



# Decision Education Research Agenda 2023

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ALLIANCE FOR  
**DECISION  
EDUCATION**





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## Introduction

**The Alliance for Decision Education** is a national nonprofit leading the growing call to have Decision Education taught in schools. Its mission is to improve lives by empowering students with essential skills and dispositions for making better decisions. Research illustrating how Decision Education impacts decision-making competence and life outcomes is critical to help build public demand, support policy making, drive adoption, and improve instructional experiences in K-12 education. The Alliance believes that not only educational outcomes will be improved, but that there will also be lifelong individual and societal benefits of receiving Decision Education. However, there is currently little research focused on the benefits and challenges of building the skills included in Decision Education among K-12 populations.

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

To promote and guide more research in the field of Decision Education, the Alliance developed this Decision Education Research Agenda. The framework was created after hosting a convening of prominent scholars in the judgment and decision-making field, and combining their insights with experience at the Alliance. The Research Agenda is intended to 1) highlight future research needs in Decision Education, and 2) serve as a guide for a collaborative community of researchers to generate research ideas, projects, and findings that inform practice in the field. It is meant to be an ongoing and integral part of building a knowledge base of credible evidence that strengthens the field of Decision Education.

### **This initial framework was created in collaboration with:**

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## Background

Decades of research by judgment and decision-making scholars have illustrated ways in which human judgment is bounded and error-prone, which impact the decisions that individuals make daily (e.g., Baron, 2008; Kahneman, 2003; Simon, 1990; Slovic et al., 1984). Despite the extensive research on decision-making from a descriptive and normative perspective (e.g. Bazerman & Moore, 2008; Brest & Krieger, 2010; Hastie & Dawes, 2009; Tversky & Kahneman, 1974), there are fewer studies on how to improve decision-making, particularly among children and adolescents. Hence, there is an increasing call to “focus attention on the search for strategies that will improve bounded judgment because decision-making errors are costly and are growing more costly, decision makers are receptive, and academic insights are sure to follow from research on improvement” (Milkman et al., 2009, p.1).

Although some research indicates decision-making differs for children and adolescents as compared to adults (e.g., Kokis et al., 2002; Weller et al., 2011), the majority of decision-making research has been conducted among adults, with fewer studies in the literature for children and adolescents. Indeed, this period of significant development involves a continuity of changes in biological, cognitive, psychosocial, and emotional domains, all of which have profound implications for decision-making (e.g. Backes & Bonnie, 2019; Toplak, 2021). Given the potential plasticity of decision-making skills over time (Dhami et al., 2012), interventions that teach decision-making to children and adolescents may improve social, health, and financial outcomes later in life (Baron & Brown, 1991; Jacobson et al., 2012; Weller et al., 2015). Therefore, it is imperative to generate

more research among children and adolescents, particularly intervention studies on improving decision-making, as findings can provide “analytical and empirical procedures for clarifying the challenges that young people face and their success in addressing them” (Fischhoff, 2008, p.12).

Developing robust measures and gathering benchmarking data on children and adolescent decision-making proficiencies can inform interventions. Studies on decision-making competencies and other outcome measures (e.g., mental and physical health, media literacy, financial literacy, relational well-being, risk behaviors, academic performance, workforce opportunities) can demonstrate the impact of Decision Education. For example, integrating decision-making training in a high school United States history curriculum improved both Decision-Making Competence (DMC) scores and performance on the history exam at the end of the term (Jacobson et al., 2012). Other studies have shown that decision-making training enhanced high school students’ proactive decision-making and career choice self-efficacy (Siebert et al., 2022). Furthermore, interventions targeting debiasing and self-regulation, both skills related to decision-making competency, have been shown to reduce adolescent risk behaviors (Chamberlain et al., 2006, Weller et al., 2015). Therefore, there is a pressing call for researchers to conduct interventions designed to improve decision-making competencies for children and adolescents, as well as examine its impact on their life outcomes, both immediate and long-term.

