PART I

Approaching Uncertain Futures

CHAPTER 1

What Do We Owe Students?

> There is no future without education.
>
> —Attributed to Rosa Parks

> Education is the most powerful tool to change the world.
>
> —Attributed to Nelson Mandela

> The purpose of education is to prepare young people for the future.
>
> —Guy Claxton[1]

What do we owe current and future generations of young people? Although there are many ways to respond to this question, most agree that we owe them an education that prepares them for the future.[2] Education, viewed from this perspective, represents a kind of promissory note to young people and their families: *If students are willing to put in the time, effort, and resources required, then their educational experiences will help equip them to navigate future uncertainties successfully and productively.*

This promissory note reflects a transactional ethos of education (i.e., "If you learn this now, then you will gain something from it in the future"). The transactional ethos of education is not without critique or limitations,[3] several of which will be explored in this chapter. Regardless of the potential benefits and limitations of a transactional educational arrangement, the more general claim remains that a key goal of education is to prepare young people for the future.

With this in mind, we can then ask, "what exactly does it mean to prepare young people for the future?" The aim of this introductory chapter is to address this question and, in turn, use it as a jumping-off point for the remaining chapters of this book.

[1] Claxton, "What's the point of school? Rediscovering the heart of education."
[2] Ibid.; Hannon & Peterson, "Thrive: The purpose of schools in a changing world"; McDiarmid & Zhao, "Learning for uncertainty: Teaching students how to thrive in a rapidly evolving world.
[3] Ambrose, "Discovering and dismantling enormous barriers hindering the transition from transactional to transformational giftedness."

What Does It Mean to Educate Young People for the Future?

One way to understand what it means to educate young people for the future is to recognize that education involves developing students' competence in understanding and doing things that they currently are not able to understand or do. In this way, teaching and learning always and already have a future orientation.

Learning is ultimately about change,[4] which involves movement from one's current state of knowing (or unknowing) and doing (or not yet capable of doing) toward a new state of knowing and doing. And teaching is about facilitating the process of learning. Although there have been debates about whether learners always need teachers and formal instruction to learn,[5] few people would deny that teaching can accelerate and enhance the process of developing students' competence.

Competence development alone is not, however, sufficient to prepare young people for future performance and success.[6] Indeed, even if young people can be successful, but do not believe that they are capable of success, then they likely will give up more quickly in the face of difficulty, avoid taking adaptive risks, procrastinate, and even attempt to avoid engaging in new learning activities.[7] Confidence development is therefore also important for future success.

As will be discussed later in this book, confidence in one's abilities serves as the motivational driver for students to engage with tasks, persist in the face of challenges, seek assistance when needed, and know when to pivot away from dead-ends and toward more feasible goals. Confidence has also been found to be a unique predictor of competent performance, persistence, and future aspirations in various academic and performance domains.[8]

We can therefore say that preparing young people for future success involves developing both their confidence and competence. How do students develop competence and confidence? The obvious answer is through experience. And those experiences can be *direct experiences* (learning by doing plus receiving informative feedback) and *indirect or vicarious experiences* (e.g., learning from watching others who clearly demonstrate

[4] Alexander et al., "What is learning anyway? A topographical perspective considered."
[5] Ranciere, "The ignorant schoolmaster."
[6] Bandura, *Self-Efficacy: The Exercise of Control*; Bong & Skaalvik, "Academic self-concept and self-efficacy: How different are they really?"
[7] Elliot et al., "Handbook of competence and motivation: Theory and application."
[8] Ibid.

and even explain what they are doing), or some combination of both indirect and direct experience.[9]

A common goal of most educational experiences therefore involves providing students with direct and indirect experiences aimed at helping them to develop their confidence and ability in learning what is taught. This typically takes the form of having students observe teachers explain and demonstrate what is to be learned, and then provide students with guided practice trying out and receiving feedback on their developing understanding and performance. This arrangement is so seemingly obvious that it hardly requires description.

However, if we are to take seriously the question of how to prepare young people for the future, then it throws a bit of a wrench into this seemingly obvious approach because much of the future is unknowable, which raises the paradoxical question: How can we prepare students for what we do not yet know?

