Innovative Education

Teaching Teens How to Make Good Decisions

Borrowing a page from the O.R. playbook, Decision Education Foundation empowers young people with the skills to make the best choices for themselves.

By Ali Abbas, Dave Reiter, Carl Spetzler and Steve Tani

Good decision-making is an essential life skill, but most people acquire it only through a process of trial and error — if at all. Decision Education Foundation (DEF) is a nonprofit organization that equips young people with powerful decision-making skills to help them better shape their futures. This is the core of our vision: Better Decisions-Better Lives.

Since its founding, DEF has advanced its mission through a variety of programs. In addition to designing and teaching an innovative course for academically gifted teens — the focus of this article — we also have developed and delivered extensive curriculum for troubled teens, as well as for "mainstream" youth. We have linked our curriculum to standard language arts and mathematics courses, and we have created standalone decision courses. We have taught teachers and students. Our sponsor and partner organizations include Strategic Decisions Group, Decision Strategies International, Susquehanna International Group, Microsoft Corporation, Stanford University, Santa Clara University (Calif.), Foothill College (Calif.), Mastery Charter High School (Pa.), Sioux Central Community School (Iowa), Muriel Wright Ranch School (Calif.), Boys and Girls Clubs of the Peninsula (Calif.), and a number of philanthropic foundations. This list is growing daily. Our work is driven by expert volunteers from the decision sciences community, including faculty and students from Stanford University, UC-Berkeley and Wharton, and senior consultants from several companies. This impressive array of people and organizations are linked by our shared vision: "Better Decisions - Better Lives."

DEF is not the first group to teach decision skills to teenagers. Past efforts have been led by Howard Raiffa, Leon Mann, Baruch Fischhoff, Marilyn Jager Adams, Rex Brown, Jonathan Baron, Robin Gregory, Bob Clemen and many others. We strive to be inclusive in our endeavor, and we encourage the participation of all interested parties.

The landscape of decision education in academia is marked by a great divide. Many readers of OR/MS Today are at the forefront of cognitive
psychology and illuminate common behavioral "decision traps" so they can be avoided. Other readers are normative decision theorists who construct optimal decisions from analytic first principles. There are fundamental differences between these two approaches, and each has a powerful story to tell about making better decisions.

To date, the blossoming of these academic disciplines has had little impact on teenagers. Teaching youths to make good decisions has long been a central goal — if not the central goal — of parents and teachers. For most adults, a "good decision" is one that puts a teenager on the right path. "Stay in school." "Don't drink and drive." "Just say no to drugs."

This approach, while well intentioned, does not equip teenagers with decision skills. It does not build the abilities to make good decisions about which job to take, which school to attend, whom to marry, and how to lead one's life. Indeed, there is evidence that the popular "just say no to drugs" DARE program has proven ineffective. The U.S. General Accounting Office reported in January 2003 that "DARE had no statistically significant long-term effect on preventing youth illicit drug use."

DEF takes a different approach. We do not teach teens what to decide; we teach them how to decide. We empower young people with the skills to make the best choices for themselves. This is our cornerstone.

We believe that both the descriptive and the normative approaches are essential for helping adolescents learn to make good decisions, and we incorporate insights from both schools of decision science into our curriculum. An academic understanding of either normative or behavioral decision theory alone is not sufficient. Indeed, young decision-makers do not need decision sciences so much as they need decision skills.

In the following sections we will summarize our objectives, expectations and key learnings from our summer 2002 pilot course for academically gifted teens. We also provide some insights on teaching decision skills to young students and their own expectations for such courses.

The 'Essential Decision Skills' Course

In the summer of 2002, DEF taught a course called "Essential Decision Skills" to gifted high school students as part of the Academically Talented Youth Program at Foothill College in Los Altos Hills, Calif. The class met for two hours and 20 minutes, on each of four days a week, for six weeks — a total of 56 classroom hours. The class consisted of 15 students, ranging in age from 13 to 17, drawn from 10 public and private high schools.