## Decision Education Research Agenda 2023

Decision Education is the teaching and learning of skillful judgment formation and decision-making. Decision Education is an interdisciplinary field drawing on concepts from psychology, neuroscience, behavioral economics, decision sciences, and others. The Alliance for Decision Education has highlighted [four K-12 Learning Domains of Decision Education](#). These Learning Domains are 1) Valuing and Applying Rationality, 2) Thinking Probabilistically, 3) Recognizing and Resisting Cognitive Biases, and 4) Structuring Decisions. While these Learning Domains are represented distinctly for clarity and operational purposes, it is important to note that there is considerable integration across areas in Decision Education for both research and practice.

In order to better understand the impact of Decision Education on students, intervention research is a primary goal for the field. However, descriptive research that benchmarks students' decision-making knowledge, skills, and dispositions is important for supporting future intervention work. Furthermore, it is necessary to develop more validated measures to assess different components of Decision Education. Therefore, it is critical to prioritize these types of research studies in parallel across the various areas of Decision Education and to examine the impact on students' life outcomes.

This agenda organizes these efforts under four key research areas, with several broad research questions as examples to illustrate the goals for each area. These questions are not exhaustive, and researchers are encouraged to consider various research questions to actively advance the field.

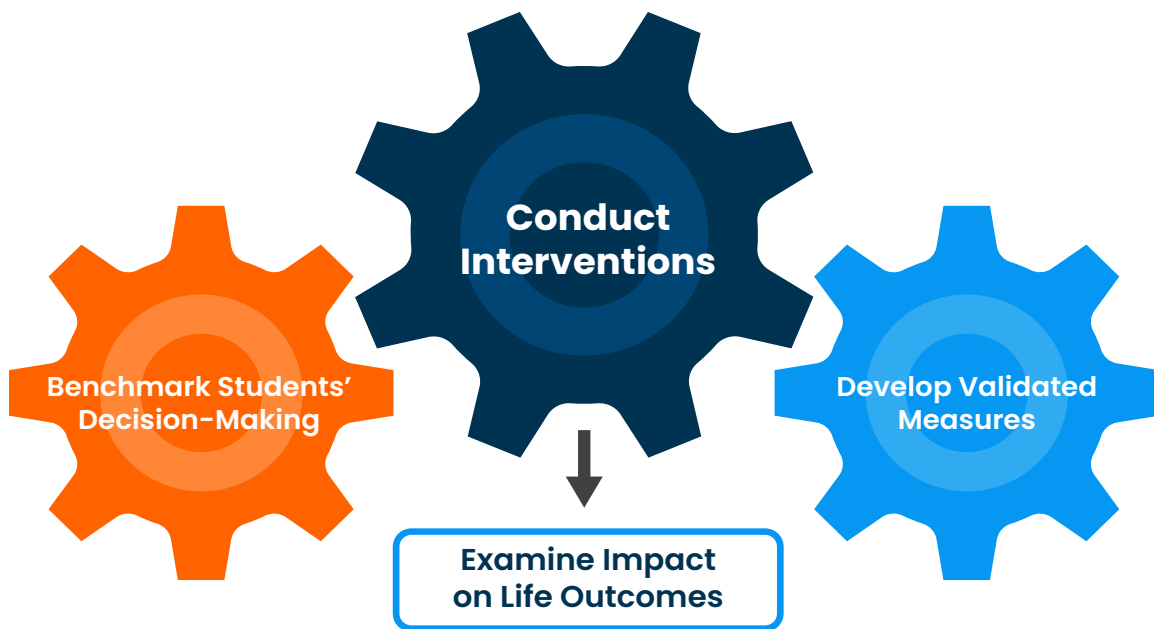


Figure 1. Key areas for research in Decision Education



## KEY RESEARCH AREA 1:

### Determine and develop relevant measurement tools

Valid and reliable measures are necessary to determine students' baseline decision-making competencies and to understand the effectiveness of Decision Education. Specifically, measures that assess knowledge (e.g., understanding of concepts in Decision Education), skills (e.g., structuring a decision, assessing expected value), and dispositions (e.g., active open-mindedness, intellectual humility) across the breadth of the four Learning Domains are essential for Decision Education. While there are existing measures that assess many components related to Decision Education (see Appendix A), since the field is both new and broad, it is important to develop additional instruments that are more directly aligned with Decision Education and can be implemented among K-12 students. The aim is to build and apply an accessible portfolio of psychometrically sophisticated and validated scales on Decision Education.