John Dewey, the American pragmatist, highlighted this paradox more than a century ago. As Dewey explained, "it is impossible to foretell definitely just what civilization will be twenty years from now. Hence it is impossible to prepare the child for any precise set of conditions."[10] Dewey's comments should give us pause. Given that the future is unknowable, can education really prepare young people for the future? One way to address this question is to expand our understanding of the future.

Not *the* Future, but Multiple Futures

Expanding our view of the future starts with the recognition that there is not one future, but multiple futures. As the future studies scholar Jim Dator has argued, "The future cannot be predicted because the future does not exist."[11] Dator's assertion aligns with the paradox Dewey highlighted, but futurists offer a way out of this paradox. Specifically, the future is not a singular, yet-to-be-experienced state, but rather represents a plural set of possibilities.[12]

Consequently, one way out of this paradox is to recognize that "there is no future but *multiple futures* with varying likelihoods."[13] Equipped with this understanding, we can then view possible futures as ranging from

[9] Bandura, *Self-Efficacy: The Exercise of Control.*
[10] Dewey, "My pedagogic creed."
[11] Dator, "What futures studies is, and is not."
[12] Glăveanu, *The Possible: A Sociocultural Theory*; Poli, Handbook of anticipation: Theoretical and applied aspects of the use of future in decision making.
[13] Gall et al., "How to visualise futures studies concepts: Revision of the futures cone."

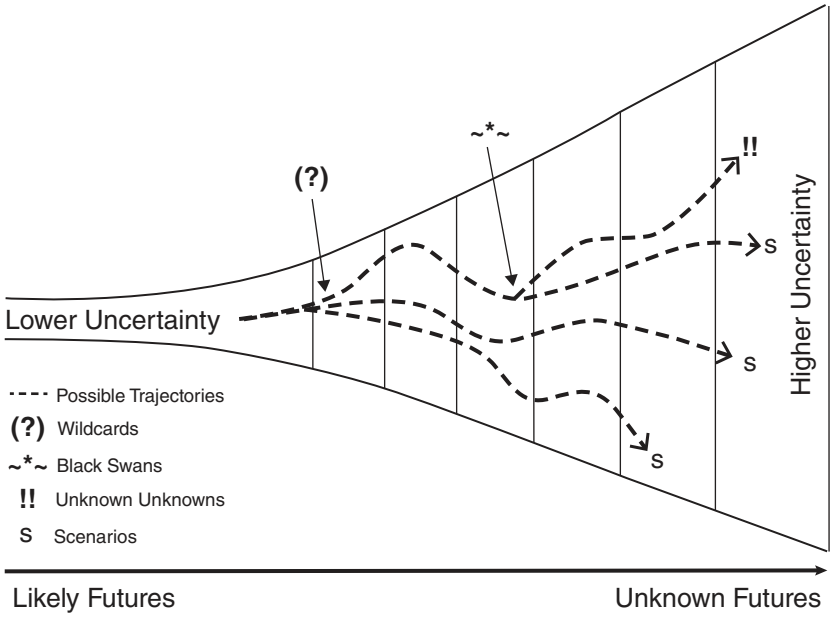

Figure 1.1 Possible trajectories from likely to unknown futures

likely and plausible futures to possible and even seemingly impossible futures. Although impossible futures may be unattainable, it is also important to note that what once seemed impossible can, in fact, become a reality.

When it comes to designing educational experiences aimed at preparing young people for multiple futures, it may therefore be helpful to have a simplified model that represents various trajectories through uncertain futures. Figure 1.1 is an example of such a model.[14]

As illustrated in Figure 1.1, there are various possible trajectories that move from likely futures to unknown futures. No particular future is predetermined. What seems likely now may never come to pass. In fact, even when we find ourselves moving along what seems to be a fixed trajectory, we can experience a "wild card" event, which catches us by surprise and changes our trajectory.[15] Wild cards can occur at the individual level or even at the global level. And considering the possibility of

[14] This is a visual representation of varying levels of uncertainty and possible trajectories among likely and possible futures (figure drawn by the author based on ideas and illustrations presented in ibid.).
[15] Ibid.

wild card events, as part of scenario planning, can help us expand our view and push us to consider a fuller range of possibilities and alternatives beyond our current thinking.[16]

COVID-19 serves as an example of a global "wild card" event. Even though global pandemics have occurred in the past (e.g., the 1918 Spanish flu), COVID-19 still caught many people off-guard. Wild card events are considered unlikely possibilities until they occur. And once they do occur, they can have a profound impact on the trajectories and the futures of individuals, entire countries, and global societies.