A team of three — Ali Abbas, Carl Spetzler and Steve Tani — taught the course. Two undergraduate interns served as teaching assistants. We had several objectives in mind while preparing for the course. First, we
wanted the students to become better at making decisions in their own lives. Our focus was on developing their skills to make personal decisions, not on training young decision consultants. Second, we wanted to learn how to teach decision skills to young people effectively: What are the special challenges when teaching young people, as opposed to graduate students and executives? What works, and what does not? Third, we wanted to see if we could successfully combine in a unified course the teaching of the "head" and "heart" aspects of good decision-making — something we believe had not been done previously. Fourth, we wanted to learn how to reach out to students and market the course to young people effectively. And fifth, we wanted to use the learning from our interaction with the students in this course to develop new teaching material that could be used for other DEF programs. In the following discussion we will elaborate further on each of the objectives and explain some of our approaches towards them.

We organized the course in four roughly parallel streams (Figure 1).

**The course curriculum consisted of four parallel ‘streams’.

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Figure 1. The course revolved around four parallel streams.

1. **Framework**
   - The power to make decisions is a human birthright.
   - We can take responsibility for the decisions that shape our lives.
   - We can always stop, think and decide.
   - A good decision does not guarantee a good outcome.
   - A good decision makes sense in the head and feels right in the heart.
   - There are six characteristics of a good decision: a helpful frame, creative alternatives, useful information, clear values, sound reasoning and commitment to follow through (Figure 2).
2. Personal and Interpersonal Skills

- Individual traits strongly influence the way we approach decisions.
- The Myers-Briggs Type Indicator is a powerful tool for understanding individual differences.
- Concrete skills pave the way to making good decisions in a team setting.
- Avoid common failings in group decision-making.
- Negotiate to win-win.

3. Correct Reasoning

- There is an axiomatic approach to rational decision-making.
- Decisions are characterized through prospects and probabilities.
- Probabilistic reasoning is governed by simple rules.
- Probabilities are states of belief, not physical quantities.
- Choose value metrics wisely, and understand their properties (e.g., exponential utility functions).
- Incorporate the decision-maker's risk and time preference.
- The value of information can be calculated.
- Decision trees are powerful tools for analyzing decisions.
- Avoid common errors in handling relevance.

4. Process

- There are powerful tools that can help in framing a decision and finding creative alternatives.
- Be careful to identify all of the important outcomes.
- Be careful to avoid biases when assessing probabilities.
- Conduct sensitivity analysis to find areas that need refinement.
- Being ready to make a decision is powerful.
- Commitment and follow-through make decisions real.

In the next section we will present some of the teaching methods we used in the course and then discuss the key learnings obtained from teaching the course.

Variety of Teaching Methods
Some of the teaching methods and media we used are described below.

**Video clips.** Video clips were great to watch in the classroom setting and enabled us to illustrate and discuss situations that would have been more difficult to do otherwise. We built lessons around clips from films like "Billy Elliot," "West Side Story" and "Dead Poets Society." We also showed a video that illustrates the role of peer pressure in decision-making, focusing on a case of cheating in the classroom.

![Image of West Side Story, Dead Poets Society, and Billy Elliot posters]

**Figure 3. Students enjoyed analyzing decisions in major movies.**

**Case studies.** We used case studies to give students hands-on experience with important concepts. We borrowed some of the cases developed by Clemen and Gregory, such as "Lost in the Desert," an interactive role-play in which the characters must decide how to respond when their small plane crashes in the desert. We also developed new case studies, particularly around the issues of balancing head and heart. The following is one such case.