- *With regards to each of the four Learning Domains, what are the knowledge, skills, and dispositions to be measured? How will they be measured?*
- *What is the primary measurement instrument for Decision Education? What are its strengths and weaknesses? What other measures should be included in the portfolio of scales for Decision Education to address any limitations?*

#### 1.1 Measures on Valuing and Applying Rationality

In the context of Decision Education, Valuing and Applying Rationality involves adopting goals that are aligned with ones' values and making skillful decisions or taking appropriate actions given one's goals. Implicit in these skills is the exercising of active open-mindedness, intellectual humility, self-awareness, and self-regulation, as well as the development of metacognition, which involves awareness and understanding of one's own thought processes. Assessing decision skills that promote epistemic and instrumental rationality among students can provide insight on how to support them in approaching and making decisions that are consistent with their values and goals.

- *How do students demonstrate dispositions in rationality? In what ways can students' rationality be improved?*
- *How does student development in related areas, such as critical thinking, impact rational thinking and behavior in students? Is there a bidirectional causality?*

## 1.2 Measures on Thinking Probabilistically

Thinking Probabilistically describes the skills of proactively navigating uncertainty in their knowledge and estimating the likelihood of possible outcomes in order to make decisions. Aside from specific numeracy skills and concepts (such as base rates, confidence intervals, weighted averages, expected values, and dependent and independent events), it requires a disposition to acknowledge various uncertainties and a willingness to address them. Understanding students' ability to think probabilistically is important for understanding and improving their decision-making.

- *How do students approach the probability of differing outcomes and the uncertainty in their knowledge? How can it be improved?*
- *In what ways can students learn to think more probabilistically?*

## 1.3 Measures on Recognizing and Resisting Cognitive Biases

Mental shortcuts that the human mind relies on when forming judgments and making decisions can result in cognitive biases, a type of error in thinking when processing and interpreting information. Examples include overconfidence bias, hindsight bias, framing effect, availability heuristic, anchoring effect, confirmation bias, sunk-cost fallacy, in-group bias, and others. Relevant measures are necessary in order to understand how these biases impact decision-making for students, and to determine how to help them recognize and resist these biases for improved decision-making and life outcomes.

- *How do cognitive biases influence students' decision-making? How do other factors (e.g., age, types of decisions) impact the development or experiences of different biases?*
- *What learnings and practices can students implement to better recognize and resist specific biases?*
- *Does reducing known biases improve skills in other Learning Domains such as probabilistic thinking, and vice versa?*



## 1.4 Measures on Structuring Decisions

Structuring Decisions provides a systematic approach for decisions that have potentially significant consequences. Important steps include framing what a decision is about, clarifying individual values, generating different options, predicting outcomes, explaining how a decision was made, taking action, and reflecting on a decision process. Without understanding the elements that make up a quality decision, students can only rely on their limited experiences. Assessing the steps involved provides opportunities to learn about and support skillful decision-making.

- *How do students structure decisions and how does this change over time?*
- *What aspects of the process in structuring decisions are particularly challenging for students and how can it be improved?*

## KEY RESEARCH AREA 2:

### Benchmark students' decision-making knowledge, skills, and dispositions

In order to target what is necessary, it is important to assess students' decision-making knowledge, skills, and dispositions. Gathering benchmarking indicators of students' competencies related to decision-making is valuable for 1) effectively measuring whether Decision Education has an impact and to what extent; and 2) targeting interventions to promote development of student outcomes that have the greatest expected value. When conducting descriptive studies on students' decision-making and its related competencies, it is essential to consider the decision maker and the factors involved in the decision.

