

CHAPTER I

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 Claxton¹

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.”

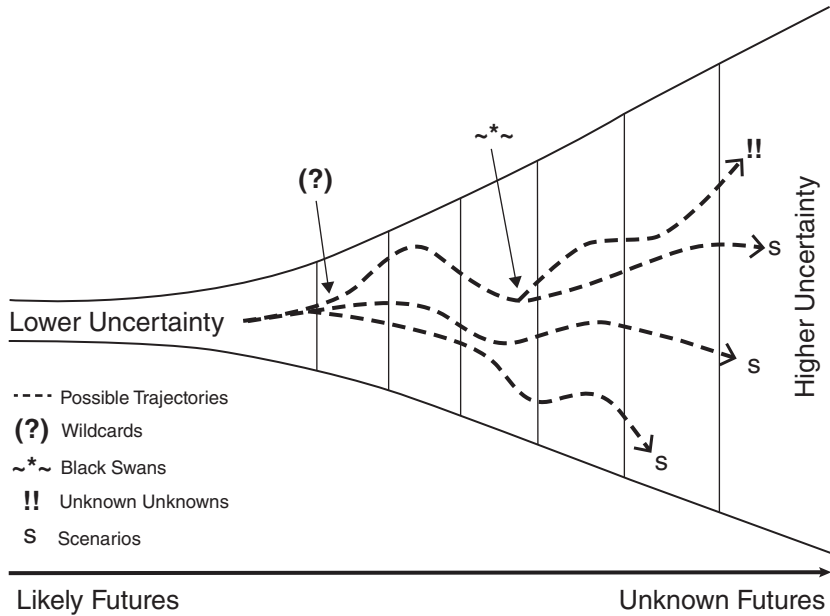


Figure 1.1 Possible trajectories from likely to unknown futures

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?” thinking²⁴ 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.

APPLICATION 1 EXPLORING POSSIBLE EDUCATIONAL FUTURES

Overview

This first application includes a protocol and walk-through aimed at helping educators, students, educational designers, and anyone interested in exploring a range of possible educational futures. Each is briefly previewed and then presented in what follows.

Application 1.1 Educational Futures Protocol

The purpose of this protocol is to engage in a scenario-building exercise with the aim of imagining and describing a range of possible future educational designs to help students learn how to better navigate uncertainty in their learning and lives. To this end, the protocol starts with identifying actionable possibilities for how current educational designs can be transformed into new and more viable alternatives.

Application 1.2 Walk-Through: Educational Futures Protocol

This walk-through is aimed at providing a brief example of how the *Educational Futures Protocol* was used to facilitate a scenario-building exercise exploring a range of possible future educational designs. Although the protocol is best suited for use with a group of two or more people, it can also be used by one person in collaboration with natural language AI chatbots.²⁷

This walk-through thereby demonstrates how individual use in collaboration with AI can be generative in providing potentially insightful scenarios. As natural language AI chatbots continue to improve and become increasingly available, they represent a potentially viable option for individuals who want to use this (and other protocols provided in this book) in partnership with AI.

Application 1.1 Educational Futures Protocol

Group size: 1 to 30+

Process

1. Introduction: A facilitator of the activity describes the purpose of the protocol; this can include introducing participants to consider the

²⁷ The author worked with the GPT model available in the OpenAI playground to produce the walkthrough. The resulting “conversation” was lightly edited by the author to increase readability.

question: *What kind of education do we owe students to better prepare them to navigate current and future uncertainties?*

2. Describe an existing educational design: Briefly describe the features of an existing educational design. This can be a higher-level description (e.g., the educational structure, organization, activities, and experiences) or more tailored and specific (e.g., the features of a particular educational program or course).
 - Provide a description of an existing educational design for a given population in a particular time and socio-cultural context.
 - Describe features of the existing design.
 - What are some strengths and limitations of this existing design? What is working and should be maintained? What should be changed and why?
3. Imagine and describe a range of future educational designs: In this step of the process, participants describe different possibilities for educational designs that can better prepare young people to navigate current and future uncertainties. Participants can be invited to consider new designs that build on existing strengths and address limitations of the current design. Participants should be encouraged to imagine and describe designs based on their likelihood of occurring (ranging from likely and plausible to unlikely and even seemingly impossible). When working in groups, each group can work on scenarios that differ by their likelihood of occurring in the future. Each scenario can then be shared and discussed with the whole group.
4. Clarify: In this step, participants can request additional clarification from anyone (or group) who has presented a scenario to get a better sense of what is being proposed. It is okay if there are not too many specifics as requesting clarification can be a shared discussion aimed at further elaborating on the scenarios, particularly unclear aspects, so that participants can gain a better understanding of the features of the scenarios.
5. Select a compelling design for additional exploration: In this step of the process, participants select one (or more) scenario(s) for further exploration. Participants can then be invited to treat this scenario “as if” it already exists and describe how it came into being (i.e., how was the actual, existing design transformed into this design). Participants can also consider potential strengths (i.e., why this design offers a better alternative to the previous, existing design) and limitations (e.g., potential hazards, barriers, and unintended consequences) of this design; what steps can be taken to build on strengths and proactively

address limitations; and how future wild card or black swan events can impact our ability to bring this design into reality.