"The Smith family has a big decision to make. Mrs. Smith's elderly mother, Mrs. Brown, has been showing signs of worsening Alzheimer's disease. Her spells of memory loss have become quite disturbing and potentially dangerous. It seems clear that she should no longer live alone in her own apartment. But where should she go? Of course, one possibility is to have her move in with the Smiths. To make space, the two teenage daughters would have to share a bedroom, which does not really sound appealing to either of them. And Mrs. Smith would probably have to adjust her work schedule so that she could be home most of the time to look after her mother. Another possibility is to put Mrs. Brown into some form of assisted-living arrangement. The Smiths are unsure which type of care would be most appropriate for Mrs. Brown, both in her current condition and in her possible future conditions. And Mr. Smith worries about how long Mrs. Brown's financial assets would allow her to remain in assisted living. Meanwhile, Mrs. Smith is wrestling with conflicting feelings. On the one hand, she feels that as a dutiful daughter she should make sacrifices to care for her mother. On the other, she believes that the needs of her own family and of her career weigh heavily toward putting her mother in an assisted-living home."
This example was used to illustrate the roles of head and heart, and to demonstrate the trade-offs that may occur in decision-making between stakeholders and across value dimensions.

**Literary examples.** We also used several examples from literature. Several of the students were naturally drawn to the humanities, and they found these examples particularly interesting. In one example drawn from Shakespeare's "Hamlet," we presented the dilemma that Hamlet describes in his famous soliloquy ("To be or not to be") as a decision situation with uncertainty, as shown in the decision tree below. (This example has long been used in Professor Ronald Howard's Decision Analysis classes at Stanford University.)

![Figure 4. Decision tree for Hamlet's dilemma.](image)

Another example we used from literature was Lewis Carroll's "Alice in Wonderland." The following is an example of a decision situation where Alice is indifferent between the consequences she is facing, and hence is equally happy with any of her alternatives.

**Alice approaches the Cheshire Cat:** *Would you tell me, please, which way I ought to go from here?*

**Cheshire Cat:** *That depends a good deal on where you want to go.*

**Alice:** *I don't much care where.*

**Cheshire Cat:** *Then it doesn't matter which way you go.*

**Alice:** *So long as I get somewhere.*

**Cheshire Cat:** *Oh, you're sure to do that, if you only walk long enough.*

One of the messages we emphasized next is the importance of knowing
our preferences in the decision situations we are facing. If we do not know our preferences, then we lack the grounds to make a good decision.

DEF has developed lessons around decisions in many novels, including Harper Lee's "To Kill a Mockingbird," Ernest Hemingway's "The Old Man and the Sea," S.E. Hinton's "The Outsiders," John Steinbeck's "Of Mice and Men," and several more.

**Group projects.** At the start of the course, we asked students to form teams of two, three or four and to choose topics for group projects. Project topics included: Where should I go to college? Should I date while still in high school? Which car should I buy? Should my mother accept a job with a high-tech startup or stay in her current job? Should my parents buy long-term care insurance? During the middle weeks of the course, we had milestone check-in dates and coaching of the project teams. The teams presented their project results during the last week of the course.

The projects were a chance for the students to apply their learning to a situation of their own choosing. Most of the students were very enthusiastic about this opportunity, and we were pleased that many of them involved their parents along the way.

![Figure 5. A group of four students discusses their term project topic: decisions about dating.](image)

**Hypothetical characters.** Throughout the course, students became very comfortable with the concept of a hypothetical clairvoyant who can tell anything physically determinable in the past, present or future. In addition, they liked the idea of a hypothetical wizard who can make anything happen. It was obvious to them that the services of the wizard would be at least as valuable as those of the clairvoyant. The students were drawn to problems involving these characters, and they helped to bring concepts like "value of information" to life.

**Demonstrations and Socratic teaching.** We used many practical demonstrations that highlighted the relevance of the material taught to real-life situations. Students enjoyed these a great deal — particularly when real money changed hands! For example, on the first day, we led the students through Ronald Howard's thumbtack exercise. In this demonstration, we ask students to bid for a certificate that entitles the
bearer to call either the outcome of a thumbtack flip (pin up or pin down) or a flip of a coin (heads or tails). The highest bidder acquires the certificate and then chooses the device (coin or thumbtack) and calls how it will land. If the call is correct, the bearer gets $20; if the call is incorrect, the bearer gets nothing.