- *What are the decision-making knowledge, skills, and dispositions among students at different developmental stages? How does it vary across students, and why?*
- *How do contextual and individual factors that are associated with students influence their learning of Decision Education?*
- *How can students' understanding of the features and the situations around a decision be improved?*

#### 2.1 The Decision Maker and Their Context

The decisions made by individuals are affected by their individual differences, which broadly refers to the characteristics of the decision maker—from cognitive ability to personality to decision style. For example, students vary in their internal processes, such as their levels of motivation and agency, which can influence their decision-making. Furthermore, environmental factors such as peers, learning environment, school culture, socio-economic status, societal norms, or cultural influences are also important to consider when assessing students and their decision-making competencies. Previous research has examined the role of individual differences in decision-making but more research is necessary to understand how these factors affect learning in Decision Education.

- *What individual factors such as cognitive ability, personality, or decision style are associated with decision-making and with students' learning of Decision Education?*
- *How do different environments (i.e. home, school, and social factors) shape students' acquisition of decision-making competencies?*

Additionally, it is important to build on the work of developmental psychologists to consider the factors that change over time for the decision maker. The cognitive, social, emotional, and psychological changes that occur in humans across their lifespan inform the ways individuals view themselves and the world. These developmental changes influence how people think about

and make decisions at different stages of their lives. Decision Education research should explore the ways in which developmental changes over time affect decision-making processes and competencies, as well as children's and adolescents' receptiveness to learning the knowledge, skills, and dispositions included within Decision Education.

- *What are students' decision-making competencies at different developmental stages?*
- *How does students' decision-making change over time?*
- *How do different factors influence the developmental trajectories of decision-making skills, knowledge, and dispositions?*

## 2.2 Decision Features and Situational Factors

Studies have demonstrated how decision features (e.g., the type of decision, the framing of choice options, the ordering of choice options) impact decisions that individuals make. Furthermore, the characteristics of the specific situation in which the decision is faced (e.g., time pressure, cognitive load, mood) also play an important role in decision-making. Research that examines students' understanding of decision features and situational factors, and how it influences their decision-making, is necessary to better equip students to improve their decision-making.

- *What are students' understanding of how decision features and situational factors affect their decision-making?*
- *How does learning about specific decision features and situational factors improve students' decisions?*

## KEY RESEARCH AREA 3:

### Conduct effective interventions that demonstrate the impact of Decision Education

Intervention research on Decision Education involves investigating what treatments or strategies work best to improve decision-making for students that lead to better short and long term outcomes. Studies that compare pre- and post-data for students who have received Decision Education training or teaching are essential for understanding its impact. Furthermore, larger studies that compare students who have received Decision Education training or teaching with students who have not can provide important information on how the intervention affects life outcomes. Findings through intervention studies can provide valuable understanding and evidence for integrating Decision Education into K-12 classrooms.

#### 3.1 Training Interventions

In order to better understand the effects of Decision Education, interventions that train students in specific competencies related to Decision Education are necessary. Several studies and instructional programs among children and adolescents have demonstrated how targeted training can improve many of the skills and dispositions highlighted in Decision Education; examples include cognitive bias training, forecasting workshops, and programs in proactive decision-making. However, there is a need for substantially more interventions that demonstrate the impact across the broad range of competencies in Decision Education, specifically among K-12 children. Furthermore, it is necessary to examine the transferability of those training interventions in the real lives of the students.

- *What are some key components of successful training interventions for Decision Education?*
- *How do training interventions improve students' performance on specific skills and dispositions in Decision Education? How does it improve their life outcomes?*
- *What characteristics of school-based training interventions in Decision Education promote transfer to other domains, such as peer relationships, financial choices, etc.?*

#### 3.2 Pedagogy and Curriculum

While there are some initial resources on teaching Decision Education (see [The Alliance website](#) for examples), intervention research that shows how pedagogy and curriculum affect the learning of Decision Education in K-12 classrooms is necessary. The field of Decision Education is wide, so students may experience a range of learning interventions. Some areas to consider regarding research in pedagogy and curriculum for Decision Education include integration (e.g., How are Decision Education concepts integrated in other subject areas? What concepts should be taught

in a stand-alone curriculum?), amount of learning (e.g. How much Decision Education content and curriculum are necessary at different developmental stages to make a perceptible impact?), design (e.g., What modes of delivery or activities are important for learning Decision Education concepts? How does learning vary online versus in-person?), and assessment (e.g. How is Decision Education learning being assessed?).