6. Reflect: Invite participants to reflect on this scenario-building exercise.
 - What did we learn from this process?
 - What, if any, possibilities can be acted on now to make transformations?
 - What are some next steps that can be taken from these insights?
 - What questions and concerns remain?

Application 1.2 Walk-Through: Educational Futures Protocol

Group size: Human participant (Author) and AI partner.

Introduction: Describe an Existing Educational Design

AUTHOR: Here's an example of a common (although not universal) educational design: Students are taught about an academic topic through some combination of lectures, class discussions, and required readings. The students are all taught in the same way and at the same time. The students are then expected to demonstrate in assignments and tests their individual understanding by reproducing what was taught. What do you think is a key strength of this design?

AI PARTNER: The key strength of this design is that it provides structure and consistency in the learning process. It also allows for a lot of feedback and evaluation. Additionally, there is an opportunity for collaboration between peers, allowing them to work together on the same assignments and share ideas with each other.

AUTHOR: I agree that some level of consistency and structure is important in education. I also agree that evaluative feedback and collaboration are also strengths of this design. What are some key weaknesses?

AI PARTNER: Some key weaknesses of this educational design include an overemphasis on rote memorization, a lack of personalization and customized learning plans, and limited opportunities to explore topics in-depth or from multiple perspectives. Additionally, it can be difficult for teachers to ensure that all students fully understand the material being taught, which can lead to lower overall performance levels.

Moving to Alternative Designs

AUTHOR: I also agree with several of the weaknesses you outline, including lack of depth, personalization, and missed learning opportunities. Another weakness I see is a lack of opportunity for students to develop their confidence and competence in navigating uncertainty because the focus is

on learning and reproducing “known-knowns” without opportunities for students to tackle more open-ended and ill-defined problems.

Let’s now consider a likely future educational design. This possibility represents “business as usual” in education, whereby much of what already occurs will be represented in the foreseeable future. Although there may be surface-level changes that can better prepare young people to navigate current and future uncertainties, the core educational design remains the same. What would it look like?

AI PARTNER: “Likely Future Educational Design”: In this educational design, the core structure would remain largely unchanged. However, there may be an increased focus on providing personalized learning plans to suit each individual student’s strengths and weaknesses. There could also be more opportunities for students to engage with open-ended projects or explore topics from multiple perspectives rather than being limited to rote memorization of facts. Additionally, technology such as artificial intelligence (AI) can help provide tailored feedback, which helps to foster self-directed growth outside of classroom instruction hours (e.g., supplementing independent study materials with online coursework platforms).

AUTHOR: Okay, let’s next consider a “*plausible*” *future educational design* that includes new and different design possibilities that are less probable, but still believed to be actionable.

AI PARTNER: A plausible future educational design could include more cross-disciplinary studies that focus on the integration of different subjects. For example, this might involve students studying a combination of psychology and economics to better understand stock markets or combining biology with computer science to understand how medical technology can provide solutions to problems in medicine.

Additionally, there may be an increased emphasis on personalized learning methods which use AI-powered recommendation engines to tailor content based on the interests and abilities of each individual learner. Doing so would provide students with greater autonomy in their learning, while still providing guidance when needed by teachers and mentors.

AUTHOR: Now, let’s consider an “*unlikely*” *future educational design* that includes new and different design possibilities that are unlikely and may not be believed to be actionable.

AI PARTNER: An unlikely future educational design could include the implementation of virtual reality (VR) in classrooms where students interact with a simulated environment that is designed to replicate real-world scenarios. This technology can be used for project-based learning which immerses them in an interactive and engaging way, allowing teachers or mentors to guide their decision-making process through feedback loops without having direct control over it. Additionally, there may also be increased focus on community service integration into curriculum so that students better understand how they directly impact society at large rather than only focusing inwardly.

AUTHOR: Finally, let's consider a "seemingly" impossible future educational design that includes new and different design possibilities that are viewed as seemingly impossible to act on.

AI PARTNER: A seemingly impossible future educational design could include the implementation of AI-powered tutors which can operate without direct supervision or intervention from teachers. This technology would be able to adjust learning programs for each individual student's strengths and weaknesses as well as provide meaningful feedback tailored exactly toward their personal needs in order to best facilitate growth and understanding. Additionally, this model may also involve digital courses/assignments that are programmed using natural language processing capabilities, allowing students a more conversational way of interacting with course material rather than having to rely heavily on memorization methods alone.

Additional Exploration

AUTHOR: Let's explore the "plausible" future educational design described. Imagine that this design already exists. Can you tell me a brief story of how it came into being? Be sure to discuss how the common, previously existing design was transformed into this new design.