Figure 6. A teacher and student discuss the thumbtack exercise.

The highest bid for the certificate was $7.49, and the student ("John") decided that the thumbtack rather than the coin would be used for the experiment. We then went through a Socratic dialogue with John about the reasons for choosing this bid amount, whether he felt happy with his decision or not, and how much would make him just indifferent to selling it. This led directly to a discussion about sunk cost.

We also explored the value of information, which was a counterintuitive concept at first. For example, students could not understand why they should pay a certain amount of money to know the outcome of the thumbtack before they called. The following conversation (see figure 7) helped clarify the concept.

<table>
<thead>
<tr>
<th>Value of Information</th>
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<tr>
<td><strong>Q:</strong> &quot;John, how much would you pay me to tell you the outcome of the thumbtack before you call?&quot;</td>
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<tr>
<td><strong>A:</strong> &quot;Not more than a dollar!&quot;</td>
</tr>
<tr>
<td><strong>Q:</strong> &quot;Well, what if you call wrong?&quot;</td>
</tr>
<tr>
<td><strong>A:</strong> &quot;Well, I will take my chances on that.&quot;</td>
</tr>
<tr>
<td><strong>Q:</strong> &quot;OK, how much money would make you just indifferent to selling the certificate?&quot;</td>
</tr>
<tr>
<td><strong>A:</strong> &quot;Nothing less than I paid for it.&quot;</td>
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This opened up room for discussion on the sunk cost principles. After that, the answer was "$7.49".

Q: "OK, I do not have change, here is $20, would you give me $12.51 and the certificate?"

A: "Sure."

Q: "If I reveal to you how the thumbtack landed is it the same to you as getting $20 for sure and giving up the certificate?"

A: "Yes."

Q: "Now, if you give me $12.51 for this service, it is just as if I bought the certificate from you and you gave me $12.51 back."

**Figure 7. Socratic conversation about value of information.**

This analogy was clear, and towards the end, they could calculate the value of perfect information. After flipping the thumbtack, John called incorrectly and lost his bid amount. He then said, "Now I realize the value of information!" We stopped at that level and did not go into the value of imperfect information, although the students did say they would value imperfect information depending on how reliable the information source was and that they could see intuitively it should be less than the value of perfect information.

**Tools for probability encoding**: the probability wheel. We found that students were very comfortable with the concept of a probability wheel. This physical tool makes the sizes of uncertainties more concrete for the decision-maker. (See Figure 8.) This tool led the way to further discussions on biases in probability encoding as well as risk attitudes. Students got very comfortable with the "wheel" and asked for it during their group exercises.
Role-play. We also relied on role-play and found it very effective when students communicated the ideas to their peers themselves. Role-play was very helpful in exercises such as "thinking about possibilities and consequences" where students were asked to think of consequences for certain decisions they make.

Key Learnings

Expectations. One of our main concerns in preparing the course was student interest. Would spending the summer learning decision skills be considered "uncool"? How would students react when asked to discuss their personal decisions in front of the class? Furthermore, we did not know what the students' own expectations were about the course. What did they have in mind? What did their parents have in mind? How hard were they willing to work during the summer?

Because of our uncertainty about all these matters, we were determined to clear these issues and manage the expectations on both sides from the very first day. We asked them simply, "Why are you here?" Figure 9 shows some of the responses to this question.