It is important to examine how teachers (e.g., teacher training, effectiveness, motivation) and school contexts (e.g., administrative support, type of school, school buy-in) also influence the learning of Decision Education. Intervention research can provide insight on effective strategies for implementation of Decision Education for successful student learning.

- *In what ways does the integration, amount of learning, design, and assessment of teaching concepts in Decision Education influence outcomes for students?*
- *How do factors involving the teacher and school context impact students' experience and learning of Decision Education?*

## KEY RESEARCH AREA 4:

### Examine the effect of Decision Education on life outcomes

The ultimate goal of introducing Decision Education into every K-12 student's learning experience is to improve life outcomes for students as they become independent. An essential aspect of Decision Education that distinguishes it from much of the existing K-12 curriculum is that students are making decisions every day, and as they become adults, these decisions increase in complexity, magnitude, and impact. In order to best prepare students for the life ahead of them, they need continuous and developmentally appropriate learning experiences in school, including opportunities to practice, that will improve their understanding of how their own mind works and how to make their reasoning more effective in achieving their goals. Despite the difficulties of assessing causal influence in real-world contexts, the research goals include examining how learning Decision Education skills transfers outside the classroom and the impact of receiving Decision Education on students' life outcomes.

#### 4.1 The Conceptual Framework

The hypothesis is that receiving Decision Education during the period when students are developing their thinking and behavioral patterns will equip them to make better decisions and have better outcomes. The following diagram demonstrates how Decision Education can affect students' decision knowledge, skills, and dispositions, which in turn affect the quality of the decisions that students make, and thereby influences their life outcomes.



Figure 2. Conceptual framework for Decision Education

## 4.2 Life Outcomes

The primary motivation for research in Decision Education is to improve the lives of all students by enabling them to make better decisions. Despite the unpredictability in daily life, there are numerous opportunities for the knowledge, skills, and dispositions gained through Decision Education to affect various life outcomes that students can influence, both directly and indirectly. Decision Education could lead to improved mental health by teaching students how to navigate uncertainty. It could lead to increased media literacy by teaching students how to evaluate information. Or it could lead to better financial welfare by equipping students with applicable numeracy and probabilistic thinking skills. From a behavioral perspective, Decision Education could lead to a reduction in unfavorable behaviors, such as drinking and driving or other dangerous decisions.

Broadly, Decision Education has the potential to improve life outcomes across many domains, including mental and physical health, media literacy, financial literacy, relational well-being, engagement of risk behaviors, academic performance, and workforce opportunities. Importantly, understanding Decision Education content should benefit all students, and potentially level the playing field among students with different backgrounds, experiences, and abilities. Research in the field should work to demonstrate lifelong implications of Decision Education integration in the K-12 system by measuring various student outcomes. Longitudinal studies comparing life outcomes of students who have had meaningful exposure to Decision Education to those who have not will help establish evidence-based relationships between learning Decision Education and better outcomes.

- *What areas of students' lives are improved by the learning of Decision Education? In what areas of students' lives can we measure effects?*
- *How do long-term outcomes, such as future career opportunities, health, and relationships, differ for students who received Decision Education in comparison to students in a control group?*

## Implementation Strategies

In order to ensure that the Decision Education Research Agenda is used as a tool among researchers rather than becoming a stagnant document, the Alliance aims to implement strategies for communication and sustainability.<sup>1</sup>

### Establishing a Researcher Community

One important strategy for implementation involves developing a community of researchers who share a common interest and understanding of Decision Education as a field. Since Decision Education is interdisciplinary, it is necessary to encourage collaborations among researchers with expertise across disciplines to inform knowledge in the field. As the field works collaboratively to achieve the goal of improving student life outcomes, progress will build on elements of other disciplines with shared goals, while focusing on the novel aspects of Decision Education in K-12 education. Therefore, the Alliance is taking steps (e.g., connecting with researchers, attending conferences, providing scholarships for graduate students) to broaden the pool of researchers who can advance understanding across the multifaceted areas of Decision Education.