Black swans are another example of events that can transform possible trajectories through uncertain futures. Like wild cards, black swans are potentially high-impact events that can transform our understanding and experience of unknown futures. Black swan events differ from wild cards because black swans represent seemingly impossible occurrences. They are events that we may be able to imagine but believe that they are not possible. Once we do encounter them, however, they transform our beliefs about what is and is not possible.

As its namesake implies, black swans were once thought to be nonexistent because there was no recorded account of observing them in nature until they were encountered in 1697, on the Swan River in Western Australia, by the Dutch explorer Willem de Vlamingh.[17] Although wild cards and black swans are highly unlikely, they are possible to imagine and anticipate (e.g., there might be another pandemic or there might be extraterrestrial life forms).

In addition to wild cards and black swans, there are "unknown-unknowns,"[18] which we cannot even imagine, but when encountered transform our futures. The iPhone serves as an example. People who lived a century ago likely could not have imagined the Internet, let alone devices such as the iPhone. And when the iPhone was made available, it was difficult to predict the profound impact it would have on the lives of those who have access to it. Although specific unknown-unknowns cannot be imagined or expected prior to their manifestation, they do serve as reminders that even the seemingly unimaginable is a possibility.

Figure 1.1 also illustrates how scenarios can move us beyond likely futures and consider possible and plausible future states. In this way, scenario building can serve as a tool for futures thinking, which can shape

[16] Barber et al., "Wildcards: Signals from a future near you."
[17] Hakan, "Philosophy of science and black swan."
[18] Gall et al., "How to visualize futures studies concepts: Revision of the futures cone"; Gustafson, "Strategic horizons: Futures forecasting and the British intelligence community."

our present behaviors and, ultimately, bring about different pathways that can open a broader horizon of possible futures.[19] Indeed, scenarios help us transform the "psychological distance"[20] and abstractness of possible futures by making possibilities conceptually closer, more concrete, and actionable in the here and now.

An extensive example of how scenario building can help us not only imagine but also consider what actions can be taken to bring about new possibilities is presented by the engineer and entrepreneur, Balaji Srinivasan, in his book, *The network state*.[21] According to Srinivasan, it is possible for us to move into what he calls "a network state." A network state reflects a future scenario that describes an organized online community, which is geographically decentralized and connected by the Internet, has a robust digital currency and internal economy, is capable of collective action, and can eventually gain diplomatic recognition and sovereignty from existing and legacy states. Although a network state does not yet exist, Srinivasan describes how movement to such a possibility can be mapped out and, ultimately, realized.

In addition to describing more macro-level futures, scenarios can also help us consider the likelihood of various finer-grain possibilities, including possibilities for new educational designs. Scenarios can thereby help us identify actionable possibilities for how we might move from "what is" to "what might [or should] be"[22] in education. Potential wild card and black swan events can also be considered for each scenario that could change the likelihood and nature of a particular scenario.

In this way, building out different scenarios of future educational designs can serve as a starting point for considering different possibilities (including seemingly impossible scenarios) for the future and how those different possibilities might be realized by acting in the present. More specifically, building scenarios allows us to lift ourselves beyond existing educational designs and map out new possibilities for what education can be. Doing so is not simply an exercise in imaginative thinking but rather enables us to specify actionable steps that we can take to bring about new and previously unimagined possibilities. Scenario building thereby serves as a powerful form of *pragmatic pretense*.[23]

[19] Gall et al., "How to visualise futures studies concepts: Revision of the futures cone."
[20] Trope & Liberman, "Construal-level theory of psychological distance."
[21] Srinivasan, "The network state: How to start a new country."
[22] Craft, "Possibility thinking: From what is to what might be."
[23] Beghetto, "A new horizon for possibility thinking: A conceptual case study of Human x AI collaboration."