<table>
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<th>Why are you here?</th>
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<tr>
<td>&quot;My parents told me to.&quot;</td>
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<td>&quot;I am really not sure.&quot;</td>
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<tr>
<td>&quot;It's a rare class and sounds really interesting.&quot;</td>
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<tr>
<td>&quot;This is the only class I wanted to take this summer.&quot;</td>
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<tr>
<td>&quot;I make decisions quickly and am usually wrong so I want to learn about how to make good decisions.&quot;</td>
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<tr>
<td>&quot;This class sounds very useful.&quot;</td>
</tr>
<tr>
<td>&quot;I thought I would try something new this summer.&quot;</td>
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<tr>
<td>&quot;My dad is a businessman. He was very excited to learn that decision-making can actually be taught. He said it was taught by a bunch of guys from Stanford who sound very confident in their approach. I am always hesitant and do not know how to make decisions. I figured this would be something very worthwhile.&quot;</td>
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Figure 9. Students' responses to why they are taking the course.

As anticipated, we had a mix of responses ranging from indifference to enthusiasm. Some of them had an idea about the nature of the class, others were drawn to something that is not usually offered, and some expected a class with some math relevance in order to practice their algebra during the summer. We also noticed that students brought their friends to attend after the first few days. Word-of-mouth was an
important marketing tool for the course. A learning that surprised us is that many of the students at the end of the course felt that its title, "Essential Decision Skills," did not do justice to its content.

To summarize the main learning here, students' expectations varied from amorphous to specific and enthusiastic. Some expectations matched ours, but the majority had very little knowledge about the nature of the course and the material being taught.

**Probability education.** Knowledge of probability among the students was another concern at the beginning. We soon learned that none of the students had prior formal training in statistics and probability. However, this did not pose major problems in our discussions. In fact, from day one we started talking about uncertainty, and students found this concept very intuitive. They also quickly grasped the notions of possibility trees and consequences of decisions. Students had no problems drawing possibility trees and were very creative constructing possibilities for outcomes of a given decision situation such as parents' reactions to skipping school or the consequences of cheating on an exam. The majority, however, had difficulty in dealing with abstract labels (e.g., "A" and "Not A") for the branches of the tree.

![Figure 10. A student works through a decision tree. Students found it difficult to work with abstract labels like the ones pictured here (A1, A2, A3); they found it easier to understand trees with more meaningful labels (e.g., Win, Lose, Draw).](image_url)

We asked students to assign probabilities to the possibilities, using the probability wheel or notions like, "Which is more likely to be your parents' reaction?" After that, the idea of tree flipping was straightforward. We did not use the phrase "Bayes' rule" in our discussion, but Bayes' rule just came naturally. Students could not see tree flipping in any other way than to sum the probabilities at the end of the tree and match them in the flipped tree. They were given "The Monty Hall Problem" and other tree-flipping exercises, and they solved them relatively easily. It was clear to us that lack of probability training was not a barrier to their learning the concepts and, in fact, may have been beneficial. For example, if we refer back to the thumbtack...
demonstration, we asked the question:

"Would you be willing to trade your thumbtack deal for a deal where you would call the outcome of a coin flip instead?"

When this demonstration is conducted in university graduate level courses, about 40 percent of the students (all of whom have taken probability classes) are willing to swap the thumbtack deal for the coin toss. Their rationale is that they do not know a value for the probability of calling correctly on a thumbtack and feel uncomfortable about this "ambiguity." However, they feel that the probability of the coin is "known" and is equal to 0.5.

In this group, which had not taken any probability classes, none of the students was willing to trade the thumbtack deal for a coin flip. This was remarkable. They all felt they had a higher chance of calling correctly with a thumbtack, and so there was no reason to switch to a coin. Any descriptive notion of "ambiguity aversion" did not exist.

To summarize our learning about probability education, we found that this was not a barrier to learning decision skills, and that it may even have been beneficial that they did not take prior probability classes.

**Head and heart aspects of decision-making.** What do we mean by "head" and "heart"? Most people intuitively understand these distinctions, but they are hard to define. The head side includes critical thinking and the analytical components of decision-making. The heart side includes the personal and interpersonal aspects of decisions, such as values, relationships, preferences, emotions, conflicts, feelings, etc. If a decision does not both make sense and feel right, then we need more work until the head and heart are aligned. People differ significantly in terms of whether they lead from the head or lead from the heart in their untrained decision process. Therefore, what it takes for each of us to get to a good decision may be significantly different. That is why we say a good decision has to make sense in the head and feel right in the heart.