### Providing Funding for Research

In order to support rigorous sustained Decision Education research, the Alliance has also committed to funding researchers. Among the various challenges of conducting Decision Education research, it is important to recognize the particular operational difficulties and funding difficulties of implementing interventions in classroom contexts and assessing students' decision-making in real life. Therefore, the Alliance aims to support researchers in working with educators to facilitate quality research with high engagements from schools. Furthermore, in order to examine the impact on life outcomes, Decision Education research calls for longitudinal studies, which take significant time and effort to conduct. In order to support researchers in these efforts, the Alliance has committed to providing grant and award funding over the next ten years. Additionally, the Alliance recognizes the need to continue fundraising efforts to support ongoing research in the field.

### Creating Widespread Demand

It is important to create awareness about and demand for Decision Education among various stakeholders, including researchers, educators, parents, policymakers, workforce members, and others. The Alliance has a strategic plan with short and long-term goals across multiple departments beyond Research, including the Community and Partnerships Department, Communications Department, and Education Department. Each of these areas aim to raise awareness, create demand, and build solutions for Decision Education.

<sup>1</sup>Please reach out to [research@allianceforddecisioneducation.org](mailto:research@allianceforddecisioneducation.org) if you are interested in learning more about research in Decision Education.



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## Appendix A: Selected Measures in Decision Education<sup>2</sup>

### Decision Competence Measures

- **Youth Decision-Making Competence** ([YDMC](#)) by Parker & Fischhoff (2005)
- **Pre-adolescent Decision-Making Competence** ([PT-DMC](#)) by Weller et al. (2011)
- **Decision-Making-Competency Inventory** ([DMCI](#)) by Miller & Byner (2001)

### Decision Style Measures

- **Adolescent Actively Open-Minded Thinking Scale** ([AAOT](#)) by Metz, Baelen, & Yu (2020)
- **Compensatory Style Questionnaire** ([CSQ](#)) by Zakay (1990); used among adolescents in Shiloh et al. (2001)
- **General Decision-Making Style** ([GDMS](#)) by Scott & Bruce (1995); validated among adolescent in Baiocco et al. (2008)
- **Maximization Scale** ([MS](#)) by Schwartz et al. (2002); used among adolescents in Yang & Chiou (2009)

### Decision Approach Measures

- **Flinders Adolescent Decision-Making Questionnaire** ([Flinders](#)) by Mann et al. (1988)
- **Proactive Decision-Making** ([PDM](#)) by Siebert & Kunz (2016); used among adolescents in Siebert et al. (2022)

### Cognitive Measures

- **Comprehensive Assessment of Rational Thinking for Youth** (CART-Y) by Toplak (in development)
- **Cornell Critical Thinking Test** ([CCTT](#)) by Ennis et al. (2005)
- **Cognitive Reflection Test** ([CRT](#)) by Frederick (2005)
- **Problem Solving Inventory** ([PSI](#)) by Heppner & Petersen (1982)
- **Junior Metacognitive Awareness Inventory** ([JrMAI-A Grades 3-5](#); [JrMAI-B Grades 6-9](#)) by Sperling et al. (2001)

### Other Relevant Measures

- **Adolescent Capacity to Engage Index** ([ACEI](#)) by Swartwout et al. (2022)
- **California Critical Thinking Disposition Inventory** ([CCTDI](#)) by Facione & Facione (1992); utilized among adolescents in Glassner & Schwarz (2006)

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<sup>2</sup> The selected measures in this appendix have been utilized among children or adolescents.