Pragmatic pretense is a form of possibility thinking that enables us to identify and explore possibilities for transformative action (pragmatic) by deviating from the actual (pretense). Pragmatic pretense blends "what if?" and "as if?" thinking[24] to not only imagine different educational futures (what if?) but also treat them *as if* they are possible. Narrating how each of these possible future educational designs came into being can, in turn, serve as a powerful way of identifying potential pathways into those scenarios.

Ray Kurzweil, the futurist and inventor, for instance, often uses a combination of *what if* and *as if* thinking to imagine, "What if some new invention could be created?" and then describe it "as if" it already exists. Doing so has allowed him and his team to identify actionable steps to realize those new possibilities. He explained this process in a 2022 podcast interview:[25]

INTERVIEWER: You've invented a lot of things, you've [come up with] and thought through some very interesting ideas. What advice would you give, or can you speak to the process of thinking, of how to think? How to think creatively?

KURZWEIL: . . . I think the key issue that I would tell younger people . . . is to put yourself in the position that what you're trying to create already exists and then you're explaining. . .

INTERVIEWER: How it works?

KURZWEIL: Exactly.

INTERVIEWER: That's really interesting. You paint a world that you would like to exist in. As if you think it exists and reverse engineer it . . .

KURZWEIL: And then you actually imagine you're giving a speech about how you created this . . . well you'd have to then work backwards as to how you would create it in order to make it work.

INTERVIEWER: That's brilliant. And that requires uh some imagination too, some first principles thinking you have to visualize that world . . . that's really interesting.

KURZWEIL: And generally, when I talk about things we're trying to invent I would use the present tense as if it already exists. Not just to give myself that confidence, but everybody else who's working on it . . . [then you] just have to kind of do all the steps in order to make it actual.

As this snippet from Kurzweil's interview illustrates, using scenarios as a form of pragmatic pretense can enable us to not only imagine something we want to create but also, by treating it as if it already exists, we can then start narrating how it came into being. This, in turn, can bolster our own

[24] Craft, "Possibility thinking: From what is to what might be."

[25] Lex Fridman Podcast #321.

and others' confidence in figuring out ways to transform the actual by bringing new possibilities into reality.

Finally, Figure 1.1 highlights the fact that uncertainty is ever present in both likely and unknown futures. The figure also illustrates how uncertainty grows as we move from likely futures to unknown futures. Although the increased uncertainty of possible futures can make us feel a bit out of control, a key assertion of this book is that all of us can still be creative agents in our futures.

We can indeed imagine and entertain new and better future possibilities. Doing so can also shape our present actions to increase the likelihood of bringing about those possible futures. The same can be said for young people. Young people are capable of learning how to productively navigate future uncertainties in the here-and-now, but they need opportunities and experience to do so.

This is not to say that experiencing uncertainty is a pleasant experience. Indeed, we often want to avoid or at least reduce uncertainty in our lives, rather than increase it. If, however, we are willing to rethink our relationship with uncertainty and the potential that it holds for bringing about new possibilities now and into the future, then we can be in a better position to recognize that uncertainty serves as an opportunity for creative action.[26] And, as will be discussed in the remainder of this book, supporting students in taking creative action in the face of uncertainty can contribute to their own and others' learning and lives.

Summary and Next Steps

The ideas presented in this book represent scenarios for how educators can design learning experiences that move us from business as usual in education to new and broader possibilities for young people. It thereby serves as an invitation to embrace uncertainty, engage in possibility thinking, and most importantly act on those possibilities. To this end, the protocol and example walk-through presented in Application 1 at the end of this chapter can be used by educators, students, and anyone interested in starting to explore and take action on different scenarios for future educational designs. The protocol can also be adapted and modified to be more tailored and relevant for a particular group and context (e.g., classroom exercise, professional development workshop for educators, community meeting, and so on).

[26] Beghetto, "There is no creativity without uncertainty: Dubito Ergo Creo."

The next two chapters focus on describing two types of educational designs aimed at preparing young people for navigating uncertainty in learning and life. Chapter 2 focuses on the prototypical or default approach aimed at preparing young people for *likely futures*. Chapter 3 then moves us beyond likely futures and invites us to consider how we might design learning experiences aimed at preparing students for the greater uncertainty of *unknown futures*, which is the focus of the remainder of this book.