While this distinction is not exactly the distinction between math/science and the humanities, combining head and heart in decision-making requires a multi-disciplinary course that does not neatly fit into either mathematical or humanities curricula. Putting these two together is perhaps DEF's most ambitious aspiration. When making decisions, many people say, "Just trust your heart (or intuition or gut or friends...)." These people are often afraid of or turned off by heartless logic. Others believe in logic and reasoning as the primary driver of good decisions. They consider heart-driven people as irrational and controlled by their emotions. We found tremendous resonance with the students in attempting to balance both aspects and in accepting that others may have a different starting place.

**Declaring a decision.** One of our main objectives while designing the course was for students to become better at making decisions in their own lives. With this in mind, we tailored our examples to personal
decision-making. One significant difference between teaching personal
decision-making to young people and teaching business decision-making
to executives occurs at the very beginning of the process, in the stage we
call "declaring a decision." In business situations, it is often apparent
when a decision needs to be made and who should make it. By contrast,
in the lives of young people, it is all-too-easy (and all-too-common) to
fail to see that a decision can or should be made and to see that the
young person can take responsibility to make the decision.

Too often, people drift through life in a reactive mode. They encounter
situations and react to them without even acknowledging that they are
making decisions, much less giving any thoughtful consideration to their
options. This need not be the case. First, we must recognize that doing
nothing or "going with the flow" can be a decision in itself. A decision is
a choice made by a person to take one path and not others. No decision
exists if there is only one path available. Many times, people see only
one path as obvious, and thus they "react" to a situation by following the
only path they see.

Perhaps the following example we experienced in one of our other DEF
programs best demonstrates young adults' perception about declaring a
decision. The example is a conversation that occurred between a DEF
teacher and "Bernard," a 16-year-old teenager in the Juvenile Hall in San
Jose.

DEF: How did you get here?

Bernard: So, I'm driving along and this guy pulls up next to me and
looks at me funny. So I pull over, he pulls over, and I beat him down. I
drive off, he calls the cops, the cops arrest me, and now I'm here.

DEF: What do you think about the decisions in your story?

Bernard: [thinking]...Well...he decided to look at me funny. He decided
to call the cops. The cops decided to arrest me. So I don't like decisions
— they put me here!

Who really makes decisions in Bernard's life? We devoted several
lessons in the first week of the course emphasizing how making
decisions can shape one's entire life. Next, we made the point that the
young people themselves are (or would be soon) responsible for making
the choices that will shape their lives. Finally, we taught that one should
be alert to the need or the opportunity to make a conscious choice.

Figure 11 shows a graphic that we developed and found very effective in
emphasizing this point. The failure mode that we want the young people
to avoid is to "go with the flow" — to go through life letting outside
forces determine one's actions. Instead, we want young people to use the
"wedge" of conscious choice to cut the link between stimulus and
unthinking response and to select an action based on thoughtful
consideration. The mantra is "Stop, Think and Decide."
Decision declaration is often a non-topic in courses for graduate students and executives. For teens, however, this is a crucial skill to develop. Our experience with this course reinforced the importance of this subject, and the students appreciated this key topic.

**Our learnings.** We learned many lessons from teaching young students and interacting with them during the six weeks of the course. We are finding some of these lessons useful in the world of business decision consulting and academia.

The first lesson was that the material we teach can be made easier to understand and more accessible to a wider and general audience. We do not need to use abstractions if it is not necessary for the setting.

We learned that addressing both the head and heart sides of a decision problem from the very beginning creates a much richer and useful integrated perspective. It also makes the topic of interest to a much broader community. However it is demanding, since most people default to emphasizing one side or the other.

We also found that the front end of the decision process, declaring the decision, and its back-end, commitment to follow through, were of great value and worthy of more attention in our discussions.

