by its outcome.</p>	<p>Students utilize tools, such as journals and postmortems, to evaluate the quality of a decision process and compare that to the quality of the outcome.</p> <p>Students develop strong habits around decision-making by analyzing patterns in past decisions.</p>