AI PARTNER: This story begins with a group of forward-thinking educators who were determined to transform the way students learn. They recognized that traditional educational models often lacked personalization and did not always provide enough opportunities for critical thinking, collaboration, or meaningful assessment methods, so they set out on an ambitious journey to improve how knowledge is shared in classrooms around the world. The team began by introducing more cross-disciplinary studies that allowed students to explore multiple subjects within one course while gaining insights from different perspectives than those traditionally taught in separate disciplines alone. Next, AI-powered tools like recommendation engines and tutors were implemented to identify individual student's learning paths more accurately as well as provide tailored instruction, feedback, and assessment. Combined, these advancements revolutionized the way knowledge was shared in classrooms across the world, leading to a whole new era of education for students everywhere.

Strengths

AUTHOR: What are the strengths of this design?

AI PARTNER: This design has several strengths which include more personalized learning paths tailored for each individual student's needs, increased opportunities for critical thinking, and collaboration through cross-disciplinary studies or project-based activities. Additionally, AI-powered tools can help ensure that students are given meaningful feedback throughout their

educational journey as well as relevant assessments depending on their level of understanding instead of relying solely on rote memorization methods.

Limitations

AUTHOR: What are the limitations of this design? Please describe any potential hazards or negative unintended consequences.

AI PARTNER: There are a few potential limitations of this design. Firstly, there is the risk that students could become overly reliant on AI-powered tools and lose out on important socialization opportunities from peers or teachers due to remote learning platforms being used for classes. Additionally, even though personalized learning plans help with targeting weak spots more accurately, they still have their own set of challenges such as providing sufficient support when needed (which may not be feasible in certain cases). Lastly, having too much information available can lead to overload if goals aren't clearly defined, making it difficult for learners to focus their energy properly without feeling overwhelmed by all they have access to learn!

Wild Card and Black Swan Events

AUTHOR: How might future wild card (unexpected) or black swan (seemingly impossible) events impact our ability to bring about this design?

AI PARTNER: Unexpected or seemingly impossible events could have both positive and negative impacts on our ability to bring this design into reality. On the one hand, certain technological advancements may help increase access for students regardless of geography by providing remote learning opportunities in ways that weren't previously possible (such as developing better AI-powered tutors/recommendation engines). On the other hand, unexpected economic downturns could lead to budget cuts which might limit initiatives meant to enhance online learning experiences, thus hindering progress toward introducing a more personalized type of education system worldwide.

Reflection

AUTHOR: Let's reflect on this dialogue. What did we learn from this process? What, if any, actionable possibilities can be acted on now to make transformations? What are some next steps that can be taken from these insights? What questions and concerns remain?

AI PARTNER: We have learned that there are many possibilities for transforming the way students learn in order to better prepare them for navigating current and future uncertainties. Some of these include introducing more cross-disciplinary studies and utilizing AI-powered tools such as recommendation engines or tutors to provide meaningful feedback tailored toward individual needs.

A number of actionable steps can be taken now, including investing in technology solutions that enable personalized learning and integrating community service projects or virtual simulations within the curriculum. Some questions remain about:

- How effective certain methods will be at ensuring student engagement?
- What motivates learners the most when tackling new concepts or topics?

Finally, it is important for educators and administrators to continue exploring ways in which course materials can integrate more modern tools such as augmented reality (AR) or natural language processing, so that students have access to truly immersive educational experiences tailored toward their needs.

AUTHOR: Thank you. This has been an interesting exploration. The scenario that I've been thinking about is different from what you presented. It is plausible but will require some changes in the way we all typically think about designing learning experiences. It is not heavily dependent on AI, new platforms, or technologies. Rather, the scenario I have been developing focuses on how we can design structured experiences with uncertainty to provide students with opportunities to develop their confidence and competence engaging with and resolving uncertainty now and into their futures. What do you think?

AI PARTNER: I think that this is an intriguing scenario and one which could potentially benefit students greatly in helping them to navigate current uncertainties. Structured experiences with uncertainty can help develop problem-solving, critical thinking skills, as well as encourage creativity when tackling complex challenges, all of which will be invaluable for future successes both personally and professionally. Additionally, these kinds of activities should allow learners enough space to make mistakes without feeling pressured by traditional assessment methods (which may not properly reflect their individual progress). There needs to be a focus on providing meaningful feedback at the appropriate intervals throughout the experience so that each student feels like they are taking away something valuable from it no matter what outcomes might have occurred. Finally, there also has to be some way for teachers/mentors to ensure that students are able to remain engaged and successfully complete the task at hand without feeling overwhelmed by all of the open possibilities – which could include providing smaller, more achievable goals along with each challenge.

AUTHOR: Thanks for the supportive feedback. Moving toward new possibilities, such as those we have discussed, is what this book is about.