**Conclusions/Results/Epilogue**

DEF learned a great deal from this course; so did the students. By the end of the course they each demonstrated a high degree of decision competence through quizzes, tests, term projects and classroom discussion.
We wondered what a group of teenagers would think of a decision skills course. We found that when they signed up for the class they did not know what to expect, for they had never before heard of "decision skills." At the end of the six weeks, we asked them to evaluate the course on a scale of 1 to 10, where 1 = "waste of time," 5 = "typical high school class," and 10 = "exceptional; should replace typical high school class." The scores ranged from 6 to 10, with a mean of 7.8.

We also asked the students for qualitative feedback. Here are some representative student responses:

"I will try to apply all this knowledge to future decisions. I will recommend this class to anyone I know."

"My bad decisions have gotten me into a huge amount of trouble in the past. I am so glad I can make good decisions from now on."

"The material in this class is a message worth spreading as much as possible."

"This was a fascinating course. It was interesting, informative, and gave me concepts and skills I feel sure I will utilize for a long, long time to come... I gained a lot from the psychological concepts we went through."

"Now I recognize decisions much more readily... The surprising thing about the course is how it didn't include only math but encompassed a number of things to offer a broad yet complete view of decision-making."

"Enrolling in [the] Decision Skills class has been one of the best decisions I have ever made."

"I feel this course teaches kids a very important tool in life that is constantly being used. Being able to make [decisions] carefully and thoughtfully is key to survival in our world today."<p>"Correct decision-making skills is not a pool of information that will dry up after high school for lack of use, and this fact alone makes the time spent in a classroom each day valuable... [My mother] is relieved to know I have learned something that I can use in guiding myself through life's tough decisions without her."</p>

The students' classroom performance and enthusiasm were high, but we wondered how well this material would "stick" and make an impact on their daily lives. Six months after the course ended, we surveyed the students and invited them to attend a focus group. We found that the students remembered the broad themes of the course very well, and remembered most, but not all, of the specific concepts. Some of the students had applied the course concepts to decisions in their lives over the preceding six months. On the other hand, half of the students felt that they had not made any important decisions during this period. Most felt better prepared to face any difficult decisions that might arise.

Particularly heartening for us was the decision of five of the students to
join DEF’s Youth Advisory Council. This volunteer group of young people helps DEF to tailor its message for a teen audience.

Perhaps the course’s greatest success was in curriculum development. The materials created for the course have provided the foundation for several subsequent DEF programs. One of these was an 80-hour workshop for high school math teachers at Stanford University, titled "Decision Analysis: Math in the Real World." Our goal was to help teachers make math come alive by linking it directly to their students' decisions. We look forward to sharing learnings from this and other DEF efforts in the future. In the meantime, to learn more about DEF and its broad range of programs, please visit our Web site: www.decisioneducation.org.

References

14. Universal Studios, 2000, "Billy Elliot."
15. www.decisioneducation.org

Ali Abbas is currently a lecturer at Stanford University and will be an assistant professor at the University of Illinois-Urbana Champagne in the fall. He has a Ph.D. in decision analysis from Stanford and has taught decision analysis to graduate students, business executives,
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**Dave Reiter** guides people through life-shaping decisions as a life decision coach. He is the former executive director of Decision Education Foundation and now sits on its Advisory Council.

**Carl Spetzler** has a Ph.D. in business and economics from Illinois Institute of Technology. He is a founding member of Decision Education Foundation and chairman of Strategic Decisions Group.

**Steve Tani** has a Ph.D. in engineering economic systems from Stanford. He has worked as a consultant in strategic decision-making for several decades.

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**Acknowledgement**

The authors thank Ronald A. Howard for many suggestions on designing the course, and many volunteers from the Decision Education Foundation who have helped in curriculum development and on the enhancement of this paper. We thank Strategic Decisions Group (SDG) for providing technical and office support for the "Essential Decision Skills" class.